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Agency

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Health and Environmental Effects
Research Program Abstracts

Interagency
Energy-Environment
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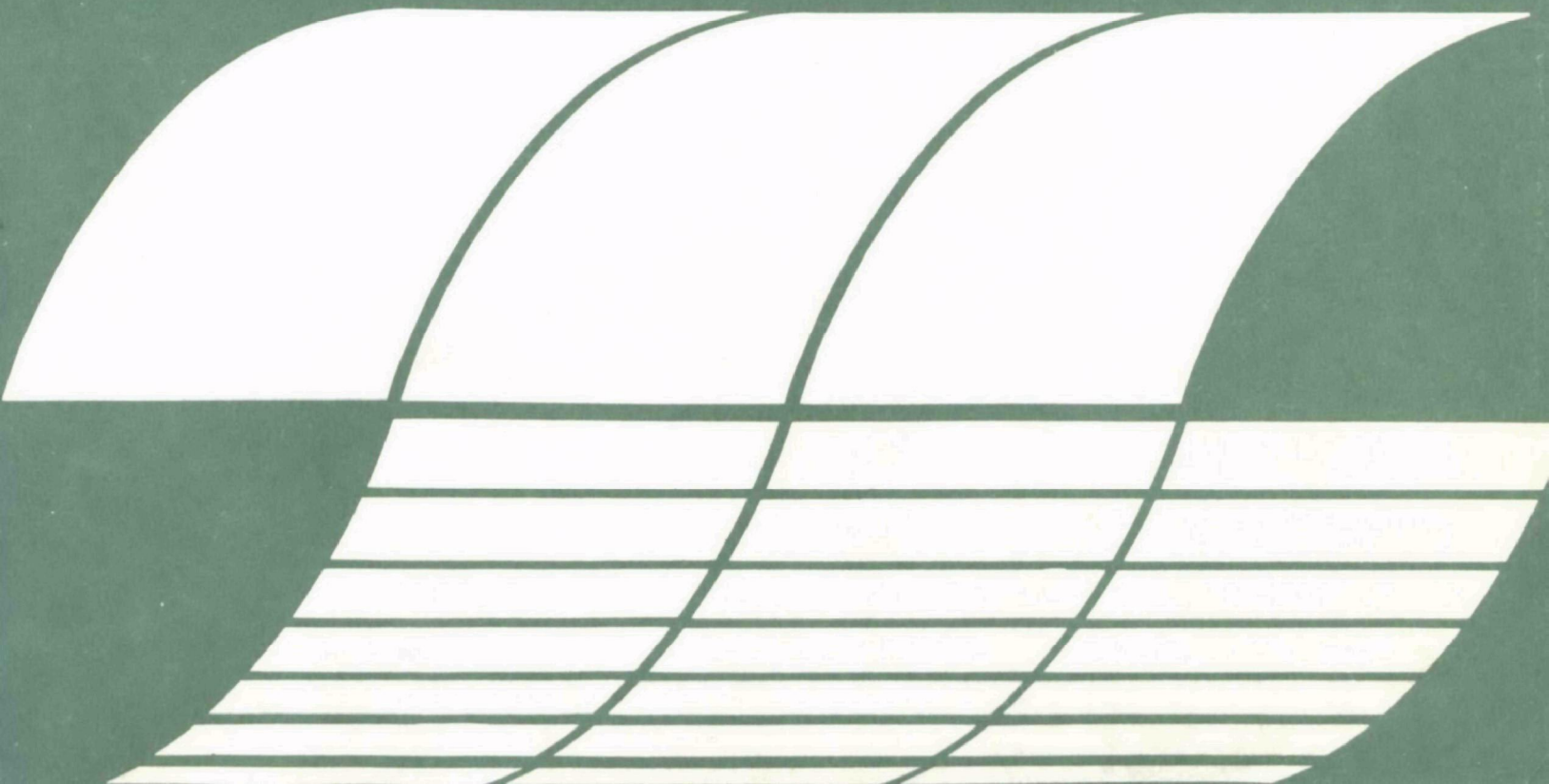
Program Report



INTRODUCTION

The Environmental Protection Agency/Office of Research and Development has prepared this research directory in an effort to better coordinate information dissemination for health and environmental effects research. This directory supersedes the "Fiscal Year 1975 Health and Environmental Effects Research Program Abstracts," published in April 1976. Specific modifications include more comprehensive information as to funding, support method, task, project officer, responsible organization and pertinent dates.

The project level descriptions contained in this volume constitute technical and programmatic information concerning the Environmental Protection Agency/ Office of Research and Development's health and environmental effects research. Each project has been funded by the FY 1975 Interagency Energy/Environment supplemental appropriation being coordinated by the Office of Energy, Minerals and Industry. In addition, each project has been assigned to one of five research development and demonstration categories: Pollutant Characterization, Measurement and Monitoring, Environmental Transport Processes, Health Effects, Ecological Effects and Integrated Assessment.

Project descriptions are culled from "Notice of Research Project" forms. These forms have been prepared under sponsorship of appropriate laboratories and agencies using the Smithsonian Science Information Exchange (SSIE) format.

Tables have been prepared to reflect the EPA/ORD FY 1975 supplemental energy appropriation budget that is directed toward energy-related health and environmental effects research. Tables 1 through 9 contain the funds budgeted by the Environmental Protection Agency to a single agency; Table 1 represents in-house EPA funding, while Tables 2-9 indicate those agencies receiving EPA pass-through funds. Table 10 is a summary table of all pass-through funds, and Table 11 is a summary of both EPA in-house and pass-through funds.

The tables are arranged by research category and fuel type (technology). Exhibit A indicates objectives within each category. The column headed "multi-fuel" includes all research dealing with five or more fuels, while the column headed "all" is a summation of all fuels within each category. Each research category has a summation row designated "xx" showing the totals of each fuel in the category. With these tables, it is possible to tell at a glance the funds directed to any research category (row), fuels source (column), or agency (table).

Similar information on environmental control technology research is contained in another volume covering: Energy Resource Extraction, Physical and Chemical Coal Cleaning, Flue Gas Cleaning, Direct Combustion, Synthetic Fuels, Nuclear, Thermal, Improved Efficiency, and Advanced Systems.

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TABLE I

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : ENVIRONMENTAL PROTECTION AGENCY

KING CAT ..ORY CHAR..MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
2XX	4649	810	128	757	140	0	0	800	0	300	1705
2A0	1590	647	120	273	0	0	0	0	0	300	250
2B0	180	0	0	0	0	0	0	0	0	0	180
2C0	500	50	0	450	0	0	0	0	0	0	0
2D0	390	0	0	0	0	0	0	0	0	0	390
2E0	70	0	0	0	70	0	0	0	0	0	0
2F0	155	83	8	34	0	0	0	0	0	0	30
2G0	270	0	0	0	0	0	0	0	0	0	270
2H0	50	0	0	0	0	0	0	0	0	0	50
2I0	30	0	0	0	30	0	0	0	0	0	0
2J0	115	30	0	0	0	0	0	0	0	0	85
2K0	800	0	0	0	0	0	0	800	0	0	0
2L0	490	0	0	0	40	0	0	0	0	0	450
ENVIR.TRANS.PROC.											
3XX	4169	755	745	475	0	0	0	0	0	0	2185
3A0	425	0	0	0	0	0	0	0	0	0	425
3B0	0	0	0	0	0	0	0	0	0	0	0
3C0	50	0	0	0	0	0	0	0	0	0	50
3D0	395	230	0	0	0	0	0	0	0	0	165
3E0	1260	275	295	0	0	0	0	0	0	0	690
3F0	1575	200	370	150	0	0	0	0	0	0	855
3G0	0	0	0	0	0	0	0	0	0	0	0
3H0	455	50	80	325	0	0	0	0	0	0	0
HEALTH EFFECTS											
4XX	6366	4251	340	880	500	195	0	0	0	200	0
4A0	3055	2075	0	430	500	50	0	0	0	0	0
4B0	2587	1652	240	350	0	145	0	0	0	200	0
4C0	624	524	100	0	0	0	0	0	0	0	0
4D0	100	0	0	100	0	0	0	0	0	0	0
4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS											
5XX	4040	1755	1450	240	0	0	0	0	0	0	595
5A1	1675	690	985	0	0	0	0	0	0	0	0
5A2	0	0	0	0	0	0	0	0	0	0	0
5A3	0	0	0	0	0	0	0	0	0	0	0
5A4	0	0	0	0	0	0	0	0	0	0	0
5A5	150	150	0	0	0	0	0	0	0	0	0
5B1	290	190	0	0	0	0	0	0	0	0	100
5B2	1460	725	0	240	0	0	0	0	0	0	495
5B3	0	0	0	0	0	0	0	0	0	0	0
5B4	0	0	0	0	0	0	0	0	0	0	0
5C1	195	0	195	0	0	0	0	0	0	0	0
5C2	250	0	250	0	0	0	0	0	0	0	0
5C3	0	0	0	0	0	0	0	0	0	0	0
5C4	20	0	20	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT											
7XX	1893	0	0	0	0	0	25	0	0	80	1788
7A0	1325	0	0	0	0	0	0	0	0	0	1325
7B0	0	0	0	0	0	0	0	0	0	0	0
7C0	234	0	0	0	0	0	25	0	0	0	209
7D0	0	0	0	0	0	0	0	0	0	0	0
7E0	334	0	0	0	0	0	0	0	0	80	254

TABLE 2

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

KING CHAR.	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	1618	435	0	213	300	25	0	0	0	0	645
	2A0	105	75	0	0	0	0	0	0	0	0	30
	2B0	0	0	0	0	0	0	0	0	0	0	0
	2C0	0	0	0	0	0	0	0	0	0	0	0
	2D0	0	0	0	0	0	0	0	0	0	0	0
	2E0	80	0	0	0	80	0	0	0	0	0	0
	2F0	470	0	0	0	0	25	0	0	0	0	445
	2G0	383	0	0	213	0	0	0	0	0	0	170
	2H0	0	0	0	0	0	0	0	0	0	0	0
	2I0	220	0	0	0	220	0	0	0	0	0	0
	2J0	360	360	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.TRANS.PROC.												
	3XX	0	0	0	0	0	0	0	0	0	0	0
	3A0	0	0	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	0	0	0	0	0	0	0	0	0	0	0
	3F0	0	0	0	0	0	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS												
	4XX	5823	1954	252	402	79	0	0	0	0	0	3136
	4A0	1180	608	0	132	0	0	0	0	0	0	440
	4B0	1615	100	200	130	0	0	0	0	0	0	1185
	4C0	386	115	0	0	0	0	0	0	0	0	271
	4D0	1330	806	0	0	44	0	0	0	0	0	480
	4E0	1312	325	52	140	35	0	0	0	0	0	760
ECOLOGICAL EFFECTS												
	5XX	4031	2015	1026	155	0	0	0	0	0	0	835
	5A1	0	0	0	0	0	0	0	0	0	0	0
	5A2	261	0	186	0	0	0	0	0	0	0	75
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	1500	1500	0	0	0	0	0	0	0	0	0
	5A5	0	0	0	0	0	0	0	0	0	0	0
	5B1	0	0	0	0	0	0	0	0	0	0	0
	5B2	0	0	0	0	0	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	670	515	0	155	0	0	0	0	0	0	0
	5C1	175	0	0	0	0	0	0	0	0	0	175
	5C2	1425	0	840	0	0	0	0	0	0	0	585
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT												
	7XX	506	0	0	0	150	0	0	0	0	0	356
	7A0	0	0	0	0	0	0	0	0	0	0	0
	7B0	0	0	0	0	0	0	0	0	0	0	0
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	431	0	0	0	150	0	0	0	0	0	281
	7E0	75	0	0	0	0	0	0	0	0	0	75

TABLE 3

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975.

FUNDING(THOUSANDS)

AGENCY : DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

KING CHAR.	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	0	0	0	0	0	0	0	0	0	0	0
	2A0	0	0	0	0	0	0	0	0	0	0	0
	2B0	0	0	0	0	0	0	0	0	0	0	0
	2C0	0	0	0	0	0	0	0	0	0	0	0
	2D0	0	0	0	0	0	0	0	0	0	0	0
	2E0	0	0	0	0	0	0	0	0	0	0	0
	2F0	0	0	0	0	0	0	0	0	0	0	0
	2G0	0	0	0	0	0	0	0	0	0	0	0
	2H0	0	0	0	0	0	0	0	0	0	0	0
	2I0	0	0	0	0	0	0	0	0	0	0	0
	2J0	0	0	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.	TRANS.PROC.											
	3XX	0	0	0	0	0	0	0	0	0	0	0
	3A0	0	0	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	0	0	0	0	0	0	0	0	0	0	0
	3F0	0	0	0	0	0	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH	EFFECTS											
	4XX	0	0	0	0	0	0	0	0	0	0	0
	4A0	0	0	0	0	0	0	0	0	0	0	0
	4B0	0	0	0	0	0	0	0	0	0	0	0
	4C0	0	0	0	0	0	0	0	0	0	0	0
	4D0	0	0	0	0	0	0	0	0	0	0	0
	4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL	EFFECTS											
	5XX	0	0	0	0	0	0	0	0	0	0	0
	5A1	0	0	0	0	0	0	0	0	0	0	0
	5A2	0	0	0	0	0	0	0	0	0	0	0
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	0	0	0	0	0	0	0	0	0	0	0
	5A5	0	0	0	0	0	0	0	0	0	0	0
	5B1	0	0	0	0	0	0	0	0	0	0	0
	5B2	0	0	0	0	0	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	0	0	0	0	0	0	0	0	0	0	0
	5C1	0	0	0	0	0	0	0	0	0	0	0
	5C2	0	0	0	0	0	0	0	0	0	0	0
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR.	ASSESSMENT											
	7XX	109	0	0	0	0	0	0	0	0	109	0
	7A0	0	0	0	0	0	0	0	0	0	0	0
	7B0	109	0	0	0	0	0	0	0	0	109	0
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	0	0	0	0	0	0	0	0	0	0	0
	7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 4

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

AGENCY : DEPARTMENT OF COMMERCE

FUNDING(THOUSANDS)

KING CATEGORY CHAR.,MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
2XX	2165	0	560	0	40	0	0	0	0	0	1565
2A0	150	0	0	0	0	0	0	0	0	0	150
2B0	330	0	0	0	0	0	0	0	0	0	330
2C0	0	0	0	0	0	0	0	0	0	0	0
2D0	0	0	0	0	0	0	0	0	0	0	0
2E0	0	0	0	0	0	0	0	0	0	0	0
2F0	150	0	0	0	0	0	0	0	0	0	150
2G0	745	0	250	0	0	0	0	0	0	0	495
2H0	0	0	0	0	0	0	0	0	0	0	0
2I0	0	0	0	0	0	0	0	0	0	0	0
2J0	0	0	0	0	0	0	0	0	0	0	0
2K0	0	0	0	0	0	0	0	0	0	0	0
2L0	790	0	310	0	40	0	0	0	0	0	440
ENVIR.TRANS.PROC.											
3XX	300	0	100	0	0	0	0	0	0	0	200
3A0	0	0	0	0	0	0	0	0	0	0	0
3B0	0	0	0	0	0	0	0	0	0	0	0
3C0	100	0	0	0	0	0	0	0	0	0	100
3D0	100	0	0	0	0	0	0	0	0	0	100
3E0	0	0	0	0	0	0	0	0	0	0	0
3F0	100	0	100	0	0	0	0	0	0	0	0
3G0	0	0	0	0	0	0	0	0	0	0	0
3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS											
4XX	0	0	0	0	0	0	0	0	0	0	0
4A0	0	0	0	0	0	0	0	0	0	0	0
4B0	0	0	0	0	0	0	0	0	0	0	0
4C0	0	0	0	0	0	0	0	0	0	0	0
4D0	0	0	0	0	0	0	0	0	0	0	0
4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS											
5XX	1470	120	1350	0	0	0	0	0	0	0	0
5A1	120	120	0	0	0	0	0	0	0	0	0
5A2	0	0	0	0	0	0	0	0	0	0	0
5A3	0	0	0	0	0	0	0	0	0	0	0
5A4	0	0	0	0	0	0	0	0	0	0	0
5A5	0	0	0	0	0	0	0	0	0	0	0
5B1	0	0	0	0	0	0	0	0	0	0	0
5B2	0	0	0	0	0	0	0	0	0	0	0
5B3	0	0	0	0	0	0	0	0	0	0	0
5B4	0	0	0	0	0	0	0	0	0	0	0
5C1	460	0	460	0	0	0	0	0	0	0	0
5C2	520	0	520	0	0	0	0	0	0	0	0
5C3	0	0	0	0	0	0	0	0	0	0	0
5C4	370	0	370	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT											
7XX	1269	0	1169	0	0	0	0	0	0	0	100
7A0	1239	0	1139	0	0	0	0	0	0	0	100
7B0	0	0	0	0	0	0	0	0	0	0	0
7C0	30	0	30	0	0	0	0	0	0	0	0
7D0	0	0	0	0	0	0	0	0	0	0	0
7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 5

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

AGENCY : TENNESSEE VALLEY AUTHORITY

FUNDING(THOUSANDS)

KING CHAR.	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	1049	864	50	0	135	0	0	0	0	0	0
	2A0	124	124	0	0	0	0	0	0	0	0	0
	2B0	171	121	50	0	0	0	0	0	0	0	0
	2C0	242	242	0	0	0	0	0	0	0	0	0
	2D0	0	0	0	0	0	0	0	0	0	0	0
	2E0	135	0	0	0	135	0	0	0	0	0	0
	2F0	35	35	0	0	0	0	0	0	0	0	0
	2G0	242	242	0	0	0	0	0	0	0	0	0
	2H0	100	100	0	0	0	0	0	0	0	0	0
	2I0	0	0	0	0	0	0	0	0	0	0	0
	2J0	0	0	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.TRANS.PROC.												
	3XX	335	250	0	0	85	0	0	0	0	0	0
	3A0	250	250	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	50	0	0	0	50	0	0	0	0	0	0
	3F0	35	0	0	0	35	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS												
	4XX	0	0	0	0	0	0	0	0	0	0	0
	4A0	0	0	0	0	0	0	0	0	0	0	0
	4B0	0	0	0	0	0	0	0	0	0	0	0
	4C0	0	0	0	0	0	0	0	0	0	0	0
	4D0	0	0	0	0	0	0	0	0	0	0	0
	4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS												
	5XX	1240	1033	72	0	135	0	0	0	0	0	0
	5A1	490	490	0	0	0	0	0	0	0	0	0
	5A2	80	80	0	0	0	0	0	0	0	0	0
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	0	0	0	0	0	0	0	0	0	0	0
	5A5	75	0	0	0	75	0	0	0	0	0	0
	5B1	65	65	0	0	0	0	0	0	0	0	0
	5B2	530	398	72	0	60	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	0	0	0	0	0	0	0	0	0	0	0
	5C1	0	0	0	0	0	0	0	0	0	0	0
	5C2	0	0	0	0	0	0	0	0	0	0	0
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT												
	7XX	422	212	0	0	210	0	0	0	0	0	0
	7A0	0	0	0	0	0	0	0	0	0	0	0
	7B0	272	62	0	0	210	0	0	0	0	0	0
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	150	150	0	0	0	0	0	0	0	0	0
	7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 6

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : DEPARTMENT OF AGRICULTURE

KING CHAR.	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	0	0	0	0	0	0	0	0	0	0	0
	2A0	0	0	0	0	0	0	0	0	0	0	0
	2B0	0	0	0	0	0	0	0	0	0	0	0
	2C0	0	0	0	0	0	0	0	0	0	0	0
	2D0	0	0	0	0	0	0	0	0	0	0	0
	2E0	0	0	0	0	0	0	0	0	0	0	0
	2F0	0	0	0	0	0	0	0	0	0	0	0
	2G0	0	0	0	0	0	0	0	0	0	0	0
	2H0	0	0	0	0	0	0	0	0	0	0	0
	2I0	0	0	0	0	0	0	0	0	0	0	0
	2J0	0	0	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.TRANS.PROC.												
	3XX	0	0	0	0	0	0	0	0	0	0	0
	3A0	0	0	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	0	0	0	0	0	0	0	0	0	0	0
	3F0	0	0	0	0	0	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS												
	4XX	0	0	0	0	0	0	0	0	0	0	0
	4A0	0	0	0	0	0	0	0	0	0	0	0
	4B0	0	0	0	0	0	0	0	0	0	0	0
	4C0	0	0	0	0	0	0	0	0	0	0	0
	4D0	0	0	0	0	0	0	0	0	0	0	0
	4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS												
	5XX	1525	743	0	512	0	0	0	0	0	0	270
	5A1	0	0	0	0	0	0	0	0	0	0	0
	5A2	270	0	0	0	0	0	0	0	0	0	270
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	285	185	0	100	0	0	0	0	0	0	0
	5A5	0	0	0	0	0	0	0	0	0	0	0
	5B1	0	0	0	0	0	0	0	0	0	0	0
	5B2	416	236	0	180	0	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	414	322	0	92	0	0	0	0	0	0	0
	5C1	0	0	0	0	0	0	0	0	0	0	0
	5C2	0	0	0	0	0	0	0	0	0	0	0
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT												
	7XX	550	120	0	230	0	0	0	0	0	0	200
	7A0	110	0	0	110	0	0	0	0	0	0	0
	7B0	370	50	0	120	0	0	0	0	0	0	200
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	70	70	0	0	0	0	0	0	0	0	0
	7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 7

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 197[illegible]

FUNDING(THOUSANDS)

AGENCY : NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

KING CHAR..	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	795	205	40	0	0	0	0	0	0	0	550
	2A0	0	0	0	0	0	0	0	0	0	0	0
	2B0	0	0	0	0	0	0	0	0	0	0	0
	2C0	0	0	0	0	0	0	0	0	0	0	0
	2D0	550	0	0	0	0	0	0	0	0	0	550
	2E0	0	0	0	0	0	0	0	0	0	0	0
	2F0	245	205	40	0	0	0	0	0	0	0	0
	2G0	0	0	0	0	0	0	0	0	0	0	0
	2H0	0	0	0	0	0	0	0	0	0	0	0
	2I0	0	0	0	0	0	0	0	0	0	0	0
	2J0	0	0	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.	TRANS. PROC.											
	3XX	0	0	0	0	0	0	0	0	0	0	0
	3A0	0	0	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	0	0	0	0	0	0	0	0	0	0	0
	3F0	0	0	0	0	0	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH	EFFECTS											
	4XX	0	0	0	0	0	0	0	0	0	0	0
	4A0	0	0	0	0	0	0	0	0	0	0	0
	4B0	0	0	0	0	0	0	0	0	0	0	0
	4C0	0	0	0	0	0	0	0	0	0	0	0
	4D0	0	0	0	0	0	0	0	0	0	0	0
	4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL	EFFECTS											
	5XX	0	0	0	0	0	0	0	0	0	0	0
	5A1	0	0	0	0	0	0	0	0	0	0	0
	5A2	0	0	0	0	0	0	0	0	0	0	0
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	0	0	0	0	0	0	0	0	0	0	0
	5A5	0	0	0	0	0	0	0	0	0	0	0
	5B1	0	0	0	0	0	0	0	0	0	0	0
	5B2	0	0	0	0	0	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	0	0	0	0	0	0	0	0	0	0	0
	5C1	0	0	0	0	0	0	0	0	0	0	0
	5C2	0	0	0	0	0	0	0	0	0	0	0
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR.	ASSESSMENT											
	7XX	0	0	0	0	0	0	0	0	0	0	0
	7A0	0	0	0	0	0	0	0	0	0	0	0
	7B0	0	0	0	0	0	0	0	0	0	0	0
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	0	0	0	0	0	0	0	0	0	0	0
	7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 8

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : DEPARTMENT OF THE INTERIOR

KING CATEGORY	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
CHAR.,MEAS.&MONIT.											
2XX	1224	823	0	301	0	0	0	0	0	0	100
2A0	0	0	0	0	0	0	0	0	0	0	0
2B0	293	131	0	62	0	0	0	0	0	0	100
2C0	466	422	0	44	0	0	0	0	0	0	0
2D0	0	0	0	0	0	0	0	0	0	0	0
2E0	0	0	0	0	0	0	0	0	0	0	0
2F0	0	0	0	0	0	0	0	0	0	0	0
2G0	465	270	0	195	0	0	0	0	0	0	0
2H0	0	0	0	0	0	0	0	0	0	0	0
2I0	0	0	0	0	0	0	0	0	0	0	0
2J0	0	0	0	0	0	0	0	0	0	0	0
2K0	0	0	0	0	0	0	0	0	0	0	0
2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.TRANS.PROC.											
3XX	0	0	0	0	0	0	0	0	0	0	0
3A0	0	0	0	0	0	0	0	0	0	0	0
3B0	0	0	0	0	0	0	0	0	0	0	0
3C0	0	0	0	0	0	0	0	0	0	0	0
3D0	0	0	0	0	0	0	0	0	0	0	0
3E0	0	0	0	0	0	0	0	0	0	0	0
3F0	0	0	0	0	0	0	0	0	0	0	0
3G0	0	0	0	0	0	0	0	0	0	0	0
3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS											
4XX	0	0	0	0	0	0	0	0	0	0	0
4A0	0	0	0	0	0	0	0	0	0	0	0
4B0	0	0	0	0	0	0	0	0	0	0	0
4C0	0	0	0	0	0	0	0	0	0	0	0
4D0	0	0	0	0	0	0	0	0	0	0	0
4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS											
5XX	2595	850	1185	75	0	0	0	0	0	0	485
5A1	147	0	147	0	0	0	0	0	0	0	0
5A2	438	0	438	0	0	0	0	0	0	0	0
5A3	200	0	0	0	0	0	0	0	0	0	200
5A4	0	0	0	0	0	0	0	0	0	0	0
5A5	0	0	0	0	0	0	0	0	0	0	0
5B1	885	700	0	0	0	0	0	0	0	0	185
5B2	325	150	0	75	0	0	0	0	0	0	100
5B3	0	0	0	0	0	0	0	0	0	0	0
5B4	0	0	0	0	0	0	0	0	0	0	0
5C1	600	0	600	0	0	0	0	0	0	0	0
5C2	0	0	0	0	0	0	0	0	0	0	0
5C3	0	0	0	0	0	0	0	0	0	0	0
5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT											
7XX	0	0	0	0	0	0	0	0	0	0	0
7A0	0	0	0	0	0	0	0	0	0	0	0
7B0	0	0	0	0	0	0	0	0	0	0	0
7C0	0	0	0	0	0	0	0	0	0	0	0
7D0	0	0	0	0	0	0	0	0	0	0	0
7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 9

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

KING CHAR..	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	390	110	50	0	0	0	0	0	0	140	90
	2A0	0	0	0	0	0	0	0	0	0	0	0
	2B0	0	0	0	0	0	0	0	0	0	0	0
	2C0	0	0	0	0	0	0	0	0	0	0	0
	2D0	0	0	0	0	0	0	0	0	0	0	0
	2E0	0	0	0	0	0	0	0	0	0	0	0
	2F0	300	110	50	0	0	0	0	0	0	140	0
	2G0	0	0	0	0	0	0	0	0	0	0	0
	2H0	0	0	0	0	0	0	0	0	0	0	0
	2I0	90	0	0	0	0	0	0	0	0	0	90
	2J0	0	0	0	0	0	0	0	0	0	0	0
	2K0	0	0	0	0	0	0	0	0	0	0	0
	2L0	0	0	0	0	0	0	0	0	0	0	0
ENVIR.TRANS.PROC.												
	3XX	0	0	0	0	0	0	0	0	0	0	0
	3A0	0	0	0	0	0	0	0	0	0	0	0
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	0	0	0	0	0	0	0	0	0	0	0
	3D0	0	0	0	0	0	0	0	0	0	0	0
	3E0	0	0	0	0	0	0	0	0	0	0	0
	3F0	0	0	0	0	0	0	0	0	0	0	0
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS												
	4XX	4875	501	724	200	0	0	0	0	0	205	3245
	4A0	0	0	0	0	0	0	0	0	0	0	0
	4B0	551	16	0	0	0	0	0	0	0	0	535
	4C0	3219	485	724	200	0	0	0	0	0	205	1605
	4D0	1105	0	0	0	0	0	0	0	0	0	1105
	4E0	0	0	0	0	0	0	0	0	0	0	0
ECOLOGICAL EFFECTS												
	5XX	160	0	70	0	0	0	0	0	0	0	90
	5A1	0	0	0	0	0	0	0	0	0	0	0
	5A2	0	0	0	0	0	0	0	0	0	0	0
	5A3	0	0	0	0	0	0	0	0	0	0	0
	5A4	0	0	0	0	0	0	0	0	0	0	0
	5A5	0	0	0	0	0	0	0	0	0	0	0
	5B1	0	0	0	0	0	0	0	0	0	0	0
	5B2	0	0	0	0	0	0	0	0	0	0	0
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	0	0	0	0	0	0	0	0	0	0	0
	5C1	0	0	0	0	0	0	0	0	0	0	0
	5C2	160	0	70	0	0	0	0	0	0	0	90
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	0	0	0	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT												
	7XX	0	0	0	0	0	0	0	0	0	0	0
	7A0	0	0	0	0	0	0	0	0	0	0	0
	7B0	0	0	0	0	0	0	0	0	0	0	0
	7C0	0	0	0	0	0	0	0	0	0	0	0
	7D0	0	0	0	0	0	0	0	0	0	0	0
	7E0	0	0	0	0	0	0	0	0	0	0	0

TABLE 10

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : TOTAL PASS-THROUGH FUNDS

KING CATEGORY CHAR.,MEAS&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
2XX	7241	2437	700	514	475	25	0	0	0	140	2950
2A0	379	199	0	0	0	0	0	0	0	0	180
2B0	794	252	50	62	0	0	0	0	0	0	430
2C0	708	664	0	44	0	0	0	0	0	0	0
2D0	550	0	0	0	0	0	0	0	0	0	550
2E0	215	0	0	0	215	0	0	0	0	0	0
2F0	1200	350	90	0	0	25	0	0	0	140	595
2G0	1835	512	250	408	0	0	0	0	0	0	665
2H0	100	100	0	0	0	0	0	0	0	0	0
2I0	310	0	0	0	220	0	0	0	0	0	90
2J0	360	360	0	0	0	0	0	0	0	0	0
2K0	0	0	0	0	0	0	0	0	0	0	0
2L0	790	0	310	0	40	0	0	0	0	0	440
ENVIR.TRANS.PROC.											
3XX	635	250	100	0	85	0	0	0	0	0	200
3A0	250	250	0	0	0	0	0	0	0	0	0
3B0	0	0	0	0	0	0	0	0	0	0	0
3C0	100	0	0	0	0	0	0	0	0	0	100
3D0	100	0	0	0	0	0	0	0	0	0	100
3E0	50	0	0	0	50	0	0	0	0	0	0
3F0	135	0	100	0	35	0	0	0	0	0	0
3G0	0	0	0	0	0	0	0	0	0	0	0
3H0	0	0	0	0	0	0	0	0	0	0	0
HEALTH EFFECTS											
4XX	10698	2455	976	602	79	0	0	0	0	205	6381
4A0	1180	608	0	132	0	0	0	0	0	0	440
4B0	2166	116	200	130	0	0	0	0	0	0	1720
4C0	3605	600	724	200	0	0	0	0	0	205	1876
4D0	2435	806	0	0	44	0	0	0	0	0	1585
4E0	1312	325	52	140	35	0	0	0	0	0	760
ECOLOGICAL EFFECTS											
5XX	11021	4761	3703	742	135	0	0	0	0	0	1680
5A1	757	610	147	0	0	0	0	0	0	0	0
5A2	1049	80	624	0	0	0	0	0	0	0	345
5A3	200	0	0	0	0	0	0	0	0	0	200
5A4	1785	1685	0	100	0	0	0	0	0	0	0
5A5	75	0	0	0	75	0	0	0	0	0	0
5B1	950	765	0	0	0	0	0	0	0	0	185
5B2	1271	784	72	255	60	0	0	0	0	0	100
5B3	0	0	0	0	0	0	0	0	0	0	0
5B4	1084	837	0	247	0	0	0	0	0	0	0
5C1	1235	0	1060	0	0	0	0	0	0	0	175
5C2	2105	0	1430	0	0	0	0	0	0	0	675
5C3	0	0	0	0	0	0	0	0	0	0	0
5C4	370	0	370	0	0	0	0	0	0	0	0
INTEGR. ASSESSMENT											
7XX	2856	332	1169	230	360	0	0	0	0	109	656
7A0	1349	0	1139	110	0	0	0	0	0	0	100
7B0	751	112	0	120	210	0	0	0	0	109	200
7C0	30	0	30	0	0	0	0	0	0	0	0
7D0	651	220	0	0	150	0	0	0	0	0	281
7E0	75	0	0	0	0	0	0	0	0	0	75

TABLE II

ENVIRONMENTAL PROTECTION AGENCY

ENERGY BUDGET FY 1975

FUNDING(THOUSANDS)

AGENCY : TOTAL FY 75 ENERGY FUNDS

KING CHAR..	CATEGORY MEAS.&MONIT.	ALL	COAL	OIL/GAS	OIL SHALE	NUCLEAR	GEOTHERM	SOLAR	WASTE-FUEL	HYDROEL	CONSERVN	MULTI-FUEL
	2XX	11981	3247	828	1271	615	25	0	800	0	440	4655
	2A0	1969	846	120	273	0	0	0	0	0	300	430
	2B0	974	252	50	62	0	0	0	0	0	0	610
	2C0	1208	714	0	494	0	0	0	0	0	0	0
	2D0	940	0	0	0	0	0	0	0	0	0	940
	2E0	285	0	0	0	285	0	0	0	0	0	0
	2F0	1355	433	98	34	0	25	0	0	0	140	625
	2G0	2105	512	250	408	0	0	0	0	0	0	935
	2H0	150	100	0	0	0	0	0	0	0	0	50
	2I0	340	0	0	0	250	0	0	0	0	0	90
	2J0	475	390	0	0	0	0	0	0	0	0	85
	2K0	800	0	0	0	0	0	0	800	0	0	0
	2L0	1280	0	310	0	80	0	0	0	0	0	890
ENVIR.	TRANS.PROC.											
	3XX	4795	1005	845	475	85	0	0	0	0	0	2385
	3A0	675	250	0	0	0	0	0	0	0	0	425
	3B0	0	0	0	0	0	0	0	0	0	0	0
	3C0	150	0	0	0	0	0	0	0	0	0	150
	3D0	495	230	0	0	0	0	0	0	0	0	265
	3E0	1310	275	295	0	50	0	0	0	0	0	690
	3F0	1710	200	470	150	35	0	0	0	0	0	855
	3G0	0	0	0	0	0	0	0	0	0	0	0
	3H0	455	50	80	325	0	0	0	0	0	0	0
HEALTH	EFFECTS											
	4XX	17064	6706	1316	1482	579	195	0	0	0	405	6381
	4A0	4235	2683	0	562	500	50	0	0	0	0	440
	4B0	4753	1768	440	480	0	145	0	0	0	200	1720
	4C0	4229	1124	824	200	0	0	0	0	0	205	1876
	4D0	2535	806	0	100	44	0	0	0	0	0	1585
	4E0	1312	325	52	140	35	0	0	0	0	0	760
ECOLOGICAL	EFFECTS											
	5XX	15061	6516	5153	982	135	0	0	0	0	0	2275
	5A1	2432	1300	1132	0	0	0	0	0	0	0	0
	5A2	1049	80	624	0	0	0	0	0	0	0	345
	5A3	200	0	0	0	0	0	0	0	0	0	200
	5A4	1785	1685	0	100	0	0	0	0	0	0	0
	5A5	225	150	0	0	75	0	0	0	0	0	0
	5B1	1240	955	0	0	0	0	0	0	0	0	285
	5B2	2731	1509	72	495	60	0	0	0	0	0	595
	5B3	0	0	0	0	0	0	0	0	0	0	0
	5B4	1084	837	0	247	0	0	0	0	0	0	0
	5C1	1430	0	1255	0	0	0	0	0	0	0	175
	5C2	2355	0	1680	0	0	0	0	0	0	0	675
	5C3	0	0	0	0	0	0	0	0	0	0	0
	5C4	390	0	390	0	0	0	0	0	0	0	0
INTEGR.	ASSESSMENT											
	7XX	4749	332	1169	230	360	0	25	0	0	189	2444
	7A0	2674	0	1139	110	0	0	0	0	0	0	1425
	7B0	751	112	0	120	210	0	0	0	0	109	200
	7C0	264	0	30	0	0	0	25	0	0	0	209
	7D0	651	220	0	0	150	0	0	0	0	0	281
	7E0	409	0	0	0	0	0	0	0	0	80	329

EXHIBIT A

RESEARCH CATEGORY

CHARACTERIZATION MEASUREMENT AND MONITORING
- 2XX SUMMATION OF CHARACTERIZATION, MEASUREMENT AND MONITORING
- 2AO AIR MONITORING
- 2BO WATER MONITORING
- 2CO GROUNDWATER MONITORING
- 2DO REMOTE MONITORING
- 2EO RADIATION MONITORING
- 2FO AIR MONITORING INSTRUMENTATION
- 2GO WATER MONITORING INSTRUMENTATION
- 2HO REMOTE INSTRUMENTATION
- 2IO RADIATION MONITORING INSTRUMENTATION
- 2JO HEALTH EFFECTS INSTRUMENTATION
- 2KO SOLID WASTE ANALYSIS - INSTRUMENTATION & MONITORING
- 2LO QUALITY ASSURANCE

ENVIRONMENTAL TRANSPORT PROCESSES
- 3XX SUMMATION OF ENVIRONMENTAL TRANSPORT PROCESSES
- 3AO ATMOSPHERIC TRANSPORT
- 3BO ATMOSPHERIC SCAVENGING AND SUSPENSION
- 3CO WEATHER MODIFICATION
- 3DO EFFECTS OF ENERGY ACTIVITIES ON AIR CHEMISTRY
- 3EO MODELS OF ATMOSPHERIC IMPACT ON POLLUTANTS
- 3FO ASSESSMENT OF ENERGY ACTIVITIES ON HYDROSPHERE
- 3GO MODELS OF THE DISTRIBUTION OF POLLUTANTS IN THE HYDROSPHERE
- 3HO TRANSPORT OF ENERGY ACTIVITIES POLLUTANTS IN SOIL

HEALTH EFFECTS
- 4XX SUMMATION OF HEALTH EFFECTS
- 4AO IDENTIFICATION OF HAZARDOUS POLLUTANTS FROM ENERGY ACTIVITIES
- 4BO BIOLOGICAL METHODS OF EVALUATING DOSE AND DAMAGE TO MAN
- 4CO METABOLISM AND FATE OF ENERGY-RELATED HAZARDOUS AGENTS
- 4DO HAZARDS OF EXPOSURE TO ENERGY-RELATED ACTIVE AGENTS
- 4EO DAMAGE, REPAIR, RECOVERY, PROTECTION AND AMELIORATION PROCESSES ASSOCIATED WITH ENERGY-RELATED ACTIVE AGENTS

ECOLOGICAL EFFECTS
- 5XX SUMMATION OF ECOLOGICAL EFFECTS
- 5A1 DATA-BASE FOR IMPACT OF AIRBORNE/TERRESTRIAL ENERGY-RELATED POLLUTANTS ON TERRESTRIAL ECOSYSTEMS
- 5A2 FATE AND EFFECTS OF AIRBORNE/TERRESTRIAL ENERGY-RELATED POLLUTANTS AND ENERGY CONSERVATION ON TERRESTRIAL ECOSYSTEMS, AND CORRECTIVE MEASURES
- 5A3 NON-POLLUTANT EFFECTS OF ENERGY TECHNOLOGIES, INCLUDING CONSERVATION, ON TERRESTRIAL ECOSYSTEMS, AND CORRECTIVE MEASURES
- 5A4 PREDICTION OF EFFECTS OF ENERGY CONSERVATION AND DEVELOPMENT ON TERRESTRIAL ECOSYSTEMS
- 5A5 IMPACT OF AIRBORNE POLLUTANTS ON TERRESTRIAL MATERIALS
- 5B1 DATA-BASE FOR IMPACT OF ENERGY-RELATED POLLUTANTS ON FRESHWATER AQUATIC SYSTEMS
- 5B2 FATE AND EFFECTS OF ENERGY-RELATED POLLUTANTS AND ENERGY CONSERVATION ON FRESHWATER RESOURCES AND ECOSYSTEMS
- 5B3 NON-POLLUTANT EFFECTS OF ENERGY TECHNOLOGIES, INCLUDING CONSERVATION, ON FRESHWATER RESOURCES AND ECOSYSTEMS, AND CORRECTIVE MEASURES
- 5B4 PREDICTION OF EFFECTS OF ENERGY CONSERVATION AND DEVELOPMENT ON FRESHWATER RESOURCES AND ECOSYSTEMS
- 5C1 DATA-BASE FOR IMPACT OF ENERGY-RELATED POLLUTANTS ON MARINE AND ESTUARINE ECOSYSTEMS
- 5C2 EFFECTS OF ENERGY-RELATED POLLUTANTS ON MARINE AND ESTUARINE ORGANISMS AND ECOSYSTEMS
- 5C3 NON-POLLUTANT EFFECTS OF ENERGY DEVELOPMENT AND CONSERVATION ON MARINE AND ESTUARINE ORGANISMS AND ECOSYSTEMS
- 5C4 PREDICTION OF EFFECTS OF ENERGY CONSERVATION AND DEVELOPMENT ON MARINE AND ESTUARINE ORGANISMS AND ECOSYSTEMS

INTEGRATED ASSESSMENT
- 7XX SUMMATION OF INTEGRATED ASSESSMENT
- 7AO MANAGE AND INTEGRATE RESEARCH INFORMATION ON ENVIRONMENTAL CONTROL AND EFFECTS OF ENERGY TECHNOLOGY SYSTEMS
- 7BO ESTIMATE SOCIAL, ECONOMIC AND CULTURAL CONSEQUENCES OF ENVIRONMENTAL EFFECTS OF ALTERNATIVE ENERGY PRODUCTION AND POLLUTION CONTROL TECHNOLOGIES
- 7CO ASSESS DIRECT AND INDIRECT ENVIRONMENTAL CONSEQUENCES OF ENERGY PRODUCTION AND CONTROL ALTERNATIVES
- 7DO EVALUATE COST/RISK/BENEFIT TRADE-OFFS OF ENERGY PRODUCTION AND POLLUTION CONTROL ALTERNATIVES
- 7EO EVALUATION OF ALTERNATIVE APPROACHES TO IMPLEMENTING ENERGY DEVELOPMENT, PREVENTION OF ENVIRONMENTAL DAMAGE, AND OTHER STUDIES

POLLUTANT CHARACTERIZATION, MEASUREMENT & MONITORING

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ABF -01

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Ambient Air Monitoring in Areas in the Vicinity of Energy-Related Sources/Western Energy Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David N. McNelis — Environmental Protection Agency
Roy B. Evans — P. O. Box 15027
Robert N. Snelling — Las Vegas, Nevada (702) 736-2969

NAME AND ADDRESS OF APPLICANT INSTITUTION

Contractor selection pending

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives. The objective of this project is to provide base line air quality monitoring data and assessment reports for areas which are or will be most seriously impacted by present or projected energy-related development activities.

(2) Approach. An inventory will be conducted of energy related sources and monitoring networks in the western U.S. and stations will be selected to be integrated in the ambient air quality assessment. Selection criteria will include consideration of validity of air quality stations/data as well as spectrum of parameters measured and energy related activity development scenario. Network air quality data emphasizing the Four Corners area, the Northern Great Plains area, the Oil Shale Areas of Colorado and Utah, the Black Mesa area of Arizona, and sites in New Mexico outside the Four Corners area will be integrated to establish the long term air quality base line for the criteria pollutants (CO, NO_x, SO_x, photochemical oxidants, hydrocarbons and particulate matter), toxic substances and visibility. The airborne platforms will be used to supplement the ground station air quality data, conduct visibility and special studies, and provide data for modeling efforts of the impact from energy related sources.

(3) Current Plans. The aircraft which will be used on sampling missions has been outfitted with the necessary instrumentation and is currently undergoing tests. The field work will be conducted under a contractual arrangement. The award of this contract is anticipated to be executed during September 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	(702) 736-2969	8/13/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1	Dr. David N. McNelis
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Monitoring Operations Division EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
325 K	1975	4	6/75	12/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Regional Ambient Air Monitoring of Energy Related Toxic Substances & Suspended Particulates in the Southwestern United States

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David N. McNelis[1]
Roy B. Evans[1]
Dr. Dale Slade[2]

1. EPA, EMSL-Las Vegas, P.O.Box 15027
Las Vegas, NV 89114
(702) 736-2969

2. Ute Research Laboratories
P.O.Box 119
Fort Duchesne, Utah 84026
(801) 722-2254

NAME AND ADDRESS OF APPLICANT INSTITUTION

Contract Award Pending (Ute Research Laboratories)

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives. This project is to provide monitoring data and reports on energy related toxic substances (e.g., As, Cd, Cr, Cu, Pb, Hg, Ni). The objective is to establish a long term air quality baseline and to assess the environmental impact of energy resource development activities in the southwestern United States, emphasizing the Four Corners area.

(2) Approach. An air quality monitoring network is to be re-established and activated for the collection of samples for total suspended particulate and toxic substance analyses. The network will include sites previously used on lands belonging to the Ute nation in Colorado, the Navajo and Apache nations in New Mexico, the Navajo, Hopi, Hualpai, Havasupai and Piute in Arizona and the Navajo nation in Utah. Elemental laboratory analysis will be conducted using atomic absorption spectroscopy.

(3) Current Plans/Progress. The monitoring sites have been selected and preliminary arrangements for the network operation accomplished. The contract with the Ute Research Laboratories is pending final award which is anticipated during 9/75.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR (702) 736-2969	DATE
		8/15/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Dr. David N. McNelis
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Monitoring Operations Division EMSL-Las Vegas

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250 K	75	4	9/75	12/80

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Groundwater Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Leslie G. McMillion - Principal investigator, Monitoring Systems Design and Analysis Staff

(702) 736-2969

NAME AND ADDRESS OF APPLICANT INSTITUTION

U. S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory, P.O. Box 15027, Las Vegas Nevada 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: A groundwater monitoring model and strategy that will be applicable to any basin containing a coal strip mine, an oil shale mining and processing project, a geothermal resource development, and a complete groundwater basin monitoring validation of a previously developed strategy.

Approach: Two groundwater basins will be intensively studied by applying theoretically developed monitoring strategies and the results developed into a guideline for monitoring groundwater quality.

The work under this program will be performed by contract, and in-house.

Approximately 80 percent (task 01) of the initial effort will be a contract covering groundwater monitoring in the coal strip mining area on the east flank of the Powder River Basin, Wyoming. The same contractor (task 01) will also expend about a 20 percent effort in groundwater monitoring around tracts U_a and U_b of the Unita Basin, Utah.

Task 07 is an in-house effort for prioritization of pollutants in the two basins to be studied.

Current Plans:

To direct studies in the two basins partly through contracts. Collection of all baseline data and all on-going monitoring efforts will be identified and all relevant data available will be used in the project. After development of the monitoring strategy the plan will be applied and further developed through a four year period.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Leslie G. McMillion	8-18-75

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	SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	01 and 07	George B. Morgan (702) 736-2969 x265
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: Monitoring Systems Research & Development Division, EMSL-Las Vegas
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
450 K (1) 50 K (7)	75	4 - 5 years	12/75	12/80

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Remote (Overhead) Research Monitoring of Energy Related Developments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. A. Pressman — Remote Sensing Division, Remote Sensing Operations Branch
Mr. E. Arthur — Environmental Monitoring and Support Laboratory-Las Vegas
Mr. C. Lake — P.O. Box 15027
Mr. M. Dockter — Las Vegas, NV 89114 Tel: (702) 736-2969 Ext. 336

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The effectiveness of overhead remote sensing and photographic techniques to monitor energy related activities and effects will be demonstrated. Emphasis will be placed on coal mining, oil and gas extraction and oil shale extraction on land use, surface disruption, surface water, vegetation and visibility. Geographical emphasis is on the Western U. S. with the objective of establishing a baseline for key parameters in this region, especially, Four Corners area, oil shale region (Colorado, Utah, Wyoming, and Northern Great Plains (N. Dakota, S. Dakota, Montana).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	A. Pressman Albert E. Pressman	Aug. 13, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	Albert E. Pressman (702) 736-2969
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		EMSL-LV, Remote Sensing Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
140 K	1975	5	May 1975	1980

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

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77ABJ

TITLE OF PROJECT
Monitoring Methods for Effluents from Facilities Involved in the Nuclear Fuel Cycle

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E.W. Bretthauer-Acting Chief of the Methods Development & Analytical Support Branch
Environmental Monitoring and Support Laboratory
P.O. Box 15027, Las Vegas, NV 89114
(702) 736-2969 Ext. 281

NAME AND ADDRESS OF APPLICANT INSTITUTION
Office of Research and Development
Environmental Protection Agency
Washington, D.C. 20460

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) The objective of this study is the development of techniques to monitor the output of new types of facilities involved in the nuclear fuel cycle with emphasis on those in the plutonium fuel cycle.

(2) Approach.

Task 1: Characterize the physical and chemical properties and radiation levels of plutonium and other actinide discharges from a mixed uranium and plutonium oxide fuel-fabrication facility.

Task 2: Recommend and collaboratively test methods for monitoring plutonium, uranium and thorium in soil, air and water, including the development of appropriate reference materials for calibration.

(3) Progress.

Task 1: An interagency agreement for the characterization of alpha-active particles has been negotiated with the Air Force Technical Applications Center (AFTAC), Patrick Air Force Base, Cocoa Beach, FL.

A feasibility study to validate sampling and characterization techniques has been successfully completed at an experimental nuclear fuel fabrication facility.

Sampling began in May 1975 at NUMEC, a large commercial facility fabricating fuel for the Fast Flux Test Facility (FFTF).

Task 2: Two methods for the analysis of plutonium in soil are being collaboratively tested as proposed reference methods.

Efforts are underway to adapt the above methods to the measurement of plutonium in air and water.

Appropriate reference materials are being developed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	E.W. Bretthauer	August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*		EMSL-Las Vegas-EPA E.W. Bretthauer (702) 736-2969 Ext. 281
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Methods Development & Analytical Support Branch
	RESEARCH GRANT	01-02	Monitoring Systems Research & Development Div.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	1975	1	10/74	1/80

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ABK

TITLE OF PROJECT
Identification of Components of Energy Related Wastes and Effluents

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Not available

NAME AND ADDRESS OF APPLICANT INSTITUTION

Not available

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this project is to identify and measure chemical elements and volatile organic components of final aqueous effluents and solid wastes from energy-related activities. The types of energy-related processes to be studied are coal mines, oil refineries, oil-shale processors, coal-fired power plants, and coal liquefaction and gasification plants. Demonstrated analytical instruments and techniques will be used for survey-type analyses of chemical elements at µg/l (in water) and µg/g (in solids) concentrations and of volatile organic contaminants at µg/l concentrations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not available	Not available	8/25/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Ann L. Alford (404) 546-3186
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		EPA, ERL-Athens, GA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
150 K	1975	0	12/75	12/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ABL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Develop Low Cost Sulfur Analyzer

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Laverne S. Birks, Chief, X-ray Optics Branch
John V. Gilfrick, Chemist, X-ray Optics Branch
Naval Research Laboratory, Department of the Navy
Washington, D.C. 20390 (202)767-2154

NAME AND ADDRESS OF APPLICANT INSTITUTION

Naval Research Laboratory
Department of the Navy
Washington, D.C. 20390

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective of this work is to design and build a compact economical x-ray spectrometer for on-site measurement of sulfur concentrations in airborne particulate samples. Many of the components, including miniature low-power x-ray tube, crystals, and detectors, are to be obtained commercially, but a number of special components are being built at NRL. A special low-power x-ray tube for more efficient close coupling to the sample will also be built for improved excitation efficiency. A sealed spectrometer chamber using vacuum or helium gas will be employed. Principal design objective is to achieve satisfactory 100-second analyses of samples collected in 30 minutes or less at or near sources, and 15-minute analyses of ambient level samples collected in two hours or less.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Jack Wagman	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Jack Wagman, 919-549-8411, X2216
X	NEGOTIATED CONTRACT TAG	01	RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	0	6/30/75	6/30/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA 77ABL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Particulate Sampling Train for Determining Three Size Fractions in Particulate Emissions from Power Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT

Dr. Wallace B. Smith, Head, Physics Section
Mr. Joseph D. McCain
Southern Research Institute
202-323-5582

NAME AND ADDRESS OF APPLICANT INSTITUTION

Southern Research Institute
2000 9th Avenue, South
Birmingham, Alabama 35205

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this task is to provide incremental funding of contract 68-02-1736 the purpose of which is to develop a manual sampling train like those used in the EPA stationary source manual methods as described in the Federal Register that will measure the particle emission from power plants in three size fraction, non-respiratory, upper respiratory tract range and lower respiratory tract range. Any out of stack device shall have an interface capable of removing a representative sample from the source without size distribution modification. The work shall consist of four phases: (1) planning and testing the proposed measurement method(s), (2) preparation of an interim report and recommendation of method(s), (3) fabrication of a field device based on the proposed method(s) and (4) field testing the device. The contractor shall provide an interim report on the proposed method(s) with test results and recommendations. After the method is approved by the project officer, the contractor shall construct the field device based on the proposed methods(s). After the field device is constructed, the contractor shall field test it at a coal fired power plant and an oil fired power plant.

Total contract funded at $53,000.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Kenneth T Knapp	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	02	Kenneth Knapp; 919-549-8411, x2216
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
8,000	1975	0	6/19/75	12/19/75

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Investigation and Feasibility Study of Methods for the Identification and Measurement of Inorganic Compounds Emitted as Particulates from Sources Using or Processing Fossil Fuels

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The current energy crisis has necessitated the use of types of fossil fuels previously not used. Some of these fuels are "dirtier" and contain higher levels of sulfur, non-combustibles, and other undesirable materials that can increase the pollution emissions. Some of these emissions may be hazardous inorganic compounds. Little information is available on the exact inorganic compounds emitted from sources using or processing fossil fuels. Most of the current effort on analysis, not on the exact inorganic compounds.

To assist the effects of the emissions from the use of the various types of fossil fuels on human health and welfare, methods are needed to identify and to measure the amounts of inorganic compounds in these emissions. With such methods, the needed data can be obtained.

The purpose of this task is to develop, to evaluate, and to test in the field methods for the identification and measurement of the amounts of inorganic compounds emitted from sources using or processing fossil fuels. This contract will also provide much needed data on the types and amounts of inorganic compounds emitted from these sources.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Kenneth T Knapp	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	03	Kenneth Knapp, 919-549-8411, x2216
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA RTP
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	1975	2	9/75	9/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Identification and Measurement of High Molecular Organic Compounds in Emissions from Power Plants and Oil Refineries

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop methods and procedures to identify and measure the organic materials emitted into the atmosphere from energy-related sources and to determine by means of bioassays what fractions or classes of the organic compounds are of potential toxicological significance. Characterization of the organic emissions involve the following major program areas: collection of sample, separation techniques, class identification, and assessment of potential health effects. Emission sampling characterization will be made at an eastern and a western fossil fuel plant and at an oil refinery.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Roy L. Bennett	August 14, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	04	Roy Bennett
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: EPA, Environmental Sciences Research Lab.
RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 50 K Energy 100 K	1975		6/75	6/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ABL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Perfection of Previously Developed Instrumentation for the Collection and Analysis of Carcinogenic Vapors in Ambient Atmospheres

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. E. D. Pellizzari, Principal Investigator
Research Triangle Institute
Research Triangle Park, North Carolina 27709
AC 919/549-8311

NAME AND ADDRESS OF APPLICANT INSTITUTION

Research Triangle Institute
Research Triangle Park, N. C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Analytical techniques and instrumentation were developed and evaluated for the collection and analysis of carcinogenic and mutagenic vapors occurring in ambient air. The areas of investigation included (a) the design and testing of a cartridge sampler for concentrating trace quantities (ng/m^3) of hazardous substances from air, (b) the design, fabrication and evaluation of a thermal desorption inlet-manifold for recovering vapors trapped on an analyte and sample transfer into an analytical system, (c) the evaluation of thermal desorption as a technique for recovering hazardous vapors from sorbents, (d) the development and performance of a field sampling system for collecting trace quantities of vapors, and (e) the application of techniques and instrumentation developed under this program to the analysis of hazardous vapors in ambient air. Emphasis is being placed on characterizing and determining known human and animal carcinogens present in the atmosphere, e.g. vinyl chloride, bis-chloromethyl-ether, trichloroethylene, chloroprene, dimethyl sulfate, chloroform, carbon tetrachloride, styrene oxide, nitrosamines, epoxides, aldehydes and the many other known carcinogens, precarcinogens and cocarcinogens.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Eugene Sawicki	August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	05	Eugene Sawicki 919/549-8411 x 2185
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	1975	2	6/75	6/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

A System for On Line Measurement of Aerosol Size Distribution, Mass and Sulfur Content

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. S. Macias, Chemistry Department, Assistant Professor 314/863-0100, ext. 4783
R. B. Husar, Mechanical and Aerospace Engineering, Associate Professor
J. D. Husar, Mechanical and Aerospace Engineering, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION

Washington University
Lindell & Skinker
St. Louis, MO 63130

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803115

A three year instrumental development and testing program is proposed to develop an accurate and high resolution system for on-line characterization of atmospheric aerosol size distribution, mass concentration and sulfur content in the respirable size range (particle diameter less than 5 μm).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		3/3/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	6	Carole Sawicki 919-549-8411 x2185
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75	1	6/1/74	5/31/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

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TITLE OF PROJECT
Sampling and Analysis of Sulfate, Nitrate and Carbon Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

James Stikeleather, Research Chemist 919-549-8411 x 2372
Northrop Services, Inc.
Environmental Protection Agency
Environmental Sciences Research Laboratory
Research Triangle Park, North Carolina 27711

NAME AND ADDRESS OF APPLICANT INSTITUTION

Northrop Services, Inc.
P.O. Box 1484
Huntsville, Alabama 35807

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Modification of contract 68-02-1567 to add man-hours to perform the following tasks:

-Operate and maintain "wet" chemical analysis system for assay of ammonium, sulfate, hydrogen and nitrate ion in particulate samples. Provide analytical results for these ions as requested by CPL technical directives.
-Conduct ambient air sampling program in conuunction with the Regional Air Pollution Study program in St. Louis and in other sites as specified by technical directive. Operate particulate sampling devices, calibrate flow monitoring devices, prepare necessary sampling data logs.
-Set-up, operate and maintain pyrolysis/chemiluminescence monitor for analysis of sulfate and nitrate ion in ambient air samples of particulate matter both in field experiments and at Research Triangle Park.
-Use EPA provided laboratory and instrumentation facilities to perform experiments in support of EPA programs for the development of spectroscopic methods of ambient air analysis.
-Assemble, calibrate and operate analytical equipment for the measurement of anions and cations in ambient air samples.
-Operate EPA-furnished laboratory facilities and test equipment to evaluate prototype instruments and candidate methods of analysis for laboratory determinations of ambient aerosol composition.
-Operate facilities and test equipment for evaluation of candidate methods of test and prototype equipment for the measurement of hazardous organic compounds in ambient air aerosols.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R. K. Stevens	August 15, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	07	Robert K. Stevens
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
45,000	1975		6/30/75	10/29/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Identification and Analysis of Ambient Air Pollutants Using Combined Techniques of Gas Chromatography and Mass Spectrometry

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. E. D. Pellizzari, Principal Investigator
Research Triangle Institute
Research Triangle Park, North Carolina 27709
AC 919/549-8311

NAME AND ADDRESS OF APPLICANT INSTITUTION

Research Triangle Institute
Research Triangle Park, N. C. 27709

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective - To sample, characterize and quantitate ambient air organic vapors.

Approach - Gas chromatography used in tandeum with mass spectrometry.

Current Plans & Progress -

Several organic vapors have been characterized in ambient air. An extension of this work is planned along with quantitative estimates of these vapors.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Kenneth John Krost	August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	08	Kenneth Krost
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	1975	1	9/75	9/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Design and Performance of an Aerosol Mass Distribution Monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Werner Stober, Ph.D., Professor of Medical Physics (02972) 494

Franz J. Monig, Dipl.-Ing.,

NAME AND ADDRESS OF APPLICANT INSTITUTION

Institut fur Aerobiologie der Fraunhofer-Gesellschaft
5949 Grafschaft/Sauerland, Germany

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803592

The objective of the project is to build a true monitor instrument capable of recording the mass distribution of aerosols in the laboratory and in the field. Time constants will range from minutes or less for source emissions to several hours for unpolluted air (background aerosol). A subordinate objective is to facilitate size-selective sampling of particulate matter of very low airborne concentration for subsequent physical and chemical analysis. The design makes use of the concept of the Stober spiral duct centrifuge for aerosols and incorporates a number of quartz oscillators as size-selective mass sensors along the duct. Current plans anticipate a prototype instrument for continuous sampling and telemetric mass distribution data acquisition in the size range between 0, 3 and 5 µm diameter. Preceding studies have shown that the size range can be extended (p, 08 to 10 µm) and that the concept of the quartz oscillator as a sensitive piezoelectric microbalance has considerably less restrictions when applied in a spinning spiral duct centrifuge than under normal gravity conditions without size selection.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Fraunhofer-Gesellschaft Munich, Germany		10/4/74

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	09	A. P. Altshuller 919-549-8411 x 2191
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
34 K	75	2	8/75	8/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ABL

TITLE OF PROJECT
Construction of one prototype sulfuric acid mist monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. William Eaton -- Project Director
Rockwell International Corporation
508-498-6771

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International Corporation
Air Monitoring Center
2421A Hillcrest Drive
Newbury Park, California 91320

SUMMARY (Give (1) Specific Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract 68-02-2220

In 1971 the Environmental Protection Agency provided in the Federal Register a standard method (Method 8) for determining Sulfuric Acid Mist from Sulfuric Acid plants. Along with this method were new federal standards of performance for acid mist emissions from new stationary sources. The analysis of Sulfuric Acid plant emissions requires the separate determination of Sulfur Dioxide (SO_2) and Sulfuric Acid Mist according to Method 8. The determination of SO_2 and H_2SO_4 mist on an extractive basis. This method involves intermittant sampling, not capable of providing any reasonable type of continous acid mist monitoring without an overburdening amount of equipment and manpower. It is therefore desirable and necessary to develop some type of instrumentation capable of providing in-situ H_2SO_4 mist monitoring for sulfuric acid plants.

The purpose of this contract is to construct one (1) prototype acid mist monitor. The monitor shall be capable of determining sulfuric acid mist over a range of 1 to 100 mg/m^3. The monitor is intended for use on contact sulfuric acid manufacturing plants and is to be mounted on an emission stack; hence, it shall be operable under the industrial conditions normally encountered.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	James Cheney/mk	August 14, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	10	James Cheney 919-549-8411 x 2892
x NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
RESEARCH GRANT		Environmental Sciences Research Lab.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$8,000	1975		6/11/75	11/11/75

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Evaluation and Intercomparative Study of Wet Chemical and Instrumental Methods for Sulfate Determination in Atmospheric Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Air and Industrial Hygiene Laboratory
California Department of Health
2151 Berkeley Way
Berkeley, California 94704
905-843-7900

Dr. Jerome Wesolowski-Physicist
Dr. Bruce Appel - Physical Chemist
Dr. Evaldo Kothny - Chemist
Mr. Emanuel Hoffer - Chemist
Ms. Sue Twiss - Statistician

NAME AND ADDRESS OF APPLICANT INSTITUTION

Air and Industrial Hygiene Laboratory, California Department of Health
2151 Berkeley,Way
Berkeley, California 94704

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Because of the limited supply of clean burning fuels and as a consequence of the present energy crisis, fuels of higher sulfur content are to be used. Accurate and reliable measurement of particulate sulfate is badly needed in view of recent studies indicating significant correlations between sulfate concentration and certain respiratory diseases.

X-ray fluorescence spectroscopy is a technique useful in determining the elemental composition of particulates. The possibility exists that most of the particulate sulfur in some areas of the country occurs in the form of sulfate. One of the main objectives of this contract and any extensions is to evaluate this possibility.

In the first phase of the current contract, the best of the present day methods were evaluated in terms of precision, accuracy and percent interference effect of twelve interferents. Then, samples were collected in the field for the purpose of intercomparison using the various sulfate methods studied. From these results the contractor will determine what correlations exist among total particulate sulfur, water soluble sulfates and total particulate sulfate.

The primary objective of this contract extension is to utilize the expertise and knowledge gained by the contractor in the original project period to reach the following goals: (1) The analysis of a designated number of particulate sulfate samples collected in the field by the two best wet chemical methods; (2) the study, on a limited basis, of the most significant interferences indicated from work done in the preliminary evaluation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Carole R. Sawicki	August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Carole R. Sawicki
X	NEGOTIATED CONTRACT	11	RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	0	10/75	10/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Dye Laser Lidar System for Remote Monitoring of Air Pollution Produced by Stationary Sources, Area Sources, and Present in Ambient Conditions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Samir A. Ahmed, Assoc. Professor, Department of Electrical Engineering
8-903/690-5392

NAME AND ADDRESS OF APPLICANT INSTITUTION

City College
138th Street and Convent Avenue
New York, NY 10028

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803109

A development program is proposed to define the working parameters for a practical lidar system for remote monitoring and tracking of specific air pollutants. The system is designed to be of particular use in the monitoring and tracking of molecular pollutants produced by stationary and area sources as well as for measuring ambient pollution conditions.

A multifrequency dye laser will be used to detect pollutants by measuring the differential absorption of atmospheric elastic backscatter on and off resonance absorption peaks. The proposed scheme therefore combines the sensitivity of resonance absorption measurements with range information as to provide an accurate method of determining accurately pollutant concentration and its spatial distribution.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Electrical Engineering		12/20/73

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER	
	AGENCY STAFF *(Intramural)*		William Herget	919-549-8411 x2216
	NEGOTIATED CONTRACT	012	RESPONSIBLE ORGANIZATION	
X	RESEARCH GRANT		ESRL, RTP	

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75	1	6/15/74	6/14/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ABM

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Automatic Field Measurement of Dissolved Metals by Energy Dispersive X-Ray in Surface and Ground Waters Associated with Energy Resource Mining Operations

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

See Attachment

NAME AND ADDRESS OF APPLICANT INSTITUTION

The Magnavox Company
Fort Wayne, Indiana 46804

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Magnavox will design, develop, test, and provide a fully automatic system for unattended field measurement of a broad spectrum of elements, i.e., sodium to uranium, employing, energy dispersive x-ray technology.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None	D. Thomas Carlton	October 1, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Dwight Ballinger
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		EPA/Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
270 K	75		6/75	6/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ABM

TITLE OF PROJECT
Use of Potassium Ferrate in Oxygen Demand Measurement

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John Kopp, Project Manager, EMSL-Cincinnati, EPA, Cincinnati, Ohio

Dr. James D. Carr, Department of Chemistry

Mr. Mark Cherwin, Department of Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Nebraska
Lincoln, Nebraska 68508

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The University of Nebraska proposes a one-year study to investigate the use of potassium ferrate as an alternate or preliminary oxidant in the total oxygen demand (TOD) test. The present dichromate method does not oxidize all organic compounds completely. This is especially true for ammonia. The ferrate ion, being a much stronger oxidant, has been reported to oxidize dilute ammonia solutions as well as a variety of organic compounds. The oxidation of ammonia and the complete oxidation of organic compounds would provide for a much more accurate measure of TOD.

The proper pH and oxidation time remain to be optimized by repeated titrations on standard water samples containing ammonia and other oxidizable substances. Measurement of COD and TOD on real wastewater samples will be made to determine correlations between the two analysis schemes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None	James D. Carr	October 1, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	Dwight G. Ballinger
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		EPA/Cincinnati

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
260 K	76		8/76	6/77

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ABN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Remote Instrumental Techniques for Monitoring Energy Related Pollutants and Effects

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. M. Bristow — Remote Monitoring Methods Branch, Remote Sensing Division
Dr. J. Guagliardo — Environmental Monitoring and Support Laboratory-Las Vegas
Mr. J. Eckert — P. O. Box 15027
Dr. H. Melfi — Las Vegas, NV 89114 Tele: (702) 736-2969, ext. 295

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Three tasks are covered by this project:

1. Vegetation Stress - This task will investigate the feasibility of detecting stress in vegetation through the use of laser fluorosensing techniques. Both laboratory and extensive field studies will be conducted with a prototype laser fluorosensing instrument. Current planning includes the construction of a suitable test site by Dec. 1975 and the construction of a laser fluorosensing system by Dec. 1976.

2. Water Quality - This task is an extension of on-going work at the facility to measure certain water quality parameters through the use of laser fluorosensing techniques. A laser fluorosensing system will be constructed by Dec. 1976 with field evaluation completed by June 1977.

3. Air Quality - This task is an extension of on-going projects to determine air quality over wide geographical areas through active remote sensing techniques. Specific objectives include the development of a two frequency downlooking airborne LIDAR by June 1976 and an earth reflected differential absorption system for monitoring tracer gases released to simulate effluents from proposed sources (June 1977).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Dr. S. H. Melfi, Chief, RSM, RSD	8/13/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
x AGENCY STAFF *(Intramural)*	1 thru 3	S. H. Melfi (702) 736-2969
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
RESEARCH GRANT		EMSL-LV, Remote Sensing Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
1. 85 K 2. Base 100K Energy 80 K 3. Base 50 K Energy 85 K	1975	6	May 1975	1981

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ABO

TITLE OF PROJECT
Fabrication of a Flame Photometric Detector and Total Sulfur Monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Recent contract work by the Better Environmental Development Corporation has resulted in a prototype flame photometric total sulfur monitor which has significant improvements in sensitivity and stability over existing flame photometric sulfur analyzers. It has been determined from evaluation by FMIB that certain improvements and changes can be incorporated into a new unit which will further increase sensitivity to less than one part-per-billion of total sulfur. Also the detector system used in the BED monitor can be used in conjunction with a sulfur chromatograph to analyze individual sulfur compounds at a concentration of less than 10 ppb.

The purpose of this contract will be to have designed and built a (1) total sulfur monitor incorporating modifications to increase the sensitivity and stability of the systems and (2) a flame photometric detector system which is designed to be incorporated into a chromatograph.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R. Baumgardner	August 14, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	01	Ralph Baumgardner
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA RTP
X RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	0	9/1/75	2/1/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77AB0

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Design and Fabricate Aerosol Dosimeter

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Carl M. Peterson & Mr. Leonard Graf
3725 North Dunlap Street
St. Paul, Minnesota 55112
Phone 612/484-8591

NAME AND ADDRESS OF APPLICANT INSTITUTION

Environmental Research Corporation; 3725 North Dunlap Street
St. Paul, Minnesota 55112

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This contract is to design and construct five portable aerosol dosimeters and two flow monitoring devices. The dosimeters will reject rain and insects but will efficiently sample particles less than 20 μm in size. Provision will be made to use up to five filters in series.

In general the above will approach "state of the art" construction. Digital displays will be used to display all time and flow information. The flow will be controlled with a mass flow controller which is adjustable over the range of two to eleven SLPM regardless of ambient changes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John Bell	August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	02	John P. Bell
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA/RTP
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	0	9/75	4/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ABO

TITLE OF PROJECT
Collection and Assessment of Sub-Micron Particulate Matter

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Andrew R. McFarland, Associate Professor, Department of Civil Engineering
219/283-6614

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Notre Dame
Notre Dame, Indiana 46556

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803594

The goals of the project are: 1) to employ a previously developed low pressure impactor to sample aerosol in several geographic locations 2) to extend the size fractionation capabilities of the system and 3) to explore promising techniques for sampling sub-micron aerosols. In particular, the system will be used to collect aerosols for subsequent determination of size distribution and trace element concentration in the Gary, Indiana area, for determination of the size distribution of atmospheric lead in the Champaign, Illinois region and for characterization of the size distribution of sulfur compounds in the St. Louis, MO area.

Currently, the system is operated such that it provides a cut-point size of 0.05 μm for particles of density two on the last impaction stage. Work will be done to reduce this lower fractionation size.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Engineering		August 14, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Paul Lamothe 919-549-8411 x 2372
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT	003	ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20 K	75	2	3/15/75	3/14/78

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U.S. ENVIRONMENTAL PROTECTION AGENCY

INTERIM - Estimate complete information will be available 1/1/76

NOTICE OF RESEARCH PROJECT

Form Approved OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*

SSIE

EPA 77ABP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Develop and maintain an interlaboratory quality assurance program for air monitoring laboratories.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Contractor not yet selected.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Contractor not yet selected.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the work is to develop and implement a quality assurance program for use by networks monitoring air quality around present and proposed energy development projects. These projects are located in the states of Montana, North Dakota, South Dakota, Wyoming, Utah, Colorado, Arizona, and New Mexico. The approach taken will be: (1) Development of a system to conduct on-site monitoring systems reviews of the laboratories carrying out the air monitoring (2) Establishment and operation of a performance survey program to apply to the laboratories carrying out the air monitoring, and (3) Providing technical assistance where needed. The product of the project will be evidence documenting the air monitoring performance of agencies participating in the program.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	not yet available	August 15, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	01	Dr. John B. Clements (919)549-8411, Ext. 2196
XX	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Environmental Monitoring & Support Lab/RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75	4	1/1/76	June 1980

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ABQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Preparation of Nutrient, Demand and Trace Metals Quality Control Samples for EPA

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Peter Atkins, President
Mr. Phil Simons, Laboratory Director

NAME AND ADDRESS OF APPLICANT INSTITUTION

Environmental Control Laboratories
3983 Research Park Drive
Ann Arbor, Michigan 48104

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The contractor will prepare, for energy related work, series of quality control reference samples, which include nutrient, demand and trace metal constituents.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None	Peter Askins	October 1, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-5	Dwight G. Ballinger
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		EPA/Cinn.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		6/75	6/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ABQ

TITLE OF PROJECT
Standardization and Quality Assurance for Water Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John Winter, Chief, Quality Assurance Branch

Harold A. Clements, Chief, Evaluation Section

Ed L. Berg, Chief, Project Management Section

NAME AND ADDRESS OF APPLICANT INSTITUTION
Environmental Monitoring and Support Laboratory
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Develop and maintain an interlaboratory quality assurance program for water monitoring laboratories. This includes distribution of standards and spiked samples. Develop techniques for standardizing water monitoring instruments.

Major Milestones

1.	Issue interim water monitoring guidelines	6/75
2.	Send out first set of quality control test samples	1/76
3.	Reports on progress of standardization procedures	6/76
4.	Issue final water monitoring guidelines	6/76

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John A. Winter	10-1-75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1, 3, 4, 5	Dwight G. Ballinger
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		EPA/Cinn.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		6/75	6/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ABR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Standardization and Quality Assurance for Radiological Pollutant Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Arthur N. Jarvis, Chief
David G. Easterly, Acting Chief, and
Lee H. Ziegler, Physicist,
Intercomparison and Calibration Section
Quality Assurance Branch, Monitoring Systems
Research and Development Division,
Environmental Monitoring & Support Laboratory
P.O. Box 15027, Las Vegas, NV 89114
Telephone: 702-736-2969, ext. 381

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Environmental Protection Agency
Environmental Monitoring and Support Laboratory
P.O. Box 15027, Las Vegas, NV 89114

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVES: To develop and maintain a quality assurance program which continuously meets the needs of those laboratories having responsibility for radiation monitoring in the environs of nuclear reactors and nuclear and fossil fuel extraction and processing facilities. This includes the distribution of calibrated samples and reference materials, cross-check studies, instrument development, and the publication of instrumental quality control procedures and pertinent guidelines.

APPROACH: Three interrelated QA activities are involved: Task 01, a contract (RFP CI-75-0261) will define the radionuclides, their activity levels, and order of importance in monitoring activities, and serve as a basis for the preparation of reference materials, calibrated samples, and cross-checks. Task 05, employing in-house effort, will result in the development and testing of a gas flow proportional counting system for alpha and beta measurements. Task 06, also utilizing in-house resources, will result in a document describing the quality control procedures required in the operation of gamma spectrometers.

CURRENT PLANS AND/OR PROGRESS:

Task 01: Qualification statements have been received from 31 prospective bidders. An invitation to submit proposals was issued 7/16/75 to all 31. Interested parties have been requested to respond on or before 9/3/75. The period of performance for completion of this work will be 9 months after the contract is let. Estimated completion date is 6/76.

Task 05: The conceptual design of the system has been completed. Required off-the-shelf components were ordered 6/11/75 and should be delivered no later than 9/15/75. Construction and testing of the system should be completed by 6/76. A final report with schematics, a parts list, and QC procedures will be issued.

Task 06: The document is being revised and will be submitted for publication in September 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		August 13, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	05, 06	Arthur N. Jarvis
X	NEGOTIATED CONTRACT	01	RESPONSIBLE ORGANIZATION: EPA Monitoring Systems Research & Development Div., EMSL-Las Vegas
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
1 50 K 5 35 K 6 5K	75	continuing activity	April 1975	continuing

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BW

TITLE OF PROJECT Preplanning Study to Develop a Comprehensive Project Proposal for a Study of the Hydrologic Effects of Development of Alaska's Coal Resources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Investigator: Alvin J. Feulner, Hydrologist, USGS, Water Resources Division, 218 E St., Anchorage, AK 99501

Project Director: George H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division,
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The preplanning study will evaluate the probable hydrologic effects and the kinds of hydrologic data needed to assess the environmental impact of mining operations in Alaska. It will outline the most likely areas for development of mining operations and anticipated hydrologic problems peculiar to those areas. It will include the following:

1. Determination of surface and groundwater availability for mining operations and transportation of coal to markets or shipping points.
2. Determination of baseline premining water quality in potential mining areas so that downstream changes in quality can be anticipated and monitored.
3. Consideration of special artic hydrologic problems related to mining in permafrost areas.
4. Develop a long-range plan for impact studies that will include alternative courses of action that will depend on various development plans.
5. Arrange study areas and problems in priority sequence to aid in the making of decisions on the implementation of future studies.

The study will compile existing information to determine where and what types of hydrologic studies are needed and will estimate the cost of such studies so that the mining impact can be evaluated in an orderly manner. A limited field reconnaissance will be made to collect data in potential mining areas where presently data are not available.

Progress: Two coal fields, the Susitna and Nenana were selected for study this year. Hydrologic reconnaissance of the fields has been completed and systematic data collection is under way. Data collection includes a continuous stage and discharge stream gaging station and miscellaneous discharge and water quality sediment measurements at many sites in each field.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov.24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	7	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75	0	Apr 75	Apr 76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BW

TITLE OF PROJECT: Assessment of the Hydrologic Effects of Strip Mining in the New River Basin of Tennessee

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Stanley P. Sauer, Hydrologist, USGS, Water Resources Division, A-413, Federal Building, U. S. Courthouse, Nashville, TN 37203

Project Director: G. H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division, National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective is to determine the effect on water quality, sediment-production, and streamflow of surface mining in selected areas of Tennessee. Unmined, actively mined, and previously mined (reclaimed and unreclaimed) areas of the State which are representative of the spectrum of climatological, geologic, hydrologic, and morphologic variations found in the region will be identified for data collection and analysis.

Approach: Existing information will be reviewed, areas classified in terms of geomorphology, coal characteristics, and mining and reclamation practices. A reconnaissance type QW investigation to determine the best areas of study will be undertaken.

Progress: Approximately 45 water quality and biologic parameters have been determined from samples obtained at 13 sites in the basin. This sampling program will be continued for different flow regimes. This effort will also help to identify the buffering ability of the natural surroundings in neutralizing acid mine drainage.

Gaging station sites have been identified and some gages installed to examine the downstream storage dilution, and conversion of constituents. These sites are located between and including a one square mile stripped basin and the New River basin outlet (382 square miles).

Land cover types have been derived from LANDSAT data and are being processed for the entire New River basin. In addition, thermal infrared imagery has been used to identify seeps with potential acid mine drainage.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov. 24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	B3-7	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20.0	75	0	Apr 75	Apr 76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BWa

TITLE OF PROJECT Effect of Strip Mining on the Hydrology of Small Watersheds in the Black Mesa Area of Arizona

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Robert M. Myrick, Hydrologist
U.S. Geological Survey, WRD
Federal Building, Rm. 4J
Tucson, AZ 85701

Project Director;
G. H. Davis, USGS
Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division,
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of the Black Mesa hydrologic study is to define the effects of mining and related activities on the water resources of an area in the northeastern corner of Arizona. Overall effects of the proposed 35-year mining operation on the water resources will not be known until completion of mining and rehabilitation. However, many questions regarding the impact of mining and related activities may be answered by monitoring the hydrology of small watersheds. The technology of watershed modeling is sufficiently advanced so that the necessity of a lengthy precalibration period is eliminated.

Approach: Three watersheds of 400 acres each were selected along one of the principal tributaries in the area of mining to monitor the hydrology of a watershed under natural conditions and throughout the period of mining and rehabilitation. Rainfall, streamflow, sediment load, quality of water including trace elements and carbon derivatives, and other data such as vegetal cover are being collected. Instrumentation of three watersheds is desirable in case the actual progress of mining is changed from the present plans. Because of the remoteness of the study area and runoff characteristics, the data collection program must be automated as much as possible.

Progress: Three small basins were selected, and monitoring installations constructed at all sites. Reconnaissance has been made in search of a suitable location for a monitor on Moenkopi Wash, downstream from the project site. A major part of the instrumentation was purchased including stage recording equipment (both float and bubble gages), automatic sediment-sampling equipment, and a number of recording rain gages to be placed at selected points in each basin. Minimal work was accomplished on the ground-water well-drilling.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	12/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS - Water Resources Division DOI

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
115.0	75	6	Apr 75	June 82

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BWa

TITLE OF PROJECT Coal Strip Mining, Land Reclamation Practices, and Water Quality Monitoring at the Centralia Mine, Washington

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Frank A. Packard, U.S. Geological Survey, WRD, Rm. 300, 1305 Tacoma Ave., So., Tacoma, WA 98402

Project Director: G. H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The mining and reclamation practices at the Centralia mine appear to conform to many of the regulations proposed in the various strip mining legislation being considered. The water quality data presently available indicate little, if any, deterioration of surface water quality downstream from the mine. If the Centralia operations have indeed protected the water resources then the reclamation practices and monitoring procedures have considerable transfer value. No current description of the mining and reclamation practices related to water resources is available and no evaluation of the effectiveness of the water quality monitoring system has been made. The objectives of this project are: (1) to describe the strip mining and land reclamation practices at the Centralia Mine as they relate to the use and impact on the water resources of the area and, (2) to evaluate the existing water quality monitoring programs for the Centralia Mine in terms of adequacy and reliability.

Approach: To make field inspections and obtain serial photographs of the mine areas and collect and compile data on geology, water quality, and water resources of the area. GW data will be reviewed regarding potential for contamination. Existing quality water monitoring will be evaluated for adequacy of site and parameters coverage, need for GW sampling, and reliability of field pH data.

Progress: Water quality equipment including specific conductance meters, pH-specific ion meters, and sediment samplers has been obtained. Aerial photographs of the area have been obtained. Groundwater and water quality data have been coded and stored. The report resulting from the "Centralia Strip Mining and Monitoring" project is essentially complete through the first draft and author revision stages.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov. 24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS - Water Resources Division / DOI

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
35.0	75	0	Apr 75	Apr 76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BWb

TITLE OF PROJECT

Characterization of Mine Drainage in Southeastern Ohio

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Clifford G. Angelo, USGS, Water Resources Division,
975 West Third Ave., Columbus, OH

Project Director: George H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: (1) To document at a reconnaissance level the occurrence of basic inorganic and organic constituents in surface and ground waters of the coal mining regions of Ohio; (2) to relate the water-quality parameters to basin characteristics; (3) to make the basic data available to those concerned with finding a solution to the problem of water-quality degradation from mine drainage.

Approach: About 150 sampling sites, predominately surface water but a few ground water, are being selected. The sites will represent the geologic framework, terrain, and mining practices in southeast Ohio. During the study period, a number of samples will be collected at each site in order to obtain data representative of different flow regimes. Measurements of streamflow, pH, acidity (alkalinity), specific conductance, temperature, and dissolved oxygen will be conducted in the field. Analyses for trace metals (Al, As, Cu, Cr, Fe, Mn, Hg, Pb, Zn) and Cl, SO_4, H_2S, phenols, total organic carbon, hardness, and turbidity will be made in the laboratory. An analysis of the relationships between dissolved constituents and basin characteristics will be performed.

Progress: Water samples have been collected at approximately 150 sites. The first round of sampling has been completed with some significant results. Sulfate concentrations range from 22 mg/l to 3600 mg/l. The higher sulfate values appear to be associated with areas where underground mining operations predominate. Low pH, high specific conductance, and high iron concentrations appear also to coincide with areas where underground mines exist. pH ranged from 2.0 to 8.9, specific conductance 195-13,700 mhos, iron content 150-4,400,000 ug/l. Preliminary analyses of data from the first round of sampling seems to indicate that pH values are not lowered in areas where surface mined lands have undergone reclamation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov. 24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	1, 2	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	75	1	Apr 75	Apr 77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BW b

TITLE OF PROJECT A Reconnaissance of the Effects of Strip Mining and Reclamation on the Concentration of Metals and the Buffering Characteristics of a Stream in Indiana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: William J. Shampine, Hydrologist, USGS, Water Resources Div., 1819 North Meridian St., Indianapolis, IN 46202

Project Director: G. H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division,
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to monitor the changes that occur in the concentrations of selected metals and the characteristics of the buffer system in the hydrologic system adjacent to an area to be mined. The area selected is in the lower headwaters of the Wabash River in southwest Indiana. The data base will range from pre to post mining following reclamation.

Approach: It is expected that samples collected monthly at five sites will be adequate to define changes in water quality, although this frequency may be modified in response to a continuing data assessment. Analysis of metals will include the dissolved phase, suspended phase, and those associated with the bottom materials. The buffer system will be defined by field measurements of pH, acidity, and alkalinity, Titration curves will be plotted for each of these determinations. Other field determinations will include temperature, specific conductance, DO, pH, and discharge.

Progress: As of September, about 50 percent of the study area has been disturbed by the mining operation. It is anticipated that mining will be completed and the land reclaimed into row crops by the end of June 1976. In addition to the mine cut itself (about 100 feet deep and 300 feet wide), a drainage system for the mine has been dug further modified the natural drainage pattern in the area.

A gaging station has been established on the main stream draining the area. Four sets of samples have been collected (essentially monthly) since May 1975. Data include (1) common inorganic ions, (2) minor elements associated with the bottom materials and in the dissolved, suspended, and total phases, (3) field alkalinities, and (4) field data (specific conductance, temperature, pH, dissolved oxygen, and discharge).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov. 24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1, 2	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
15 K	75	1	May 75	Jun 77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BWb

TITLE OF PROJECT
Characterization of Mine Drainage in Illinois

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Larry G. Toler, Hydrologist, USGS, Water Resources Division, P. O. Box 1026, 605 North Neil Street, Champaign, IL 61820

Project Director: G. H. Davis, USGS, Reston, VA 22092

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Geological Survey, Water Resources Division
National Center, Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To document at a reconnaissance level, the occurrence and distribution of basic inorganic and organic constituents in surface and ground waters in the coal mining regions of Illinois. To relate water quality to basin characteristics and make the data available to those seeking a solution to water degradation in mined areas. To enable continued or increased mining with a minimum effect on water quality.

Approach: A data network will be designed and operated. Data will be analyzed, evaluated, interpreted, and published.

Progress: Publications and maps of the Illinois Geological Survey were reviewed for site selection and fifty states were selected and located on USGS topographic quadrangle maps for reconnaissance sampling. Each site has been sampled twice, once in May and once in June, both during base flow periods.

Extremely acid conditions occurred at three locations (pH 3.3 to 5.0). These three sites showed maximum concentrations of sulfate (4100 mg/l), zinc (5.9 mg/l), sulfide (1.4 mg/l), aluminum (220 mg/l), arsenic (0.52 mg/l), chromium (0.64 mg/l), mercury (2.2 mg/l), and phenol (.027 mg/l).

About one half the sites sampled had high sulfate concentrations in excess of 250 mg/l and more scattered high concentrations of phenols and minor elements. It is suspect that the high sulfates are caused by mining activities but in many cases sampling sites were improperly located to sample the worst conditions. Tentative plans are to continue reconnaissance efforts to isolate those streams being degraded and to document points of degradation and extent of the recovery reaches.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	George H. Davis	Nov. 24, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1-2	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS - Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20 K	75	1	Apr 75	Jun 77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BX

TITLE OF PROJECT Development of Instrumentation for High-Volume Analysis of Petrochemical and Associated Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: A. Beetum, Hydrologist, U.S. Geological Survey, Water Resources Division, National Center, Reston, VA 22092

Project Director: George H. Davis, USGS, Water Resources Division
National Center, Reston, VA 22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Develop guidelines to be used by management in choosing equipment for high-volume analysis of petrochemical and associated compounds. In addition, consideration of analytical methods to be used and software or hardware for data processing to be used in choosing suitable equipment for research and development in automation. To develop guidelines to permit managements choices consistent with longer term goals to fully automate with intermediate steps.

Approach: Plan a reasonable automated set-up that would maintain or reduce the standard error of estimate on analytical data, double analytical output, and reduce manpower requirements by 25 percent in comparison to that required presently. Give several procedures where milestones can be reached as subdivisions of total goal. Contract or inhouse prepare detailed specifications for equipment, software and data management system for each milestone. Initiate individual contracts to acquire equipment, software and data management system for group or class instrument selected as a milestone.

Progress. A retrieval was made of organic parameters analyzed by USGS. Water Resources Central Labora ories system from WATSTORE by states. An interagency agreement between the USGS and EKDA to assist in planning and installing computer automated laboratories was made. The first draft of the Preliminary Feasibility Study and Cost/Benefit Analysis is completed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	P. E. Greeson
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$125K	1975	four	April 1975	April, 1980

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E77B-BX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Instrumentation and Techniques for Measuring Sediment Laden Stream

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Raul S. McQuivey, Hydrologist, U.S. Geological Survey, Water Resources Div., National Center, Reston, VA 22092
Project Director: George H. Davis, U.S. Geological Survey, Water Resources Div., National Center, Reston, VA 22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston ,VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To develop, test, and field evaluate flumes, weirs, and other devices and means suitable for measuring sediment and debris laden flows, to develop an in-situ instrumentation system capable of measuring the mass concentration of sediment in water, to develop an acceptable sampler(s) for measuring the discharge of bedload sediment particles so as to permit the effects of energy development, particularly mining activities, on streams to be monitored.

Approach: Flumes, weirs, and other types of control structures are being developed, tested, and field evaluated in the areas of oil shale and coal mining. Photographic techniques are being investigated. A literature search will be made of commercially available suspended solids sensors compatible with the objective. One or two instruments will be selected for comprehensive laboratory tests. An automatic sampling and data logging system to operate in conjunction with the optimum sensor will then be designed. The complete package will be tested first under simulated field conditions. Promising direct-measuring bedload samplers will be calibrated to define their efficiencies under various conditions. The effects of such things as particle size, transport rate, bed form, hydraulic condition, sampler orientation, and degree of filling on sampler efficiency will be ascertained. Appropriate samplers will be modified and/or new samplers developed and subsequently tested and calibrated to provide improved operation.

Progress: Experimental weirs and flumes have been installed on the Belle Fouche River in Wyoming, on Piceance Creek in Colorado, and on a tributary of the North Fork of the Kentucky River, Kentucky. The state of the art in photographic techniques that might be applied to the problem of flow measurement is being assessed. Although the equipment survey is only partially complete, a Dynatrol density gage is being tested. One of the bedload samplers of primary interest is the Helley-Smith sampler, which is a pressure-difference-type sampler that has been used recently by several investigators. The effects of various intake to exit area ratios are being studied.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2	P. E. Greeson
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		U.S. Geological Survey, Water Resources Div

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$270K	1975	four	April, 1975	April, 1980

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E77B-BX

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Development of Instrumentation for Characterizing and Monitoring Water Quality in Deep-lying Aquifers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: W. Scott Keys, U.S. Geological Survey, Water Resources Div., Lakewood, CO 80225
Project Director: George H. Davis, U.S. Geological Survey, Water Resources Div., National Center, Reston, VA22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To develop instrumentation and methods for identifying and monitoring contaminants in aquifers by neutron activation. The emphasis will be on deep aquifers, but the techniques will also apply to wastes migrating from land fill or radioactive waste disposal sites. The advantages of in-situ identification by activation are: data can be interpreted immediately in the field so that changes can be monitored continuously, information is obtained on the vertical distribution of contaminants, and identification of contaminants through casing is possible. The purpose of this study will be to establish detection thresholds, interfering isotopes, the size of source needed, effect of borehole, rock matrix parameters, and logging and interpretive techniques.

Approach: Literature searches and laboratory investigations including borehole models will be used to establish most logging parameters before activation logging, in the unknown environment of a well, is attempted. Field tests should be carried out in an area of known contamination where core or other high quality information is available on the rock matrix. Activation and chemical analyses of water will be used for calibration. Comparisons will be made between activation with Californium 252 and a pulsed neutron source.

Progress: Development of a probe containing a pulsed neutron generator and gated detector and a probe and shield to utilize Californium for in-hole activation is in progress. A system for digitizing gamma spectra in the field on computer compatible 7-track magnetic tape has been developed. This system has just been successfully tested in the field at the West Valley, NY, Nuclear Fuel Services Company's radioactive waste burial site. The system permits rapid recall of gamma spectra from the magnetic tape in the field for background subtract, spectral stripping and quantitative comparison with spectra previously recorded at the same depth in a borehole.

*Terminated due to lack of funds.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2, 5	P. E. Greeson
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$70K	1975	zero	April, 1975	April, 1976*

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BX

TITLE OF PROJECT
Development of Methods for Characterizing and Monitoring Levels of Chronic Toxicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Harry V. Leland, Biologist, U.S. Geological Survey, Water Resources Div., 345 Middlefield Road, Menlo Park, CA 94025
Project Director: George H. Davis, USGS, Water Resources Division
National Center, Reston, VA 22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Standard methods for characterizing and monitoring toxic substances at sublethal concentrations in aquatic ecosystems are not available. The general objective of this investigation is to determine, through detailed studies of organisms, simplified (model) ecosystems and natural (field) sites, the extent to which trace contaminants (especially trace metals) in different aquatic environments are available for biological uptake, influence the production and structure of plant assemblages, affect the growth and production of animals, and thus determine the trophic relationships and composition of aquatic communities.

Approach: Reservoirs of trace contaminants in aquatic environments for bioaccumulation and the physico-chemical factors influencing solute metal availability and toxicity will be examined. Methods of measuring responses of aquatic communities to trace contaminants that are applicable to water quality monitoring programs will be evaluated. Field studies in general will be conducted to verify results of laboratory experiments and to suggest problems needing further study. The reliability of monitoring methods for detecting population and community changes due to the presence of trace contaminants will also be determined.

Progress. Critical reviews have been conducted of the published literature and an analysis made of experiences of other research workers with procedures for measuring effects on aquatic organisms and aquatic ecosystems of chronic exposures to trace contaminants. Responses to many inorganic and organic toxicants were considered but an emphasis was placed on substances released to the environment as a consequence of fuel extraction and combustion. Based on these reviews, test methods and important representative substances were selected for study.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	3	P. E. Greeson
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS Water Resources Division / DOI

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K	1975	four	April, 1975	April 1980

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BY

TITLE OF PROJECT
Water Quality and Geochemistry of Shallow Aquifers of Piceance Creek, Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Stanley F. Robson, Hydrologist, USGS, Lakewood, Colorado
303 234-3815

Project Director: George H. Davis, National Center, Reston, Virginia
702 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objectives of the project are to collect detailed chemical analysis of the relatively shallow ground waters that may be impacted by mining for oil shale and associated minerals, principally in the Piceance and Yellow Creek basins of Colorado. The study serves to support a portion of an initial effort to improve predictive geohydrologic and chemical models that may better evaluate the impact of oil shale mining on the hydrologic regime of the Piceance basin. The total effort is designed to develop the data base and analytical capability required to make evaluations. The existing state of chemical equilibrium must be documented and studies of water quality made to predict effects of dewatering on water chemistry.

Approach: Water samples will be collected from approximately ten new wells and many springs located in the Piceance Creek basin. Chemical analyses for a broad suite of parameters will be conducted on selected samples.

Progress: Project is closely coordinated with other studies involving the drilling of wells. Funding in this project has been utilized to cover chemical analyses from 50 to 100 springs as well as covering some additional parameters being run of well samples from the drilling.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1, 1	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$24K	1975	Four	April, 1975	1980

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E77B-BY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Definition of Potentiometric Surface of Shallow Aquifers in Piceance Creek Impacted by Oil Shale

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: John Weeks, Hydraulic Engineer, Lakewood, CO
303 234-3815

Project Director: George H. Davis, National Center, Reston, VA 22092
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to supplement the Geological Survey effort required to describe the detailed steady-state conditions of the ground-water system of the Piceance Creek basin prior to mining oil shale. The unstressed potentiometric surface will be defined in order to calibrate digital models that can then be used to predict the impacts of oil shale extraction, waste disposal, and water storage reservoirs on the shallow ground and surface water regimes. The digital model will also incorporate chemical and water quality data to provide predictions of changes in the shallow ground-water and surface-water regimes that could be brought about by additional oil shale extraction in the Piceance basin.

Approach: The total project will involve the drilling of 40 wells, 20 completed in the upper aquifer and 20 completed in the lower aquifer, in the Piceance and Yellow Creek drainages of the Piceance basin. The wells will be of adequate diameter to accept submersible pumps for aquifer testing and water quality sampling. Water levels will be monitored and correlated with continuous hydrographs already installed at seven locations in the basin on a quarterly basis. The data collected will be used to construct potentiometric maps for the aquifers. The maps will be used to improve the calibration of the ground-water model and to provide baseline data for the region. The data so collected will be supplemented by similar data from the lease tracts and from wells where completions statistics and methods are known.

Progress: Efforts have been directed to drilling wells of which 55% is complete.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
x	AGENCY STAFF *(Intramural)*	1b-2, 3	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20K	1975	zero	4/25/75	Jan., 1976

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BY

TITLE OF PROJECT
Reconnaissance of Shallow Ground-Water System of NW Colorado for Evaluating Impact of Coal Mining

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: William Brogdon, U.S. Geological Survey, Water Resources, Div. Denver Federal Center, Lakewood, CO 80225

Project Director: George H. Davis, USGS, National Center, Reston, VA 22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this project is to collect and coordinate the collection of baseline geohydrologic and geochemical data in an area of principal coal reserves in northwestern Colorado to facilitate and improve efforts to describe the mechanisms determining impacts of mining on the shallow ground-water and surface-water systems. This study will initiate a reconnaissance geologic and hydrologic investigation in the geographical area generally bounded by the Yampa River on the north, the Williams Fork River on the south, Steamboat Springs on the east, and Juniper Springs on the west. Existing wells and exploration programs of industry will be used to provide information that will (1) identify areas requiring further investigation and (2) identify areas for more intensive monitoring of impacts brought about by surface mining of coal.

Approach: The study will identify the principal areas of probable concern in terms of surface mining of coal and possible impacts on the hydrologic system. The general geographical area is that bounded by the Yampa and Williams Fork Rivers, the Steamboat Springs area, and Juniper Springs. The usefulness of existing wells for delineating the potentiometric surface of principal shallow aquifers, identifying structural controls on the system, and determining geochemical patterns will be determined. Water level data from these and previous investigations will be contoured. The need for additional observation wells to supplement the existing wells will be determined.

Progress: Data collection and chemical analyses of ground water in the coal areas of Moffat, Routt, Garfield, and Rio Blanco Counties, the Danforth Hills, and Yampa Valley are being updated. About 324 wells have been inventoried, 125 water-level measurements made and 85 complete chemical plus a large suite of trace metals analyses run. A report of the basic data with water level and chemical quality maps is being prepared.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2-4, 5, 6	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20K	1975	zero	May, 1975	Nov., 1975

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BY

TITLE OF PROJECT
Chemical and Physical Characteristics of inflow to the Tongue River in Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Don Coffin, Hydrologist, U.S. Geological Survey, Water Resources Div., P.O. Box 1696, 421 Federal Bldg., 316 N. Park St., Helena, MT 59601
Project Director: George H. Davis, USGS, National Center, Reston, VA 22092 · 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To quantify the ground-water discharge contributing to stream flow of the Tongue River downstream from the Tongue River Reservoir to the confluence of the Tongue with the Yellowstone. To describe the chemical character of that discharge and to correlate changes therein with geologic strata and to correlate changes in discharge with the hydrologic character of the geologic strata. To provide low flow data for assessment of biological implications.

Approach: Following the closure of the Tongue River Reservoir, an aerial infra-red (thermal) scan will be made of the entire Tongue River starting at the Decker coal mine along the Tongue River Reservoir to the Tongue River near Miles City stream flow station. If any tributaries to the Tongue located downstream of the reservoir are found to be flowing during the low-flow study, accurate records of flow and quality as they enter the Tongue will be kept.

Progress: The Tongue River Dam will be closed after October 1, 1975. Plans have been made for a concentrated effort during October of (1) making a seepage run (measure mainstem and tributary flow at intervals) from the Tongue River Dam to the confluence with the Yellowstone River; (2) measuring water levels in observation wells near the river; (3) collecting water samples from the river and from wells for chemical analysis; (4) obtaining aerial infra-red imagery by the U.S. Forest Service and concurrent temperature data along the Tongue River; and (5) analyzing the water samples.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	3-7, 8	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$15.4K	1975	zero	April 1975	Jan. 1976

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG D5-E685-BY

TITLE OF PROJECT: Shallow Ground-Water Reconnaissance of Fort Union between Yellowstone and Missouri Rivers in Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Don Coffin, Hydrologist, U.S. Geological Survey, Water Resources Div., P.O. Box 1696, 421 Federal Bldg., 316 N. Park St., Helena, MT 59601
Project Director: George H. Davis, USGS, National Center, Reston, VA 22092 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey
Hydrologic Studies Section
Lakewood, Colorado 80225

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to produce and calibrate a simulation technique that projects the impact of large-scale surface mining of energy fuels in southeastern Montana on the shallow ground-water and surface-water systems. The study involves the collection of physical and chemical data from existing wells and from springs and seeps. The effort would be directed at geographical areas where coal is most likely to be developed, in the Yellowstone River basin and the Upper Missouri River basin near the Fort Peck Reservoir.

Approach: Initial efforts will locate existing wells in the area of eastern Montana between the Yellowstone and Missouri Rivers. Field efforts will then involve final selection of representative wells and sampling. Water levels will be measured to discover gross differences in the potentiometric surface and maps will be prepared showing this surface. Modified pumping tests may be run if pumps and observation wells are available. Samples of aquifer water will be collected and analyzed as shown in the attached table.

Progress: Approximately 5,000 well records filed with the Montana Dept. of Natural Resources & Conservation have been obtained for the coal rich areas of McCone, Richland, Dawson, and Prairie Counties Montana. About 500 selected wells in McCone County have been inventoried (location accurately determined, depth and water level measured) and about 50 water samples have been collected for chemical analyses. The well inventory is complete in the Circle West area, which is the area where coal mining appears most imminent. Field work is extending to nearby areas where coal is known to exist.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	4	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$22.6K	1975	zero	April, 1975	April, 1976

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
IAG-D5-E77B-BY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Water Quality Impacts of Surface Coal Mining in Southwestern North Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Mark Croft, Hydrologist, U.S. Geological Survey, Water Resources Division, P.O. Box 778, Rm. 332, New Federal Bldg., 3rd & Rosser Ave., Bismarck, N.Dak. 58501
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Hydrologic investigations have shown some marked differences in the quality of shallow ground water in wells installed in the Gascoyne coal mine area. These data have been utilized in the Northern Great Plains Resources Program. The data have not yet been collected over a sufficiently long period to permit an understanding of the mechanisms contributing to deterioration of water quality. Not only will the data be collected to establish current geochemical relationships but also to monitor changes as mining and reclamation expand. The ultimate purpose of the monitoring is to calibrate predictive methods to be utilized for planning and regulatory purposes.

Approach: Selected chemical analyses of indicator parameters will be performed at either new wells or at existing wells. Field measurements, including depth to water, may be performed more frequently. Water quality analyses of shallow ground water in up to six wells near the Gascoyne Mine will be performed.

Progress: Water quality samples are being collected and analyzed at the following surface water stations:

06330000 Missouri River near Williston, N.Dak.
06338490 Missouri River at Garrison Dam, N.Dak.
06340000 Spring Creek at Zap, N. Dak.
06340500 Knife River at Hazen, N. Dak.

The water levels in ground water wells are being measured monthly and semi-annual samples are collected for standard analysis, nutrients and trace metals.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	5	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$11K	1975	zero	April, 1975	April, 1976

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BY

TITLE OF PROJECT
Water Quality and Geochemistry of Shallow Aquifers of the Uinta Basin

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator . Fred Fields, Hydraulic Engineer, U.S. Geological Survey, Water Resources Div., 8002 Federal Bldg., 125 So. State St., Salt Lake City, UT 84138
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, 8002 Federal Bldg., 125 South State Street, Salt Lake City, Utah 84138 801 524-5654

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect detailed chemical analysis of the relatively shallow ground waters that may be impacted by mining for oil shale and associated minerals principally in the Uinta basin of Utah. This study is an ongoing effort to improve predictive geohydrologic and chemical models that may better evaluate the impact of oil shale mining on the hydrologic regime of the Uinta basin. The total effort is designed to develop the data base and analytical capability required to make evaluations.

Approach: Water samples will be collected from new wells and many springs located in the Uinta basin. A complete suite of chemical analyses will be conducted on selected samples. Data will be used, as chemical patterns are established, to refine predictive models of water quality both for those waters encountered by mining operations and thus available for discharge from the mines and of those waters entering surface drainages as springs and seeps.

Progress: To date 12 wells and springs in the Uinta basin have been sampled. A comprehensive suite of chemical analysis have been completed. Sampling and analyses will continue.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	6-12, 13	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$20.0K	1975	Four	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E77B-BY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Reconnaissance of Surface and Ground Water System in Eastern Utah to Evaluate Coal Mining and Related Energy Activities

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: James C. Mandorff, Hydrologist, U.S. Geological Survey, Water Resources Div., 8002 Federal Bldg., 125 So. State St., Salt Lake City, UT 84138
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, 8002 Federal Bldg., 125 South State Street, Salt Lake City, Utah 84138 801 524-5654

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect and coordinate the collection of baseline geohydrologic and geochemical data in an area of the principal coal resources in eastern and southwestern Utah to facilitate and improve efforts to describe the mechanisms determining impacts of mining on the shallow and moderately deep ground water and surface-water systems. The study will, in cooperation with the Bureau of Land Management, involve a geologic and hydrologic reconnaissance type investigation in the geographical area generally drained by the Colorado River system in Utah. The purpose of the entire effort is to develop or refine an understanding of any important mechanisms that may relate coal mining, disturbed land reclamation, and subsequent coal preparation and use to any changes in the hydrologic regime and to develop therefrom a capability to predict such changes.

Approach: (1) Identification of the principal areas of probable concern in terms of mining and local use of coal and possible impacts of these activities on the hydrologic system, (2) determine what data are available to describe the hydrology of the shallow and intermediate aquifers and surface waters, (3) identify existing wells and inspect for usefulness in delineating the potentiometric surface of principal shallow aquifers, identifying structural controls on the system, and determining geochemical patterns. Water level data from these and previous investigations will be contoured. Water quality data from this and other investigations will be examined to determine whether selected data may also be contoured.

Progress: To date 35 samples from wells and streams in eastern Utah have been collected with chemical analysis in progress. 40 samples have been collected from the coal regions in the Dirty Devil River drainage basin. These samples are being screened for possible trace-metal determinations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	6-14, 15	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$25.0K	1975	one	April, 1975	April, 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BY

TITLE OF PROJECT: Physical and Chemical Characteristics of Shallow Ground-Water System North of Gillette, Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Marlin E. Lowry, Hydrologist, U.S. Geological Survey, Water Resources Div., 4015 Warren Ave., P.O. Box 2087, Cheyenne, WY 82001
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: This project is intended to assess the water resource contained in the shallow aquifers of the Gillette area and to permit prediction of the effects of surface mining of coal, and of large water impoundments on these water resources. This will be accomplished by adding on to an existing geologic drilling program the collection of physical and chemical hydrologic data.

Approach: Water level data and water samples will be collected from approximately seven wells in a 50 square mile area located about 30 miles north of Gillette, Wyoming. The holes will be completed to permit distinguishing between significant aquifers during any testing or sampling. Additional holes will be drilled to allow adequate evaluation of the aquifer characteristics for different depths and to allow the collection of cores, geophysical logs, and aquifer data. Data will be used to refine predictive models of water quantities (levels) and quality as they may be affected by surface mining and by large water impoundments.

Progress: To date, seven core holes drilled by the Coal Resources Branch of USGS have been converted to water monitoring wells. In addition, three deep and three shallow wells in proximity to the seven have been drilled and cased. All 13 wells are designed to permit well tests which will measure differences in head and water qualities within different water bearing beds. A complete suite of geophysical logs of all 13 holes has been completed. Geological section measurements have been made from outcrop data and correlated with subsurface data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	7	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY APPROVED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$21.0	1975	zero	June, 1975	Dec., 1975

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
IAG-D5-E77B-BZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Water Quality Monitoring in Yampa and Williams Fork River in Hayden-Craig, Colorado Area

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Richard Grozier, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Lakewood, CO 80225
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect detailed physical, chemical, and selected biological data from the surface waters of the Yampa and Williams Fork Rivers that may be impacted by coal mining and associated power plant facilities in the Hayden-Craig, Colorado area. This study will initiate work in documenting the existing baseline water quality conditions in the study area to permit future assessment of possible impacts from coal development in the area.

Approach: Water quality monitoring will be conducted at the locations and for the parameters necessary to assess future impacts in the geographical study area. Flow measurements will be made at the time of sampling.

Progress: Stream flow water quality monitoring equipment for stations on the Yampa and Williams Fork Rivers have been acquired. Data collection and analysis for an extensive suite of chemical and biological parameters was initiated in August, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	1 a, b, c	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$16,606	1975	four	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BZ

TITLE OF PROJECT: Water Quality Monitoring on White River, Parachute Creek and Logan Wash in Oil Shale Areas of Western Colorado

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Richard Grozier, Hydrologist, U.S. Geological Survey, Water Resources Div., Bldg. 53, Denver Federal Center, Lakewood, CO 80225
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: To collect detailed water quality data from selected surface waters in the areas of western Colorado likely to be impacted by oil shale development. The study will initiate several new water quality monitoring stations and supplement the parameter coverage at several existing stations. The total effort will aid in documenting the existing baseline water quality conditions in the oil shale area so that possible future impacts from oil shale development can be evaluated.

Approach: There are two existing USGS monitoring stations located upstream and downstream from the Federal oil shale leases on the White River; these stations will be supplemented for additional parameter coverage. The proposed Parachute Creek station will be established between two different oil shale projects and upstream from major irrigation diversions to provide baseline water quality data and monitor future impacts from oil shale development. The station proposed for Logan Wash will provide baseline data used to evaluate the water quality impacts of in situ oil shale development in that specific drainage.

Progress: Stream flow water quality monitoring equipment for the Parachute Creek and Logan Wash stations have been acquired. Data collection and analysis for an extensive suite of parameters was initiated in August, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	2 a, b, c	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$22.702 K	1975	four	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BZ

TITLE OF PROJECT

Surface Water Quality Monitoring in Energy Development Areas

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: James C. Mandorff, Hydrologist, U.S. Geological Survey, Water Resources Div., 8002 Federal Bldg., 125 So. State St., Salt Lake City, UT 84138
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to collect water quality data in the oil shale and coal development areas of Utah. There are four existing USGS monitoring stations located in the oil shale and coal areas and these stations will be supplemented for additional parameter coverage. Along with the monitoring of physical-chemical parameters, a biological monitoring program will also be initiated. The total effort will aid in documenting the existing baseline water quality conditions in the oil shale and coal development areas so that possible future impacts can be evaluated.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Utah.

Progress: Monthly samples were obtained in July, August, and September at each of four gaging stations. Monthly sampling will continue at the four stations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	3, 4/a, b, c	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$17.44K	1975	four	April, 1975	April, 1980

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

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IAG-D5-E77B-BZ

TITLE OF PROJECT Surface Water Quality Monitoring in the Yellowstone River and Its Tributaries in Northern Great Plains Coal Region of Eastern Montana

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Grady L. Moore, Hydrologist, U.S. Geological Survey, Water Resources Div., 421 Federal Bldg., 316 N. Park St., Helena, MT 59601
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to continue the surface water quality monitoring program established with the USGS in 1974. Due to variation in climatic conditions, it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is accomplished in part by the continuation of the previously established 8-station monitoring network to provide a more objective basis for evaluating the possible impacts of energy development activities on surface water quality in the Yellowstone River coal region of Eastern Montana. It should be noted that there are many other water quality stations established in the area and that the EPA-USGS program is an integralpart of the overall water quality sampling network.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Montana.

Progress: Collection of the agreed upon data is continuing at seven stations on the Yellowstone River and a station on the Tongue River below Hanging Woman Creek.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	5 a, b, c	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$23.960 K	1975	four	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BZ

TITLE OF PROJECT
Continuing Surface Water Quality Monitoring in Powder River Basin of Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Fred C. Boner, Hydrologist, U.S. Geological Survey, Water Resources Div., 4015 Warren Ave., Cheyenne, WY 82081
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to continue the surface water quality monitoring program established with the USGS in 1974. Due to variation in elimatic conditions it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is to be accomplished in part by the continuation of the previously established seven station monitoring network to provide a more objective basis for evaluating the possible impacts of energy development activities on surface water quality in the Powder River coal region of Wyoming.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Wyoming.

Progress: A new expanded sampling program is in progress and on schedule. To improve quality control, one man has been assigned specifically to this sampling program. Analyses are presently in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	6	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$23.47K	1975	four	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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IAG-D5-E77B-BZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Water Quality Monitoring of Missouri River and Its Tributaries in Northern Great Plains of North Dakota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: William E. Harkness, Hydrologist, U.S. Geological Survey, Water Resources Div., Rm. 332, New Federal Bldg., Third St. & Rosser Ave., Bismarck, N.Dak. 58501
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to continue the surface water quality monitoring program established with the USGS in 1974. Due to variation in climatic conditions it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is accomplished in part by the continuation of the previously established four station monitoring network and supplementing an additional two stations to provide a more objective basis for evaluating the possible impacts of energy development activities on surface water quality in the Missouri River coal region of western North Dakota. To monitor possible impacts on aquatic ecosystems the study is to be expanded to include the establishment of a biological monitoring program. It should be noted that there are many other water quality sampling stations established in the area and that the EPA-USGS program is an integral part of the overall water quality sampling network.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of North Dakota.

Progress: Samples for a complete suite of parameters are being collected and analyzed at the six sites. Sediment sampling equipment has been obtained as needed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	7 a, b, c	F. A. Kilpatrick
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$24.39K	1975	four	April 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BZ

TITLE OF PROJECT Water Quality Monitoring of Yellowstone River and Its Tributaries in Powder River Coal Region of Eastern Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Fred C. Boner, Hydrologist, U.S. Geological Survey, Water Resources Div., 4015 Warren Ave., Cheyenne, WY 82081
Project Director: George H. Davis, USGS, National Center, Reston, VA 703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to supplement the surface water quality monitoring program established with the USGS in 1974. Due to variation in climatic conditions it is necessary to continue the monitoring effort for a period of years to establish representative baseline conditions. This is accomplished in part by supplementing previously established physical and chemical monitoring stations with a biological monitoring program. This will provide more objective basis for evaluating the possible impacts of energy development activities on aquatic ecosystems in the Powder River coal region of northeastern Wyoming.

Approach: The USGS will be responsible for the collection and analysis of biological data in energy impacted areas of Wyoming.

Progress. A new expanded sampling program is in progress and on schedule. To improve quality control, one man has been assigned specifically to this sampling program. Analyses are presently in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	8	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$4.932K	1975	four	April, 1975	April, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E77B-BZ

TITLE OF PROJECT Establishment of New Surface Water Quality Monitoring Stations in the Powder and Green Rivers of Wyoming

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Fred C. Boner, Hydrologist, U.S. Geological Survey, Water Resources Div., 4015 Warren Ave., Cheyenne, WY 82081
Project Director: George H. Davis, USGS, National Center, Reston, VA
703 860-6846

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Geological Survey, Water Resources Division
National Center
Reston, VA 22092

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: The objective of this study is to augment a seven station surface water quality monitoring program established in 1974 with the addition of 14 new stations in energy impact areas of the Powder River coal region and Green River basin in Wyoming. This comprehensive monitoring network is designed to provide a more objective basis for evaluating the possible impacts of energy development activities on the water resources of Wyoming. The subject monitoring program was developed with assistance from the Wyoming Department of Environmental Quality, Water Quality Division.

Approach: The USGS will be responsible for the collection and analysis of surface water quality data in energy impacted areas of Wyoming.

Progress: A new expanded sampling program is in progress and on schedule. To improve quality control, one man has been assigned specifically to this sampling program. Analyses are presently in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	George H. Davis	11/24/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	8	F. A. Kilpatrick
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		USGS, Water Resources Division

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60.97K	1975	four	April, 1975	April 1980

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-CG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of Ultrasensitive Ammonia Monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Hrubesh, L.W., Principal Investigator, Chemistry Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P.O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to increase the sensitivity of existing microwave ammonia gas detectors by preconcentration techniques.

We will study the feasibility of trapping ammonia on surfaces then heating the surface under carrier flow conditions to drive the concentrated gas off and deliver it to the selective microwave detector.

We have designed and constructed test fixtures for the trap. We have looked qualitatively at the following materials for trapping efficiency: stainless steel, copper and platinum gauze, chromosorb 101 and 102, teflon shavings, glass wool and silanized glass wool. We have so far found the metals to be very efficient traps for ammonia but have been unable to reproducably drive it back off. The other compounds trap with less efficiency but show promise for quantitative flashing.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	L. Hrubesh	9/19/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1.1	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomedical & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75			12/75

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA-IAG- D5-0681- CG

TITLE OF PROJECT

Development of Advanced Air Monitoring Instrumentation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Velmer A. Fassel, Deputy Director 515 - 294-2112
Dr. Gerald J. Small, Chemist
Dr. Kenneth Olson, Postdoctoral
Ms. Vera J. Peterson, Technician
Mr. Robert J. Conzemius, Assistant Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ames Laboratory, USERDA
Iowa State University
Ames, Iowa 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project (a): The characterization and quantitative determination of organic pollutants, produced, for example, from fossil-fueled energy sources define the objectives of this program. Aromatic carcinogens comprise a particularily worrisome subclass of the pollutants. A new approach for achieving the above objectives will be taken and involves site selection or luminescence line narrowing spectroscopy and optical detection of magnetic resonance spectroscopy. Utilization of a moderate peak power tunable dye laser as the optical pumping source will permit (i) characterization of molecules belonging to the above class at the part per billion (or less) level and (ii) trace level analysis by three independent spectroscopic "finger prints." Low energy laser excitation in the visible or near uv should circumvent the problem of the photochemical decomposition of pollutants initiated by very high energy exciting radiation.

Project (b): Airborne particulates may eventually constitute one of the most dangerous forms of pollution arising from energy generation sources. Atmospheric aerosols or particulates may be immobilized by filtration or deposited by impaction on various media and examined by a number of analytical techniques. For the definitive characterization of the immobilized particulates, it is necessary to establish accurate calibrations on an absolute mass basis for the analytical technique used. It is this singularly difficult problem that is addressed by this proposed study.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	V. A. Fassel, Deputy Director	9-30-75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomedical & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75			6/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-CG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Study of the Optical Absorption Properties of H_2SO_4 and Ammonium Sulfates in KBr Pellets

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

P. T. Cunningham (Staff), (Principal Investigator),
and S. A. Johnson (Staff)
Chemical Engineering Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(See Attached Sheet)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N.A.	P. T. Cunningham	September 4, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Warren A. Sinclair
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory/ ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75			6/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

NOTICE OF RESEARCH PROJECT

(Prepared for The Smithsonian Science Information Exchange)

Summary of Proposed Work

The Chemical Engineering Division at ANL has developed methods for the chemical characterization and analysis of airborne particulate material based on the infrared spectroscopic analysis of particulate samples embedded in KBr pellets after collection on a Mylar film using an inertial impactor. Work to be accomplished in the immediate future can be broken into four distinct, but interrelated, program elements.

1) The infrared characterization of airborne particulate material has been developed at ANL to the point where quantitative determination of neutral sulfate is possible. In this program element, variations in spectra are being investigated as a function of acidity to determine the feasibility of using infrared spectra as a quantitative measure of the acidity of sulfate-containing aerosol.

2) Present methods permit analysis of sulfate in the range from about five to several hundred micrograms in samples collected on a Mylar film. In this program element, a more detailed study of possible procedures whereby filter samples can be analyzed using infrared techniques will be undertaken.

3) The infrared method developed at ANL and the light scattering technique developed at the University of Washington both permit time resolved (one hour) identification of acid sulfate aerosol. These two methods make use of quite different physical characteristics and side-by-side comparison of these procedures seems advisable. This program element provides for ANL participation in an extended (two to three weeks) field comparison study at a site where a relatively high incidence of acid sulfate is anticipated.

4) A number of procedures are presently available, or under development, for the quantitative analyses of sulfate in submicron particulates. This program element provides for ANL participation in a direct comparison study of all presently available procedures under field conditions.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0031

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCG (EPA-IAG-D5-E681-CG)

TITLE OF PROJECT

Effects of Sulfuric Acid Aerosol on Vegetation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Sagar V. Krupa, Assistant Professor, Department of Plant Pathology

Robert D. Shrum, Assistant Professor, Department of Plant Pathology

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Plant Pathology
University of Minnesota
St. Paul, Minnesota 55108

REVISED PAGE

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) a) To determine the relationship between different dosages of H_2SO_4 aerosol (continuous and intermittent exposures) and both visible and subtle effects on some important crop and tree species; b) To develop and describe the range of visible symptoms induced on different plants by the acid aerosol; c) To determine the environmental conditions under which maximum injury is observed and d) To develop a catalog of plants sensitive, intermediate and resistant to H_2SO_4 aerosol based on comparative response.

(2) Plants will be raised under greenhouse conditions and at different stages of growth, will be exposed to different concentrations x durations of H_2SO_4 aerosol in special tubular, all-glass exposure chambers. The system will allow simultaneous exposure of one branch of a plant to the aerosol in an exposure tube and the opposite branch of the same plant to water vapor in another exposure tube (check). H_2SO_4 aerosol will be generated through a positive air pressure system mixing water-saturated filtered air with SO_3.

Parameters such as temperature and relative humidity will be controlled and monitored continuously. Acid aerosol concentration will be measured about every 15 minutes using an ultrasonic transducer--Coulometry System through Gran's plots. Data will be acquired through a computerized acquisition system and will be analysed with a CYBER-74 computer. All facilities except the tubular glass exposure chamber are available at this time at the University of Minnesota

(3) Last phase of the study would involve the determination of the response of acid aerosol sensitive plant species, to simultaneous exposure to threshold dosages of H_2SO_4 aerosol and varying concentrations of NH_3. Environmental conditions used will be congenial for acid aerosol injury.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, Dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Agriculture	Sagar V Krupa	8-6-75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		Hodge R. Wasson
X NEGOTIATED CONTRACT	2	RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75	61		6/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CG

TITLE OF PROJECT
OPTIMIZED FILTERS AND STACK PROBE FOR AEROSOL SOURCE SAMPLING

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

H. J. Ettinger, Group Leader, Industrial Hygiene Group

M. I. Tillery, Staff Member, Industrial Hygiene Group

J. C. Elder, Staff Member, Industrial Hygiene Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Industrial Hygiene Group (MS486), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will evaluate existing stack sampling procedures for particulates; develop improved sampling criteria, probes, and collection media; and develop a stack sampler that provides particle size information. The evaluation will consider the importance of isokinetic sampling; losses in probe as a function of particle size and sampling conditions; and collection efficiency of the filter media. Performance of the reverse type Pitot tube and importance of isokinetic sampling and particle losses in the probe will be determined in a small-scale wind tunnel. Test aerosols will be used to evaluate performance of the filtration media with respect to sampling rate, particle size, and temperature. Redesigned portions of the stack sampler will be evaluated under similar conditions. Initial work on the particle sizing stack sampler will be directed at the use of a cascade centripetal-type device.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Harry Ettinger	9-17-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA /LASL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
65 K	75		6/76	6/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D5-E681-CG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Studies to determine SO_3 and SO_4 in Power Plant Stack Emissions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.
Leonard Newman, Applied Science. Head, Analytical and Environmental Chemistry
Russell N. Dietz
Stephen E. Schwartz

NAME AND ADDRESS OF APPLICANT INSTITUTION
Brookhaven National Laboratory
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forward ed to investigators who request such information. Your summary is to be used for these purposes.

Sulfur dioxide has long been recognized as one of the major contributors to air pollution. Recently it has been recognized that sulfate is a significantly more deleterious pollutant. The principal sources of sulfur oxides in urban areas are fossil fuel, coal and oil, used for power generation, space heating, and industrial processing. A complex relationship exists between urban sulfur dioxide to urban and non-urban sulfate and there is a need for a better understanding of the atmospheric chemistry of sulfur compounds. Indeed, in many geographical areas control strategies on sulfur content of fuel have led to a marked decrease in the ambient sulfur dioxide levels; however, concomitant decreases in the sulfate levels have not been obtained. An understanding of this problem is predicated on a knowledge of the source emission terms for sulfate and of the factors which affect these terms.

A complete assessment will be made of the facts forming the basis for source emission terms for sulfate from oil and coal fired power plant and space heating facilities. The analytical methods used for determining the sulfate emission factors will be surveyed and evaluated. A suitable technique will be adopted, built and employed in at least one oil and one coal fired facility. Additional technique development will probably be necessary. Approaches will be formulated, tested and implemented as the needs and budget dictate. A major output of this program will be the foundation for an emission data base for sulfate.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Leonard Newman	9/15/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	4	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomedical & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75			6/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CG

TITLE OF PROJECT
INSTRUMENTATION FOR THE ENVIRONMENTAL PROTECTION AGENCY

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. S. Goulding, Electronics Engineering
Head, Nuclear Instrumentation Group
J. M. Jaklevic, Electronics Engineering
Group Supervisor, Nucl. Instru. Group
B. W. Loo, Electronics Engineering,
D. A. Landis, Electronics Engineering
J. D. Meng, Electronics Engineering
Lawrence Berk. Lab. Berkeley, CA 94720

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of California
Lawrence Berkeley Laboratory
Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Develop a field instrument for the measurement of total particulate sulphur in ambient air. The unit will consist of a continuous tape sampler with automatic X-ray fluorescence analysis for sulphur.

2) Modify existing X-ray fluorescence analyzer to operate with a pulsed X-ray tube. The completed system will operate with particulate samples collected as a part of the St. Louis Regional Air Pollution Study.

3) Fabricate a beta-gauge mass monitor to handle a wide variety of particulate samples collected in the field. The design will be based on that of an existing unit in our Laboratory.

4) Improve the automatic dichotomous air sampler to operate with a variety of different filter media.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	C. J. Schmidt	June 25, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5 a-d	H. R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/ LBL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
120 K	1975		7/1/75	6/30/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCG

TITLE OF PROJECT
Mass Spectrometric Structure Determinations of Environmental Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Lewis Friedman, Chemistry Department, Senior Scientist
Daniel Slatkin, Medical Department, Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Brookhaven National Laboratory
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The proposed investigation is designed to develop mass spectrometric techniques for the investigation and assay of environmental pollutants. A spark source mass spectrometric technique will be used to attempt to "finger print" samples obtained from black anthracotic particulate matter observed in tracheobronchial lymph nodes. The pigmented material contains an integrated sample of air pollutants that have penetrated the bronchial tree and are sequestered in the tracheobronchial lymph nodes. The general characterization of these "black lung" substances may require a variety of mass spectrometer techniques including methods used to study fragile molecular species. Techniques of single ion impact and chemical ionization are possible approaches to the study of volatile components of pigmented lung tissue. These techniques can also be applied to the study of fragile molecules which can be formed in atmospheric processes and which are serious health hazards. The assay of peroxyacetylnitrate is a case in point. This molecule and other relatively unstable species will be investigated using the computerized tandem mass spectrometer facility in the BNL Chemistry Department.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Lewis Friedman	7/14/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	7	Hodge R. Wasson
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75			6/78

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCG

TITLE OF PROJECT
Development of an On-Line Size-Mass Aerosol Monitoring Device

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William Sedlacek) Co-investigators CNC-11 1/2 m/y
Paul Guthals) 1/4 m/y

Other presently unnamed Staff Members of CNC-11 1/2 m/y

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of California CNC-11
Los Alamos Scientific Laboratory
P.O. Box 1663, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary initial objective is the development of an on-line size-mass aerosol monitoring device for utilization on an airborne platform. An eventual application of this device would be to the investigation of atmospheric aerosols from man-made sources. Previous preparatory effort has been accomplished with state-of-the-art particulate cascades and microbalance techniques. It is proposed that the microbalance be coupled with a cascade to produce size and mass data on a number of aerosol sizes of interest. Laboratory investigations and proof testing of the instrumental concept will precede environmental testing and hardening of the instrument. A series of surface field tests will be conducted prior to installation on an airborne platform. These latter two segments of the project are not envisioned for accomplishment during the first year.

William A. Sedlacek 77 BCG

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Paul R. Guthals	September 25,1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	9	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
90 K	75		6/76	6/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-CH

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of aqueous Effluent Instrumentation & Methods for Energy Related Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Velmer A. Fassel, Deputy Director (515-294-2112); Dr. Harry J. Arec, Ass't Prog. Dir.; Dr. James S. Fritz, Chemist; Dr. Colin Criswell, Ass't Chemist; Mr. Kenneth Lee, Postdoctoral; Dr. Joseph Katzenburger, Postdoctoral; Mr. Walter L. Sutherland, Assistant Physicist.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ames Laboratory, USERDA
Iowa State University
Ames, Iowa 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The broad objectives of this study are to develop the basic science, the investigative methods and the hardware so that the demanding analytical requirements associated with the characterization of organic and inorganic pollutants inaqueous effluents from energy generating sources can be met in a viable practical manner. The specific effluents on which attention will be focused include waste or scrub water effluents from the mining, processing, and conversion of coal, acid mine drainage liquids, leachates and runoff from spent solid waste piles, and ground, surface, and estuary waters in the vicinity of coal operations and geothermal energy plants. The specific projects are (a) critical comparison of activated carbon and macroreticular resins for the isolation and characterization of trace organic pollutants in water; (b) development of chelating resins with macroreticular organic matrices for the isolation of heavy metals pollutants from estuary waters; and (c) expansion of the project on development and application of an inductively-coupled plasma analytical system for simultaneous multielement determination of trace elemental pollutants.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	V.A. Fassel, Deputy Director	9/30/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
113 K	75		10/75	6/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-D5-681-CH

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

INSTRUMENTATION AND METHODS FOR OIL SHALE RELATED EFFLUENTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. C. White, Person in Charge (615) 483-8611 Ext. 3-1472
M. R. Guerin, Project Leader Ext. 3-6901
B. R. Clark, Principal Investigator Ext. 3-6901

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Plans to develop a large scale oil shale processing technology in the Green River formation must include surveilance of related effluents. This project focuses on the development of methods for the chemical characterization of aqueous effluents associated with the retorting processes; attention is being given principally to organic and trace metal components.

Organic components will be extracted from the aqueous phase by activated carbon and/or solvent extraction techniques and concentrates. Profiling of components will be carried out using gas chromatographic methods employing standard and specific element detectors. Fractionation of the organic mixture will be followed by identification and quantification of some specific molecular species, e.g., phenols, polycyclic aromatic hydrocarbons and some nitrogenous bases. Trace metals will be determined simultaneously by spark source mass spectrometry.

Samples of retort product water should be available soon from the Laramie Energy Research Center. Meanwhile, charcoal extraction is being carried out on available aqueous samples from a coal conversion process to gain some detailed knowledge of extraction efficiencies for compound classes using this technique. When the extraction procedure is sufficiently developed, instrumentation for automation of this step will be developed concomitantly with chemical characterization studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Bruce R. Clark	9-26-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1.1	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		6/76	6/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

INSTRUMENTATION AND METHODS FOR OIL REFINING RELATED EFFLUENTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. C. White, Person in Charge (615) 483-8611 Ext. 3-1472
M. R. Guerin, Project Leader Ext. 3-6901
B. R. Clark, Principal Investigator Ext. 3-6901

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Oil refining processes have associated effluents which may be detrimental to health and/or environment. Although many gaseous effluents have long been identified, detailed knowledge of aqueous effluent steams requires additional scrutinity in order to assure a minimum hazard.

The scope of this project includes the chemical characterization of organic components in process waters admitted to the environment. This will be accomplished by the development of methodology suitable for the extraction, concentration, fractionation and chemical characterization of the organic components.

Plans and present efforts involve the adaptation of extraction procedures for the efficient separation of organic compounds of all important classes. Charcoal extraction studies are in progress and appear to indicate good separations. Whole sample and fraction profiles will be carried out employing gas chromatographic techniques with standard and specific element selective detectors. Specific compound analyses may be made if developmental work progresses smoothly; of special concern are the levels of phenols and polycyclic aromatic hydrocarbons.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Bruce R. Clark	9-26-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1.2	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
33 K	75		6/76	6/77

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NOTICE OF RESEARCH PROJECT

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-D5-681-CH

TITLE OF PROJECT
INSTRUMENTATION AND METHODS FOR GEOTHERMAL SOURCE RELATED EFFLUENTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. C. White, Person in Charge 483-8611 Ext. 3-1472
M. R. Guerin, Project Leader Ext. 3-6901
B. R. Clark, Principal Investigator Ext. 3-6901

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Geothermal steam and water sources may provide a substantial energy resource. Large scale production could have a significant health and/or environmental effect since a large number of salts and compounds have been identified in effluents from several operating facilities.

The scope of this project includes the development of methodology for the rapid analysis of trace metals in brines and steam condensates and a screening of organic compounds carried in aqueous effluent streams. Spark source mass spectrometry on whole and treated samples will be employed in the identification and quantification of metals. Charcoal extraction and concentration of organic compounds will be followed by chemical characterization and profiling using gas chromatographic techniques. Known hazardous compounds, e.g., phenols and polycyclic aromatic hydrocarbons, will be sought in these preliminary studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Bruce R. Clark	9-26-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1.3	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
20 K	75		6/76	6/77

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG -D5-E681-CH

TITLE OF PROJECT
Continuous Monitoring Systems for Dissolved Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

	Phone
W. W. Pitt, Chemical Technology, Group Leader	3-6676
W. F. Johnson, Instrumentation and Controls, Development Engineer	3-6029

NAME AND ADDRESS OF APPLICANT INSTITUTION

Chemical Technology Division, Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In this program, analytical systems will be developed for specific application in environmental monitoring, particularly monitors that can detect properties of specific pollutants on a continual basis. These will include systems where photometric or reagent development monitoring can be used.

In the consideration for continuous monitoring, pollutants conveniently fall into several classes: 1) compounds that have uv-absorbing properties; 2) colored substances capable of absorbing visible light; 3) compounds with native fluorescence; 4) oxidizable substances; 5) reducible substances; 6) compounds capable of reacting with immobilized enzymes to produce a measurable heat of reaction. Based on the above list, the mode of monitoring can be divided into two basic types: (1) non-interacting and (2) chemical reacting. We propose to develop monitoring systems that will be useful in field testing for dissolved pollutants. The development effort will progress through design, fabrication, and evaluation of prototype instruments.

This is a new program, however, significant results in related areas have been obtained. A miniature flow fluorometer has been designed and fabricated. It can be used to monitor liquid streams for total fluorescent hydrocarbons, such as polynuclear aromatics.

A sensitive (μg/l) flow monitor which utilizes the reduction of cerium(IV) to fluorescent cerium(III) to continuously measure oxidizable compounds in a polluted water environment has been developed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	W. W. Pitt, Jr.	9-23-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1.4	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
	75		6/76	6/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of Aqueous Effluent Instrumentation and Methods for Energy Related Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Velmer A. Fassel, Deputy Director (515 - 294-2112); Dr. Harry J. Svec, Assistant Program Director; Dr. James S. Fritz, Chemist; Dr. Colin Crisswell, Assistant Chemist; Mr. Kenneth Lee, Postdoctoral; Dr. Joseph Katzenburger, Postdoctoral; Mr. Walter L. Sutherland, Assistant Physicist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ames Laboratory, USERDA
Iowa State University
Ames, Iowa 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The broad objectives of this study are to develop the basic science, the investigative methods and the hardware so that the demanding analytical requirements associated with the characterization of organic and inorganic pollutants in aqueous effluents from energy generating sources can be met in a viable practical manner. The specific effluents on which attention will be focused include waste or scrub water effluents from the mining, processing, and conversion of coal, acid mine drainage liquids, leachates and runoff from spent solid waste piles, and ground, surface, and estuary waters in the vicinity of coal operations and geothermal energy plants. The specific projects are (a) critical comparison of activated carbon and macroreticular resins for the isolation and characterization of trace organic pollutants in water; (b) development of chelating resins with macroreticular organic matrices for the isolation of heavy metal pollutants from estuary waters; and (c) expansion of the project on development and application of an inductively-coupled plasma analytical system for the simultaneous multielement determination of trace elemental pollutants.

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N/A	V. A. Fassel, Deputy Director	9-30-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	I	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		6/76	6/77

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PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CI

TITLE OF PROJECT
Development of a Portable Centrifugal Analyzer for Environmental Samples

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

	Phone
C. A. Burtis, Chemical Technology, Group Leader	3-1649
W. D. Bostick, Chemical Technology, Research Chemist	3-1714
S. E. Lindberg, Environmental Sciences, Research Associates	3-1283
R. L. Turner, Environmental Sciences, Research Associate	3-6268

NAME AND ADDRESS OF APPLICANT INSTITUTION
Chemical Technology Division, Oak Ridge National Laboratory
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to design, fabricate, and field test a portable centrifugal fast analyzer for monitoring environmental pollutants.

A centrifugal fast analyzer (CFA) consists of a multiple-cuvet rotor that utilizes a centrifugal field to simultaneously transfer and mix a parallel number (i.e., up to 42) of samples and reagents into their respective cuvets. A stationary photometer or fluorometer scans all the cuvets during rotation and the resulting electronic signals can be acquired and evaluated either by a simple printer or by an on-line computer. The advantages that result from the simultaneous and parallel analysis of multiple samples include: (1) increased precision and accuracy due to the superior optical performance, (2) low sample and reagent volume requirements, (3) high sample analysis rate, (4) quick turnaround between different analyses, and (5) automatic data acquisition.

A portable Centrifugal Fast Analyzer (CFA) has been developed and evaluated. The lessons learned have been applied to a new design and an advanced prototype is under construction. The following chemical assays have been adapted for use on the portable CFA [brackets denote reagent(s) or method used]: NO_2^- [indole, dimethylaniline, and Marshal's reagent methods]; I^- [catalytic effect on Ce(IV)]; SO_4^{-2} [$BaCl_2$ and CAD turbidimetric]; PO_4^{-3} [molybdenum blue and 340 nm]; K^+ [tetraphenyl boron turbidimetric]; Zn^{+2} and Pb^{+2} [PAR]; As(v) [molydbenum blue].

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	C A Burtis	9-24-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		6/76	6/78

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CJ

TITLE OF PROJECT DETERMINATION OF DIFFERENCES IN FINE PARTICLES EMITTED BY EASTERN AND WESTERN COAL FIRED PLANTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. V. Mokler, Aerosol Scientist 505-264-3403
R. L. Carpenter, Biophysicist 505-264-3085
R. L. Hanson, Chemist 505-264-4103

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
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Fine particles emitted from coal fired plants represent a potentially serious and widespread inhalation problem. This arises primarily from the possible concentration of toxic metallic and organic compounds in these particles. Although the availability of different elements within the coal must control the possibility of their emission, it is quite clear that design and operating parameters will also influence the nature of the particles emitted from a specific source. The purpose of this study is to compare, through a review of available data and supplemental sample collection and analysis, the differences in the physical and chemical nature of fine particles emitted during the use of eastern and western coals. Although the initial focus will be on coal combustion for power generation, some of the results, information, and techniques might later be used in considering particulate emissions from other methods of coal utilization. This project was initiated July 1, 1975 and is therefore still in the information gathering and evaluation phase. Local southwest USA sources for sample collection have been identified which will permit future characterization of fine particle emissions from such coal-burning plants.

77BCJ

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Robert K Jones for B.V. Mokler	December 2, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1a.1 and 2	Hodge R. Wasson
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		6/76	6/77

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CJ

TITLE OF PROJECT MEASUREMENT METHODS FOR DETERMINATION OF CARCINOGENIC HYDROCARBONS AND TRACE METALS IN EFFLUENTS FROM COAL FIRED POWER PLANTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

T. R. Henderson, Biochemist 505-264-3085
R. L. Hanson, Chemist 505-264-3085
R. L. Carpenter, Biophysicist 505-264-3403
B. V. Mokler, Aerosol Scientist 505-264-3403

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

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Stack effluents and fly ash will be characterized with respect to organic and metal content. The concentration effects from combustion can be determined by analysis of coal and analysis of both the fly ash removed by the control equipment and the effluents. Previous reports have indicated that some volatile metals escape as vapors. An indication of the extent of their escape can be obtained by comparing metal concentrations in coal and fly ash. Sulfate and several trace metals have been found to be concentrated on the surface of the particulate emissions that are below three microns in diameter. Analysis of the various size particulate samples will reveal the extent that this occurs in the effluents from coal fired power plants. Atomic absorption spectrophotometry with a graphite furnace attachment will be used for the trace metal analysis. Gas chromatography, gas chromatography-mass spectrometry, and spectrofluorometry will be used to determine the organic components in the effluents from coal fired power plants. These analyses will permit characterization of effluents with respect to various operating parameters at the power plants. They also will provide the analytical data necessary for various small animal repeated or chronic inhalation exposure studies. A survey of the literature has been initiated to deterrine the components present and the methodology used for studies of power plant effluents.

77 BCT

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable		December 2, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Hodge R. Wasson
X	NEGOTIATED CONTRACT	1b	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
55 K	75			6/78

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CJ

TITLE OF PROJECT
EVALUATION OF INERTIAL SAMPLERS FOR CHARACTERIZING PARTICULATE AIR POLLUTANTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

O. G. Raabe, Aerosol Physicist 505-264-2107
D. Talley, Aerosol Physicist Associate 505-264-2107
G. J. Newton, Aerosol Physicist Associate 505-264-2409

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

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Adequate assessment of the health consequences of inhaling potentially toxic or carcinogenic particulates released into the atmosphere from power plants requires not only information about their concentrations and distribution, but also about their distribution with respect to aerodynamic size since the deposition of inhaled particles in the respiratory tract depends upon their aerodynamic properties. Inertial samplers, such as cascade impactors, are used to collect a sample, graded with respect to aerodynamic size for appropriate analysis of the material in each size group in the respirable range. High volumetric sample rates are necessary for collecting sufficient material on each sampler stage to allow accurate analysis. Many users of commercially available high-volume inertial samplers depend upon the manufacturer to provide correct calibration data and operating instructions. Because most inertial sampler design theory is based on the performance of low-volume inertial samplers, faulty design or erroneous calibration predictions may compromise the results obtained by the user of high-volume samplers. The purpose of this study is to evaluate existing instruments and techniques and to provide appropriate recommendations for improving the designs and techniques of using high-volume inertial samplers for collecting and studying air pollutant aerosols. The procedure to be used is to (1) purchase inertial samplers from commercial sources, (b) compare sampler design with accepted design criteria, (c) calibrate each instrument with appropriate laboratory produced aerosols, (d) test each sampler under representative operating conditions both in the laboratory and at selected field sites, (e) sample source materials with several samplers simultaneously for operational comparison, (f) prepare critique for each device, and (g) provide criteria for improving performance through design changes operating changes. A variety of inertial samplers have been acquired and physical measurements of the dimensional relationships of the impactors are underway.

77BCJ

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Robert K Jones for O G Raabe	December 2, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS ORIGINATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		6/76	6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CJ

TITLE OF PROJECT

Laser Optoacoustic Spectrometer for C O Detection

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Nabil M. Amer, Energy & Environment Division, Physicist
Frederick A. Kirsten, Electronics Engineering Department, Electronics Engineer
Kenneth A. Tani, Energy & Environment Division, Physicist
Lawrence Berkeley Laboratory, Berkeley, CA 94720

NAME AND ADDRESS OF APPLICANT INSTITUTION

Energy & Environment Division
Lawrence Berkeley Laboratory, University of California
Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Current techniques for the detection of CO in air are time consuming and require large sample volumes. We propose to develop a prototype laser optoacoustic spectrometer to measure, within seconds, concentrations of CO of 10^{-7} or less even in the presence of large concentrations of other gases. The required sample volume is in the order of a few cubic centimeters.

A primary requirement for this technique is that the spectral output of the coherent light source should match one or more of the absorption bands of the gas under analysis. When the laser is tuned to coincide with one of the absorption lines of that gas, the laser light is absorbed. The sample is therefore heated proportional to the concentration of the particular gas. By modulating the laser beam, the temperature change of the sample is made time-dependent, and the resulting fluctuation of pressure is detected with a capacitor microphone placed in the sample cell The microphone signal is then amplified, recorded, and/or digitized.

The laser excitation source is tunable such that it can selectively excite each of the set of absorption lines of the gas being analyzed. This minimizes the effect of interference from ambient gases. We propose to design a tunable laser with ~0.1 MHz bandwidth, which will result in ultrahigh resolution spectroscopy.

Laser resonance absorption, optoacoustic spectroscopy has advantages over other detector schemes (resonance and ordinary Raman scattering, for example) of being relatively simple, giving good sensitivity, and requiring only low power lasers.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Lawrence Berkeley Laboratory		8-13-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		H. R. Wasson
X	NEGOTIATED CONTRACT	3	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F	STARTING DATE	ESTIMATED COMPLETION DATE
115	1975	77	6/27/75	6/27/76

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CK

TITLE OF PROJECT Develop Specifications for Instruments, Methods and Systems for Measuring Radioactive Effluents Released in the Nuclear Fuel Cycle

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Phelps, P.L., Principal Investigator, Electronics Engineer
Kordas, J.
Kirby, J.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P. O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program will evaluate and advance the status of current technology for instruments, systems, and methods employed in environmental radiation measurements, particularly related to radioactive effluents from facilities associated with the nuclear fuel cycle. These facilities include uranium mills, fuel-fabrication and and fuel reprocessing plants, and advanced nuclear power reactors, i.e., liquid-metal fast-breeder reactors (LMFBR) and high-temperature gas-cooled reactors (HTGR). The approach will be first, to review the technology, second to develop specifications for the specific needs, and third to develop the required instrumentation.

An extensive literature review with concurrent site visits to nuclear fuel processing, fabrication plants and uranium mills will be made to ascertain the critical instrumentation and measurement problems. Emphasis is being placed on detection and quantification of radioactive aerosols released from stack or present in ambient air. Particular attention is being given to the transuranic elements. The main thrust of this project will be to develop suitable hardware for stack or fence-line measurements.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA		9/19/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Hodge R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
135 K	75		11/75	6/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CK

TITLE OF PROJECT Evaluate State-of-Art Measurement and Instrumentation Techniques for Monitoring Plutonium and Uranium Particulates Released from Nuclear Facilities.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dick A. Mack, Department Head, Electronics Engineering Department
Robert J. Budnitz, Energy and Environment Division
Antony Nero, Energy and Environment Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Berkeley Laboratory, University of California,
Berkeley, California 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program will study the instrumentation presently employed in the nuclear fuel cycle for monitoring plutonium and uranium particulates. The nuclear fuel cycle includes the mining and milling of uranium ores, fuels used in nuclear reactors, fuel reprocessing plants and the transportation of nuclear fuel between these activities. Any gaps in the existing instrumentation and measurement technology will be reported and recommendations will be made for their elimination.

Based on the methodology employed in compiling the survey of Instrumentation for Environmental Monitoring, Radiation, this study will evaluate new measurement procedures and compare them with methods presently in use.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Lawrence Berkeley Laboratory	Richard D. Mack	8-12-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	2	H. R. Wasson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION 10720
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT	STARTING DATE	ESTIMATED COMPLETION DATE
35 K	1975	79	9/1/75	6/30/76

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CK

TITLE OF PROJECT Prepare standard reference material for uranium ore samples, uranium mill tailing sample, & natural thorium sample for use in instrument calibration & method evaluation.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Claude W. Sill, Chief, Analytical Chemistry Branch, Health Services Laboratory,
U. S. Energy Research and Development Administration, Idaho Falls, Idaho 83401.

Phone: 208-526-0111 Ext. 2531; FTS 208-526-2531

NAME AND ADDRESS OF APPLICANT INSTITUTION

U. S. Energy Research and Development Administration, Idaho Falls, Idaho 83401.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Accurate and reliable analyses of various environmental and biological samples are required to assess the impact of radioactive wastes from the production of uranium and thorium on man and his environment. The most accurate and reliable standards to evaluate the capability of different laboratories or analytical procedures are generally solid materials containing exactly known concentrations of the various radionuclides involved. A standard for both the ^{238}U and ^{235}U series has been prepared from a sample of pitchblende known to contain primary unaltered mineral in true secular equilibrium. By analyzing the ore for uranium, which was done by a simple accepted volumetric procedure, the activity of all the daughters of both series can be calculated from the known abundances and half-lives of the uranium isotopes. Thus, an essentially primary standard is obtained whose activities are known accurately, free of any bias due to direct analytical measurements of the radioactive nuclides themselves. Extensive analyses for all of the long-lived daughters have confirmed the condition of secular equilibrium. Other standards have been prepared from both natural thorium ores and uranium tailings, and are in the process of being standardized by several different procedures of proven accuracy and reliability to determine the activity of the pertinent radioactive species. These standards will be made available to other laboratories to assist in their own quality control.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Claude W. Sill	9/12/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)		Hodge R. Wasson
X	NEGOTIATED CONTRACT	3	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50 K	1975	none	7/1/75	3/1/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0051

PROJECT NO. *(Do not use this space)*
SSIE

EPA
EPA-IAG-D5-E684-CL

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitorin

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director
Dr. James R. McNesby, Chief
Office of Air & Water Measurement, NBS

Principal Investigators - See attached sheet

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Bureau of Standards
Washington, D. C. 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives

The objectives of the projects are (a) determine the Standard Reference Materials needs in energy related pollution with respect to air and water, (b) develop the Standard Reference Materials of air and water pollutants, (c) develop Standard Reference Materials for Radiological Pollutants associated with nuclear energy sources, (d) develop measurement methods for energy related pollutants.

(2) Approach

NBS will conduct workshops to determine the SRM needs associated with coal gasification, coal liquifaction, oil shale processing, off-shore oil drilling, mine drainage, uranium mining, desulfurization processes, power plant operation and geothermal operations. On the basis of these studies specific SRMs will be developed. In measurement science, we will develop a laser/fluorescence sulfur dioxide monitor, an instrument to measure sulfur containing particles, methods to analyze water for polar and non-polar organics, and methods to determine not only the elemental composition of polluted water but the molecular or ionic pollutant species.

(3) Current Plans and/or Progress

The project is just underway and little substantive progress can be reported. However, plans are progressing for a number of workshops and for launching the experimental measurement research. This planning phase includes extensive review of existing literature. A grant to the

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Harry R. McNesby	7/8/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1	J.R. McNesby
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		NBS/Office Air & Water Measurement

$ OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT	STARTING DATE	ESTIMATED COMPLETION DATE
440 K	75	81	6/76	6/80

(3) Current Plans and/or Progress - Continued

University of Minnesota for the sulfur particulate instrument is being negotiated, the detailed proposal from University of Minnesota having been received and reviewed favorably.

Principal Investigators

Dr. W. Mann, Deputy Chief, Applied Radiation Division, NBS
(Radiological Pollution)
Dr. P. LaFleur, Chief, Analytical Chemistry Division, NBS
(Air and Water Projects, Analytical Chemistry)
Dr. M. Scheer, Chief, Physical Chemistry Divsion, NBS
(Air and Water Projects, Physical Chemistry)
Dr. R. Deslattes, Chief, Quantum Metrology Section, NBS
(Air Project, Optical Physics)

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E684-CM

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director
Dr. James R. McNesby, Chief
Office of Air & Water Measurement, NBS

Principal Investigators - See attached sheet

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Bureau of Standards
Washington, D. C. 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives

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(3) Current Plans and/or Progress

The project is just underway and little substantive progress can be reported. However, plans are progressing for a number of workshops and for launching the experimental measurement research. This planning phase includes extensive review of existing literature. A grant to the

(continued

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Harry R. McNesby	7/8/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	1.1-5	James R. Mc Nesby
NEGOTIATED CONTRACT	21-5	RESPONSIBLE ORGANIZATION
RESEARCH GRANT		NBS/Office of Air & Water Measurement

DOLLARS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT	STARTING DATE	ESTIMATED COMPLETION DATE
560 K	75	83	10/75	6/80

(3) Current Plans and/or Progress - Continued

University of Minnesota for the sulfur particulate instrument is being negotiated, the detailed proposal from University of Minnesota having been received and reviewed favorably.

Principal Investigators

Dr. W. Mann, Deputy Chief, Applied Radiation Division, NBS
(Radiological Pollution)
Dr. P. LaFleur, Chief, Analytical Chemistry Division, NBS
(Air and Water Projects, Analytical Chemistry)
Dr. M. Scheer, Chief, Physical Chemistry Divsion, NBS
(Air and Water Projects, Physical Chemistry)
Dr. R. Deslattes, Chief, Quantum Metrology Section, NBS
(Air Project, Optical Physics)

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E684-CN

TITLE OF PROJECT
Quality Assurance and Instrumentation in Air & Water Pollution Monitorin

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director
Dr. James R. McNesby, Chief
Office of Air & Water Measurement, NBS

Principal Investigators - See attached sheet

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Bureau of Standards
Washington, D. C. 20234

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

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(2) Approach

NBS will conduct workshops to determine the SRM needs associated with coal gasification, coal liquifaction, oil shale processing, off-shore oil drilling, mine drainage, uranium mining, desulfurization processes, power plant operation and geothermal operations. On the basis of these studies specific SRMs will be developed. In measurement science, we will develop a laser/fluorescence sulfur dioxide monitor, an instrument to measure sulfur containing particles, methods to analyze water for polar and non-polar organics, and methods to determine not only the elemental composition of polluted water but the molecular or ionic pollutant species.

(3) Current Plans and/or Progress

The project is just underway and little substantive progress can be reported. However, plans are progressing for a number of workshops and for launching the experimental measurement research. This planning phase includes extensive review of existing literature. A grant to the

(continued)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Harry R. Shanley	7/8/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
X AGENCY STAFF (Intramural)	1	I.R. McNesby
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		NBS/Office of Air and Water Measurement

DOLLARS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TO BE ASSURED BEYOND CURREN	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	75	85	10/75	12/79

(3) Current Plans and/or Progress - Continued

University of Minnesota for the sulfur particulate instrument is being negotiated, the detailed proposal from University of Minnesota having been received and reviewed favorably.

Principal Investigators

Dr. W. Mann, Deputy Chief, Applied Radiation Division, NBS
(Radiological Pollution)
Dr. P. LaFleur, Chief, Analytical Chemistry Division, NBS
(Air and Water Projects, Analytical Chemistry)
Dr. M. Scheer, Chief, Physical Chemistry Divsion, NBS
(Air and Water Projects, Physical Chemistry)
Dr. R. Deslattes, Chief, Quantum Metrology Section, NBS
(Air Project, Optical Physics)

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-DE

TITLE OF PROJECT
Direct Reading Personal Gas and Vapor Monitors

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Lawrence Doemeny
Phone: (513) 684-2591

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The increased attention to the development of alternate energy sources will result in increased numbers of workers exposed to toxic chemical substances. The recent advances in solid state electronics and surface physics is making it possible to consider personal, direct reading instruments which can take breathing zone samples of the worker and quickly display the concentration or give suitable warning. The personal monitors would use metal oxide surface semiconductors, piezoelectric crystals, microminiature gas chromatograph columns as sample collectors and separators. Collector responses would be analyzed using state-of-the-art electronics with the concentrations displayed in a suitable format. Preliminary information as to specific applications in mind, dealing with coal processing are as follows:

a. H_2S - e.g., specific contaminant in the Synthane Process under investigation by the U.S. Bureau of Mines.

b. CO - e.g., specific contaminant in the Synthane Process under investigation by the U.S. Bureau of Mines.

c. Hydrocarbons - e.g., contaminants in the Solvent Refined Coal Process under development by Pittsburg and Midway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	John F. Finklea, M.D.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
110,000	75	2	5/75	12/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-DE

TITLE OF PROJECT
Development of a Portable Microwave Spectrometer

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Lawrence Doemeny
Phone: (513) 684-2591

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. *Omit confidential data*). In the Smithsonian Science Information Exchange, *summaries of work in progress are exchanged* with government and private agencies supporting *research and are forwarded* to investigators who request such information. Your summary is to be used for these purposes.

Present requirements exist for a portable gas monitor which is capable of selectively detecting several trace contaminants of a hazardous or toxic nature in air. Few techniques are available which are based upon a physical measurement and have the required specificity and sensitivity. This project will be the continuation of a feasibility study (scheduled for completion in 10/75) into the development of a portable microwave spectrometer for the detection of several low molecular weight compounds. The spectrometer would be capable of selectively quantifying one of several compounds sampled directly from the working environment. The first phase of development would lead to a field prototype with later stages directed to increasing the sensitivity and variety of compounds which would be monitored. Ten substances, including the following, are being investigated for use on a feasibility basis presently:

a. NH_3 - e.g., specific contaminant in the Synthoil Process under investigation by the U.S. Bureau of Mines.

b. SO_2 - e.g., specific contaminant in the Solvent Refined Coal Process under development by Pittsburg and Midway.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	John F. Finklea, M.D.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
90,000	75	2	3/75	12/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
FPA-IAG-D5-E773-DE

TITLE OF PROJECT
Personal Samplers Testing in Cold Environments

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Lawrence Doemeny
Phone: (513) 684-2591

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Although a number of sampling and monitoring devices have demonstrated their usefulness to measure personal occupational exposure to toxic substances in the continental United States, where temperatures are generally mild, it is questionable if some of these devices can properly function at the low temperatures expected along the Alaskan pipeline. This project will test the adequacy of several gas detector tube sampling pumps and portable direct reading instruments in cold environments.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	John F. Finklea, M.D.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50,000	75	2	5/75	6/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI- MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-DE

TITLE OF PROJECT
Development of a Fibrous Aerosol Monitor

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Laurence Doemeny
Phone: (513) 684-2591

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Occupational Safety and Health Administration standards presently require assessment of worker exposure to asbestos aerosol. Exposure to fibrous glass and other fibrous aerosols will have to be monitored in the future. These materials are widely used in the insulation industry and with the current push for energy conservation will be used more extensively. At this time, there is no instrument available to rapidly measure the concentration of fibrous dust in the air. The development of a fibrous aerosol monitor would allow real time measurement of fibrous aerosols for the purpose of accurately detecting areas in the workplace that contain potentially dangerous concentrations of fibrous aerosols. The development of the monitor will be a one year contract effort after which it will be necessary to comprehensively test the monitor for accuracy and suitability under a wide range of field and laboratory conditions. The results of these tests will be used in further development of the fibrous aerosol monitor as a rugged, portable and accurate field survey instrument for the assessment of worker exposure to fibrous aerosols.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	John F. Finklea
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
140,000	75	2	5/75	6/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DH

TITLE OF PROJECT Isolation and Identification of Water-Borne Pollutants Associated With the Power Industry (Steam-Electric Generation)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. Wayne Holley, TVA, 150 401 Building, 4th & Chestnut Streets, Chatta., TN (615)755-3135
Lucy E. Scroggie, TVA, 150 401 Building, 4th & Chestnut Streets, Chatta., TN (615)755-3135
Lyman H. Howe, TVA, 150 401 Building, 4th & Chestnut Streets, Chatta., TN (615)755-3135

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, Division of Environmental Planning, 268 401 Building, 4th & Chestnut Streets, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Develop rapid, quantitative method for acrolein by voltammetry at positive potentials (where oxygen does not interfere). Compare results with method for acrolein at negative potentials.
2. Measure values for total arsenic in the presence of a variety of interferents (Cu, Se, Pb, Cd, Hg, Sb, Mo, V, Fe, Tl, Cl). Compare and explain values found by differential pulse polarography, flameless atomic absorption, and colorimetry.
3. Develop quantitative, sensitive, alternate method for simultaneously measuring cadmium, lead, copper, and zinc by anodic stripping voltammetry. Compare results with standard atomic absorption.
4. Test digestion techniques and more sensitive analytical methods for suspended and dissolved metals (Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, Mg, Mn, No, Ni, Pb, Sb, Se, Sn, Ti, V, Zn). Gather wet ashing, ignition, and fusion data. Categorize refractory and volatile metal systems.
5. Adapt commercially available chemical, instrumental, and computer methodology to the measurement of sulfate in air and water samples.
6. Develop simple, inexpensive method for monitoring asbestos in water. Concentrate solids from water by membrane filtration. Quantitate and compare total fiber mass found by visible microscopy to that found by electron microscopy.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	C. Wayne Holley	August 13, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	1-6	C. Wayne Holley
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: Tennessee Valley Authority, Division of Environmental Planning
RESEARCH GRANT		

FUNDS OBLIGATED	F Y	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50 K	1975	4	May 7, 1975	May 6, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E721-DI

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development and Evaluation of an Integrated Approach to the Optimization of Nuclear Power Plant Radiological Surveillance Programs

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. A. Belvin, Ass't. Chief, Radiological Hygiene Branch (Project Director) River Oaks Bldg., Muscle Shoals, AL 35660 FTS 205-383-4575
B. B. Hobbs, Analytical Chemist, Radiological Hygiene Branch
L. G. Kanipe, Analytical Chemist, Radiological Hygiene Branch
R. L. Doty, Health Physicist, Radiological Hygiene Branch
R. G. Wallace, Health Physicist, Radiological Hygiene Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut Street, Rm. 268
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives:

1. To develop and maintain a model quality assurance program for radiological surveillance. The emphasis for this project will be on development of a multiple-laboratory program.
2. To develop improved radiological monitoring techniques.
3. To develop an optimized radiological monitoring program.

Approach:

1. To produce an analytical quality control document which can be used by radiological laboratories for quality control monitoring of procedures, counting equipment, and data handling.
2. To develop a program of interlaboratory studies, standards, and analytical and counting procedures to use as standard methods in multiple laboratories.
3. To produce guidelines for gamma counting and data reduction techniques.
4. To develop a cost-effective radiological surveillance program through the use of statistical methodology, parametric studies, and improved sampling procedures.

Progress:

1. An AQC manual has been produced in preliminary draft form.
2. Equipment for "approach" items 2 and 3 is being procured.
3. Preliminary work on interlaboratory studies and gamma data reduction techniques is underway.
4. Statistical evaluation of available data is underway. Plans are being made for a conference on radiological sampling techniques.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Ernest A. Belvin	

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1, 2, 3 (1-6)	James A. Oppold
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		TVA/Div. of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$135K obl.; $135K est. exp	1975	4	May 7, 1975	May 6, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E721-DJ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Remote Sensing of SO_2 Effects on Vegetation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III, Supv. Terrestrial Ecology Section (Principal Investigator)
A. Leon Bates, Botanist (Project Leader)
Alan R. Stevens, Supv., Photogrammetry and Remote Sensing Sect., WCP, Knoxville, TN

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning, Terrestrial Ecology Section
Tennessee Valley Authority, E&D Building
Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research activity involves testing, refinement, and development of remote sensing instrumentation and techniques for monitoring the visible effects of SO_2 emissions from fossil-fueled electric generating stations on terrestrial vegetation. NASA will collaborate with TVA in the project. Low and high altitude color, color infrared, multi-spectral scanning, and perhaps other types ofimagery and ground-truth data will be obtained for effects on soybeans and mixed Southern pine-deciduous hardwood timber stands in the vicinities of the Shawnee and Widows Creek Steam Plants, respectively, for both visual and automated interpretations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones III	8/22/75

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1, 2, 3	W. R. Nicholas
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DK

TITLE OF PROJECT
Standardization of Instruments and Techniques for Ambient Monitoring and Measurement

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: T. L. Montgomery, Chief, Air Quality Branch, Division of Environmental Planning, TVA, River Oaks Building, Muscle Shoals, AL 35660 (205) 383-4631 ext. 555
Roy May, Environmental Scientist (assigned parttime)
Additional Staffing in Progress

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, Division of Environmental Planning, Air Quality Branch, River Oaks Building, Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objectives are to determine the most reliable, accurate, precise and robust instruments for collection and fractionation of suspended particulates for subsequent analysis for size distribution, sulfates, and trace metals. A literature survey of available instruments and techniques for sampling of suspended particulates for size distribution and mass concentration is to be made and the most practical instruments selected for a field comparison test. This is a new project and only general plans have been completed. Detail plans will be made after the completion of the literature survey of available instruments and the selection of personnel to conduct the test. A comparison field test of the most practical and available instruments for collection and separation of suspended particulates for size distribution, mass concentration and analysis of trace elements and sulfates is to be conducted at a regular high-volume sampling station near a coal-fired power plant. All instruments are to be operated simultaneously and alongside the high-volume sampler. Analytical data of the samples are to be evaluated and intercomparisons of sampling instruments made to identify the best sampling method to fractionate suspended particulates. Preliminary surveys of the literature are in progress, a list of equipment available in TVA has been completed, and staffing is in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	For T. L. Montgomery	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	T. L. Montgomery
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: Division of Environmental Planning, Tennessee Valley Authority
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
35 K	1976	4	5/7/76	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-DX

TITLE OF PROJECT
Underway Water Sampling System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mo Ringenbach, Director, Engineering Development Laboratory
NOAA - NOS, C61
WSC#2
Rockville, Md. 20852

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop cost effective data acquisition and processing systems which measure physical and chemical parameters in the marine environment to support offshore energy resource development programs.

It is planned to develop two relatively independent systems:

1) Seascan: An underway, interactive water measurement system that will allow rapid, quasisynoptic, fine scale delineation of the coastal current field as needed for input to the concentration/trajectory model. Future plans call for the possible inclusion of temperature, salinity and optical capabilities to this system.

2) Towed surface sampler for hydrocarbons: This system will allow uncontaminated, underway surface sampling for hydrocarbons, thus bypassing the present method of accumulation and storage of large amounts of water where contamination may occur. This system also has the potential for measuring certain trace metals. This project will begin the last week in August 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Mo Ringenbach	4 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-2 (2)	John W. Townsend, Jr.
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/NOS/EDL C61

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$495K	75	2	August 1975	Dec. 1978

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E693-DY

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Ocean Oil Spill Concentration and Trajectory Forecast

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Celso Barrientos, Research Meteorologist, Marine Technology Branch
NOAA - NWS/TDL, W427
Gramax Bldg.
8060 - 13th St., Silver Spring, Md. 20190

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop a numerical model which will predict the movement and concentration of oil spilled in the oceans as a function of time and space. The program also includes provisions for forecasting current, wind and wave field that have not previously been available.

To accomplish this objective, the following parameters will be included in the model:

1) Surface wind field

2) Three dimensional currents

3) Direct wind drag effects

4) Wave transport

5) Sea air pollutant transfer

6) Model integration.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Celso Barrientos	4 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-7	John W. Townsend, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/NWS/TDL W427

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$200K	75	3	Nov/Dec. 1975	December 1979

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E693-DZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Shipboard Environmental Data Acquisition System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Roy Wyett, Program Manager, Surface Observing Systems Program
NOAA - NWS, W44x1
Gramax Bldg., 8060 - 13th Street
Silver Spring, Md. 20190

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this program is to develop an automated meteorological instrument package to be operated from oil tankers, merchant ships and certain offshore supply vessels. This system will provide a capability for real-time monitoring selected surface atmospheric parameters. Future plans call for use of a modification of this system to be used on offshore drill rigs and production platforms; plans also include expansion of the system to measure the sub-surface ocean thermal structure. The development of this system includes:

1) A primary system to automatically measure and report meteorological data transmitted via satellite. Ship location and velocity will be manually entered.

2) Automation of the system to give a capability to determine ship location and velocity.

3) Total system completion. This includes complete test and evaluation, writing production specifications and detailed application plans.

Task (1) has already been implemented.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Roy Wyett	4 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1 (1)	John W. Townsend, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/NWS W44x1

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$80K	75	2	July 1974	Dec. 1978

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EA

TITLE OF PROJECT
Standardized and Intercalibrated Techniques for Marine Monitoring

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Robert Farland, Chief, Metrology Division
NOAA - NOS/NOIC, C632
Washington Navy Yard Annex, Bldg. 160, Room 118
Washington, D. C. 20374

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to develop common technique for the standardization and intercalibration of sampling and analytical methodologies in the oceanic environment. The effort will be concentrated on developing appropriate mechanisms for coordination of standardization and intercalibration activities among state, local and private agencies.

To accomplish this, the plan is to expand NOIC activity in the areas of water quality instrument standard, calibration procedures and facilities by implementing the following tasks:

1) Develop a dissolved oxygen laboratory standard.

2) Assess present chemical standards in relationship to in-situ water quality measurements.

3) Develop a dynamic test standard for current meter standardization.

4) Procure a transfer standard for interlaboratory calibrations.

5) Expand water quality instrumentation lab.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Robert Farland	4 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1-5 (5)	John W. Townsend, Jr.
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		NOAA/Nat. Oceanographic Instrumentation Center

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$250K	75	2	Before July 1975	Dec. 1978

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EB

TITLE OF PROJECT Lidar Techniques for Measuring Particulate Pollutants from Energy Production and Their Transport and Dispersion Processes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. V. E. Derr
Tel. (303) 499-6296

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA, Environmental Research Laboratories
Wave Propagation Laboratory
Boulder, Colorado 80302

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Subtask I - The Application of Doppler Lidar to Atmospheric Transport Processes
The objective of the proposed research is to develop and test an operational frequency-modulated, continuous-wave (FM/CW) doppler lidar sensor for measuring and monitoring in a continuous mode the atmospheric processes that transport, disperse, and concentrate airborne pollutants. The following data would be obtainable from this sensor:

- °profiles of wind velocity and turbulence
- °velocity of dispersal of pollutant clouds
- °velocity in severe-weather vortex phenomena
- °mixing depth
- °velocity and range in stack effluent plumes

The proposed FM/CW doppler techniques will allow improved resolution of the above measurements, especially the altitude scale for vertical profiles of wind velocity and turbulence.

Subtask II - Development and Application of Lidar Techniques to Measure Particulate Pollution Arising from Power Generation Facilities

The primary objective of the research is to develop measurement techniques for tracing and analyzing the pollutants arising from existing sources and from expected sources of pollution such as oil shale development and fossil power plants. The informationobtained from this analysis is an important ingredient of impact assessment, air quality monitoring, and forecasting pollution potential.

Useful output products will include a device, a technique, and theoretical understanding for measuring, with greatly improved cost effectiveness, the concentration and character of particulate pollutants.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Dr. V. E. Derr	8/7/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	T-1 & T-2	John W. Townsend, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$150K	75	4	July 1, 1975	June 30, 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No., 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EC

TITLE OF PROJECT

Cloud and Precipitation Modification Effects of Pollutants from Energy Production

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Rudolph Pueschel, Principal Investigator
Dr. Farn Parungo, Research Chemist
Mr. Paul Allee, Physicist
Mr. Charles Van Valin, Research Chemist

FTS(303)499-6360
Atmospheric Physics & Chemistry Lab
Environmental Research Laboratories
NOAA
Boulder, Colorado 80302

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Oceanic and Atmospheric Administration
Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: To develop criteria by which to assess the impact of increased use of sulfur-rich coals in power plants on the quality of the atmospheric environment, on nearby clouds and associated weather, and on local radiation budgets.
APPROACH: Measurements will be taken in and around plumes from power plants to determine the size, shape, and chemical composition of atmospheric pollutants from the plants, especially gaseous and particulate sulphur and heavy metal compounds. Emphasis will be on aerosols with cloud modifying properties. Since the gas-to-particle conversion rate and the size of the sulfuric acid and sulfate particles, hence their environmental impact, are functions of third-body trace constituents, water vapor mixing ratio, and ultra-violet irradiation, the field studies must be performed under different climatic conditions and in the absence and presence of independent pollution sources.
PROGRESS/PLANS: The first field study was conducted near Colstrip, Montana, during a 4-week period in May and June in an area where large powerplant is under construction. These measurements will provide "clean air" background values for comparison with future measurements, to be taken periodically after the plant begins operation in late August, to determine the effects of powerplant effluents. Plume studies at the Four Corners plant near Farmington, New Mexico, commenced the last week in July. This 1-week pilot study will be followed in October by a more comprehensive 4-week field study. Future plans include the initiation in December of a 2-week pilot study at the Kennecott, Utah, copper smelter which has the largest sulphur dioxide output in the country.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Rudolph Pueschel	Aug. 8, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*		John W. Townsend, Jr.
	NEGOTIATED CONTRACT	1	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT	(1)	NOAA/ERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100	1975	4	May 1975	October 1979

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EK

TITLE OF PROJECT Meteorological Interpretation and Prediction of Air Quality in the Western United States Related to Energy Activities

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Lester Machta, Director
Air Resources Laboratory,
National Oceanic and Atmospheric Administration
Silver Spring, MD 20910
Telephone 301-427-7645

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Oceanic and Atmospheric Administration
Rockville, Md. 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is the analysis of selected air quality measurements, using meteorological trajectory and removal data, to make predictions of environmental impact from future energy resource activities. The approach is to establish transport models from existing air pollutant data plus data to be obtained from a network of existing and future air quality stations selected on the basis of a survey of early information. Tracer experiments from selected existing or proposed energy sources will be used to validate the transport models. Current plans have been developed in discussions between existing NOAA and EPA personnel at the EPA Radiological and Environmental Center in Las Vegas, Nevada. These plans call for collection of existing atmospheric SO_2 data, mainly from industrial plants, to identify gaps which need filling. These gaps will be filled by data taken from aircraft. The augmented data will be analyzed to achieve a more adequate picture of the air pollution meteorology. Recruitment of a meteorological investigator to conduct this project is expected shortly.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Dr. Lester Machta	8/7/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
x	AGENCY STAFF *(Intramural)*	1 (1, 2, 3)	John W. Townsend, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/ARL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100,000	75	4	5/1/75	3/19/80
150,000	76			

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E771-EL

TITLE OF PROJECT
Western Energy-Related Overhead Monitoring (WEROM)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

EPA Project Director - Al Pressman, Chief, Remote Sensing Branch, EPA, Las Vegas, NE
NASA Project Director - Edward Lee Tilton, III, NASA Earth Resources Laboratory, Bay St. Louis, MS
NASA Technical Investigator, James E. Anderson, NASA-ERL, Bay St. Louis, MS

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Space Technology Laboratories
National Aeronautics and Space Administration
Bay St. Louis, Mississippi 39520

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives

The objective of this project is to transfer remote sensor data acquisition and processing techniques from NASA to EPA for energy-related overhead monitoring system.

Approach

The project will be conducted in 3 phases with data from selected sites in Western U. S. Of the total effort expended during the project, approximately 50% will be dedicated to the monitoring of coal strip mine rehabilitation activities. Monitoring the environmental impact of mine mouth fossil fuel power plant emissions will account for approximately 30% of the total effort. Rehabilitation problems associated with oil shale extraction will comprise about 15-20% of the project work. Minor effort will include monitoring techniques applicable to geothermal prospects.

Current Plans and Progress

During Phase I (18 months) NASA will generate monitoring information products for EPA evaluation. Work to date includes the collection of multispectral scanner data and initial analysis of selected coal strip mine sites. Also, a remotely sensed data acquisition system and compatible data processing system will be assembled by NASA for subsequent EPA use. EPA personnel will receive training in the operation of system hardware and the use of NASA software and processing techniques. Phase II (18 months) will include demonstration and transfer of monitoring techniques developed during Phase I. The demonstration will consist of a periodic inventory of selected sites and will approach the operational system to be used by EPA. During Phase III (2 years) EPA will use the techniques in an operational mode, with NASA providing assistance in the operation of the system, and in the addition of new capabilities as developed during Phases I and II.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	James R. Morrison	8/13/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	for Edward Lee Tilton
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NASA Earth Resources Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$550 K	1975	4	July 1975	June 30, 1979

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E771-EU

TITLE OF PROJECT
Energy Related Remote and In Situ Sensing Instrument Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. G. B. Northam (804-827-2576), Environmental and Space Sciences Division
Dr. F. Allario (804-827-2986), Environmental and Space Sciences Division
Dr. G. L. Gregory (804-827-2486), Space Applications and Technology Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Aeronautics and Space Administration
Langley Research Center
Hampton, Virginia 23665

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: To develop and apply advanced electro-optical techniques to the measurement and characterization of power plant and other source effluents.

(2) Approach: To meet the project objectives the following five tasks will be conducted:

Task 1 - Raman Lidar.- Evaluate Raman Lidar for remote measurement of the concentration of SO_2 and NO at a power-plant stack exit.

Task 2 - Plume Dispersion Studies.- Apply aerosol scattering lidar techniques to the study of plume dispersion under various atmospheric conditions.

Task 3 - IR DIAL.- Develop and apply the tunable IR differential absorption lidar (DIAL) technique to the remote measurement of molecular plume effluents.

Task 4 - Laser Heterodyne Detector.- Evaluate the use of the laser heterodyne detector technique as a means to increase the sensitivity of long path continuous wave absorption measurements using diffuse reflectors.

Task 5 - HCℓ Monitor.- Develop and deliver to EPA an improved in situ HCℓ chemiluminescent monitor. The monitor will be evaluated at concentrations as low as 5 ppb HCℓ in ambient and polluted air.

(3) Current Plans and/or Progress: Tasks will be conducted in accordance with the Project Plan. Since this is a new project there is no progress to report at this time.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	John P. Mugler, Jr.	August 8, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1-5	John P. Mugler, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NASA Langley Research Center

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$245	1975	4	July 1, 1975	June 30, 1979

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ENVIRONMENTAL TRANSPORT PROCESSES

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACO-A2

TITLE OF PROJECT
Structure and Reactivity of Adsorbed Oxides of Sulphur

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jack H. Lunsford, Professor, Department of Chemistry 713/845-2011
Texas A & M University
College Station, Texas 77843

NAME AND ADDRESS OF APPLICANT INSTITUTION
Texas A & M Research Foundation
P.O. Faculty H
College Station, Texas 77843

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 801136

The overall objective of this research is to determine the structure and reactivity of adsorbed oxides of sulfur. Several spectroscopic techniques are being used to follow reactions which occur with SO_2 on metal oxide surfaces. Results from such a study will be useful in identifying the photochemical and thermal reactions which take place on atmospheric aerosols. The specific goals during the current year were (a) to study the reactivity of SO_2^- for oxidation and reduction reactions on vanadium oxide supported on silica gel, (b) to determine the photoreactions which occur following the adsorption of SO_2, H_2O, and O_2 on magnesium oxide and (c) to determine whether sulfur oxides are present on atmospheric aerosols. The first two of these objectives has been achieved, and the third study is actively in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Chemistry		9/19/74

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Jack Durham 919-549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT	A2	ESRL, RTP

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 30K Energy 10K	75	1	12/15/73	12/14/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACO-A3

TITLE OF PROJECT
Reactions of Sulfur Dioxide in Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David M. Himmelblau, Professor, Department of Chemical Engineering 512/471-7446

NAME AND ADDRESS OF APPLICANT INSTITUTION

The University of Texas at Austin
Austin, TX 78712

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant NO. 808814

The objective of this study is to determine the rate and extent of reaction of sulfur dioxide and other air pollutants at ppm concentrations with aerosol droplets of the order of size of one micron. In the initial experiments radioactive $^{35}SO_2$ will be transferred to aerosols, and the total radioactive sulfur transferred counted. Models of the mass transfer and reaction will be fit by the experimental data, and used to elucidate the mechanism and extent of reaction.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Engineering		2/25/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Jack Durham 919-549-8411 x 2181
	NEGOTIATED CONTRACT	A3	RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP --EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50K	75	2	8/75	8/78

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACO-B-1

TITLE OF PROJECT
Mechanisms of Photochemically Initiated Oxidations

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jack G. Calvert, Department of Chemistry, Professor of Chemistry - 614/293-2251

Edward K. Damon, Department of Electrical Engineering, Associate Professor of Electrical Engineering

NAME AND ADDRESS OF APPLICANT INSTITUTION

The Ohio State University Research Foundation
1314 Kinnear Road
Columbus, Ohio 43212

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This work has been planned to elucidate the chemical changes and the primary reaction mechanisms which occur in the simulated, sunlight-irradiated, polluted atmospheres. Three distinct areas of our research are aimed at the attainment of this overall objective: (a) the experimental study of the mechanism of the photo-oxidation of several common contaminants of the urban atmospheres. Specifically a variety of kinetic studies will be made using various combinations of sulfur dioxide, formaldehyde, nitrogen dioxide, nitric oxide, olefin hydrocarbons, and carbon monoxide, both in oxygen-rich mixtures and together with other selected reactants picked to test key points in the photo-oxidation mechanism; (b) the characterization of the reactive intermediates and transients formed in the irradiated, simulated, polluted atmospheres, and the quantitative determination of certain rate constants for their seemingly inportant homogeneous thermal reactions; and (c) the use of these rate constant data, together with other published kinetic data and computer techniques, to test possible models for the chemical changes observed in these systems. The best kinetic models developed will be employed to simulate the chemical changes which are expected to occur for conditions encountered in real atmospheres. We will attempt to extrapolate these models to predict the effects of changes in pollutant concentrations on the formation of the key products of photochemical smog.

Grant No. 800398

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Mathematics and Physical Sciences		10/25/74

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		Joseph Bufalini 919-549-8411 x 2422
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT	B-1	ESRL, RTP --EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
51K Base 45K Energy	75	0	1/1/73	12/31/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACO-B2

TITLE OF PROJECT
Smog Chamber Study of Rate of Conversion of SO_2 as Function of Reactant Concentration

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Arthur Levy & David F. Miller
Battelle Columbus Laboratories
505 King Avenue
Columbus, Ohio 43201 (FTS)614-295-8045 (PH)614-299-3151

NAME AND ADDRESS OF APPLICANT INSTITUTION

Arthur Levy & David F. Miller
Battelle Columbus Laboratories, 505 King Avenue
Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract No. 68-02-1720

The contractor will perform approximately 50 smog chamber tests of synthetic hydrocarbon-NO_x-SO_2 air mixtures and of automotive exhaust-SO_2-air mixtures.

Independent variables in the synthetic mixtures test program shall be: (a) hydrocarbon reactant composition; (b) initial levels and ratio of the hydrocarbon-NO_x reactants; (c) initial level of SO_2; (d) humidity; (e) level of natural aerosol in chamber background air; and (f) initial level of NH_3.

The contractor shall develop and/or refine methods for chemical characterization of the aerosol present in the photoirradiated smog chamber mixtures.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Basil Dimitriades	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	B2	Basil Dimitriades, 919-549-8411, X2706
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		6/26/75	6/26/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACO-B3

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Smog Chamber Studies of Atmospheric Chemistry of Organic and Nitrogen Containing Emissions from Emerging Energy Technologies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. L. A. Ripperton, Senior Scientist
Research Triangle Institute
P.O. Box 12194
Research Triangle Park, North Carolina 27711 (919)549-8311, X658

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dr. L. A. Ripperton
Research Triangle Institute, P.O. Box 12194
Research Triangle Park, North Carolina 27711

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract No. 68-02-2258

Task A

1. Literature survey to gather information presently available on composition and emission rates of organic, NO_x, and SO_x emissions resultant from: (a) shale-oil production (mining and in-situ processes), refining, and combustion processes; (b) coal mining and combustion; (c) coal liquefaction, and liquid product refining; (d) coal gassification (mining and in-situ processes), gaseous product refining, and combustion processes; and (e) petroleum refinery operations.

Task B

2. Smog chamber study of atmospheric chemistry of emissions from production and refining operations related to coal and oil-shale conversion and petroleum refining. Study will include smog chamber testing equivalent to approximately 25 36-hour tests.

Task C

3. Twenty one days of field measurements (at one or more mutually agreed upon sites) of the primary photolytic rate constant (k_1) for NO_2 dissociation using the instrumental technique recently developed by Sickles and Jeffries at U.N.C. The measurements shall commence one hour prior to sunrise and terminate one hour after sunset and should have temporal resolution of at least five minutes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Basil Dimitriades	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	B3	Basil Dimitriades, 919-548-8411, X2706
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	1975		6/30/75	6/29/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACO-D

TITLE OF PROJECT
Study of the Effects of Airborne Sulfur Pollutants on Materials

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Florian Mansfeld (Technical Staff)
Rockwell International Corp. Science Center
Box 1085
Thousand Oaks, California 91360 (805)498-4545

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International Corporation
Science Center
Thousand Oaks, California 91360

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract No. 68-02-1081

(1) Objective: To quantify the effects of measured levels of sulfur pollutants in an urban area on economically important, susceptible materials.

(2) Approach: To expose selected materials at nine sites in the St. Louis area and measure damage as a function of pollution and climatological factors.

(3) Progress: Weathering steel, galvanized steel, stressed Al 2014-T6 and Al 7079-T6, oil base and latex paints, marble, silver plate, and nylon hose have been exposed for 3 and 6 month periods since October 1974. Significant differences in the amount of damage to materials between sites has been observed. These damages will be correlated with levels of pollutants and climatological factors.

Total Project $99,083 ($40,000 funded in FY 1974)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Fred H. Haynie	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Fred H. Haynie, 919-549-8411, X2891
X	NEGOTIATED CONTRACT	D/1-6	RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	1975	0	May 15, 1974	October 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACP-A1 and A2

TITLE OF PROJECT
Aircraft Measurements in Support of Studies of Sulfur Transformation and Transport

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jerry Anderson & Warren White
Meteorology Research, Inc.,
464 W. Woodbury Road
Altadena, California 91001 (213)791-1901, X240

NAME AND ADDRESS OF APPLICANT INSTITUTION

Meteorology Research
464 W. Woodbury Road
Altadena, California 91001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract No. 68-02-2245

(1) Objective: Obtain measurements of SO_2, sulfate, aerosol size and composition in plumes during short and long range transport in order to derive fluxes, transformation rates and mechanisms and removal rates and mechanisms of sulfates and other pollutants.

(2) Approach: An instrumented aircraft will be used to perform a variety of chemical and physical measurements in plumes from single power plants and extended urban sources. Measurements will include SO_2, O_3, NO, NO_x, temperature, relative humidity, light scattering, aerosol charge, and aerosol size distribution. Aerosol collections will be made for chemical and microscopic analyses. The measurements will be used to determine sulfur balance in the plumes and to obtain insight into the rates and mechanisms for the conversion of SO_2 to sulfate.

(3) Progress: Measurement program was initiated in St. Louis July 15 (coal fired plumes and urban plume) and will continue until August 15. Studies of oil fired plumes will be made later.

(This is part of Project MISTT)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William Wilson	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	A1 & A2	William Wilson, 919-549-8411, X2181
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
A1 Base 70K A2 Energy 100K 30k	1975	1 est.	7/1/75	6/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACP-A5

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Sulfur Budget in Large Plumes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Rudolf B. Husar, Department of Mechanical Engineering 314/863-0100, ext. 4060
Washington University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Washington University
Lindell & Skinker Blvds.
St. Louis, MO 63130

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803896

The three main objectives of this study are: 1) establish and document by field measurements the sulfur budget in large single plumes, 2) identify the major physical and chemical mechanisms and parameters which govern the sulfur budget, 3) Formulate and test a dispersion-transformation-removal model for SO_2 and aerosol. Instrumented aircraft and surface vehicles will be used for the detailed plume mapping of fixed distances from the source outward to 100 km. Using wind field data from pilot balloon measurements, the horizontal sulfur flux will be measured in the gas and aerosol phase. The aerosol mass and sulfur content will be measured by a high resolution β-guage and vaporization-flame photometric method, respectively. These data will be utilized to establish the amounts of SO_2 converted to aerosol and its rate and the amount of sulfur removed by dry deposition. The data will be used for the improvements and extension of dispersion-transformation-removal models.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
School of Engineering and Applied Science		3/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		William Wilson 549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT	A5	ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 110 K Energy 150 K	75	2	8/75	8/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONM AL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-77-ACP

TITLE OF PROJECT
Applications of Holography to Environmental Studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

B. P. Hildebrand, Staff Engineer
Physics & Instrumentation Dept.
Battelle-Northwest

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Physics and Instrumentation Dept.
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data. In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research project is aimed at investigating the usefulness of holographic methods to determine size, shape, distribution, composition and velocity of aerosols and particles contributing to pollution. These studies include fundamental scattering theory relating to resolution, methods for generating short wavelength coherent light, study of recording materials, and methods for automatic analysis of the hologram image.

The first year of this program will be devoted to a detailed theoretical and experimental investigation into the fundamental limits of holography. We will attempt to remove all factors contributing to the deterioration of resolution including optics, recording materials and reconstruction procedures. When a satisfactory system has been developed, we will evaluate it at various wavelengths.

Although we cannot expect to resolve particles smaller than one wavelength, we can still record and image them as points to obtain distribution and density. There is no fundamental limitation on the smallness of particles that can be recorded. There is, however, the practical limit of signal-to-noise ratio; very small particles scatter very little light. We will make some rough calculations of this limit based on film noise and attempt to verify these experimentally.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		7-15-75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	A-6	A. P. Attshuller
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		EPA/RTP/CPL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
110 K Base 110 K Energy	75		4/75	12/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77ACP-A6
77ACO-A5

TITLE OF PROJECT
Sampling and Analysis of Atmospheric Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Kenneth T. Whitby, Professor, Mechanical Engineering Dept., 612/373-3049
D. Kittelson, Assistant Professor, Mechanical Engineering Department
S. Patankar, Associate Professor, Mechanical Engineering Department
B. Cantrell, Research Associate

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Minnesota
Minneapolis, Minnesota 55455

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803851

Aerosol size distributions are being measured in St. Louis as part of the RAP's program from both ground based and aircraft mobile laboratories. These measurements are being made in conjunction with a complete array of chemical, physical and meteorological measurements. In conjunction with other collaborators of the team, new models for the conversion and transport of sulfate aerosols are being developed.

Also, experiments on the generation of sulfate aerosols, SO_2, NO_x, HC, and hetrogeneous aerosols are being conducted in a laboratory smog chamber.

In addition to providing a new data base for sulfur conversion, these experiments have already provided a new understanding of the fate of sulfur in urban and power plant plumes. Also, a new trimodal model for atmospheric aerosol size distributions has been developed.

Improvements in the already developed automatic aerosols size distribution measuring system will be made. A new automatic aircraft aerosol sampler for microscopy is being developed.

Extensive efforts are also being made to develop procedures for handling large quantities of miltivariable air pollution data using a special laboratory computer system.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Mechanical Engineering		3/4/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	77ACP-A6 77ACO-A5	William Wilson 549-8411 x 2181
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
A6 Base 110K/Energy 110K A5 Base 60K/En. 25K	75	2	8/75	8/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACP-A7

TITLE OF PROJECT
Sources and Transport of Trace Metals in Urban Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. John W. Winchester, Professor & Chairman, Dept. of Oceanography, Florida State University, Tallahassee, FL 32306 904/599-4940
Dr. J. William Nelson, Associate Professor, Dept. of Physics, Florida State University, Tallahassee, FL 32306

NAME AND ADDRESS OF APPLICANT INSTITUTION

Florida State University
Tallahassee, FL 32306

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 802132

The transport of heavy metals in aerosols will be investigated in the St. Louis, Missouri area by means of sample collection on filters and in cascade impactors, chemical analysis by sensitive nuclear methods of neutron activation and x-ray fluorescence, and correlation with sample location, particle size distribution, time variation during changing meteorological condition, proximity to major sources, altitude of sampling, and the occurrence of rain and fog. The relative importance of natural terrestrial and marine sources and urban or industrial pollution sources will be compared for each element, as well as the effect of source processes on particle size distribution. The study should lead to improving our prediction capability for the distance of transport of different elements and its dependence on particle size and meteorological factors and a determination of the extent of impact of pollution sources on air quality at distances remote from the sources. Moreover, the data obtained will aid in the setting of air quality standards by better evaluation of natural vs. pollution sources and by documenting the concentrations of trace metals as a function of particle size, information which may be related to aerosol respirability and impact on human health, and which may be linked to the types of processes occurring at pollution sources.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Arts and Sciences		11/26/74

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	A7	Ronald Patterson 919-549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75	1	4/1/73	1/31/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACP-A8 & A9

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Aerosol Dynamics

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. J. R. Brock, Professor, Department of Chemical Engineering 512/471-3348

Dr. P. Middleton, Research Associate, Department of Chemical Engineering

NAME AND ADDRESS OF APPLICANT INSTITUTION

The University of Texas/Austin
Austin, Texas 78712

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803660

Objective of study is the correlation of observations of aerosol size distributions in the atmosphere and in smog chambers with the theory of aerosol dynamics through mathematical descriptions and numerical simulation of the basic growth processes of particulate matter. Currently, accurate numerical simulation has been achieved for aerosols growing by simultaneous nucleation, coagulation, and condensation. Further work on coupling these growth processes to chemical species undergoing reaction is planned.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Engineering		11/1/74

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER	
	AGENCY STAFF *(Intramural)*		Jack Durham	919-549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION	
X	RESEARCH GRANT	A8 & A9	ESRL, RTP/EPA	

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
A8-10 K A9-30 K	75	2	4/1/75	3/31/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA 77ACP-A10
77AEI-002

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Relationship of the Smog Aerosol to Pollution Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

S. K. Friedlander, Professor of Chemical Engineering and Environmental Health Engineering 213/795-6811, ext. 1392

NAME AND ADDRESS OF APPLICANT INSTITUTION

California Institute of Technology
1201 E. California Blvd, Pasadena, CA 91109

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 802160

1. Objectives

The goal of this research is to develop experimental and theoretical methods for relating the properties of the pollution aerosol to the characteristics of emission sources.

2. Approach

This will be accomplished by starting from the observed chemical and physical characteristics of the pollution aerosol and testing certain hypotheses for the atmospheric changes which occur in the size distribution and chemical composition.

3. Progress and Plans

Chief among the atmospheric changes are the growth processes resulting from gas-to-particle conversion of organic vapors, SO_2 and NO_2. By laboratory experiments with atmospheric air samples, data are being obtained on particle growth rates as a function of particle size. At the same time gas-to-particle conversion rates are being measured by chemical analysis. It is also proposed to initiate a separate set of studies on the deposition of aerosols in models of the human lung. The goal will be to estimate the rate of deposition of various chemical species present in the pollution aerosol at points of high deposition intensity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
California Institute of Tech.		1/25/74

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		William Wilson 919-549-8411 x 2181
	NEGOTIATED CONTRACT	A10	RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT	002	ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
A10 20K	75	1	4/1/73	1/31/77
002 Base 75K/Energy 40K				

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA A
77ACP-12

TITLE OF PROJECT
Field Sampling and Infrared Spectrophotometric Analysis of Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Paul Cunningham
Chemical Engineering Division, Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439 (FTS) 312-739-7711

NAME AND ADDRESS OF APPLICANT INSTITUTION
Argonne National Laboratory
Energy Research and Development Administration
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objective: Determine the concentration of neutral sulfate aerosol [$(NH_4)_2SO_4$] and acid sulfate aerosol ($NH_4HSO_4 + H_2SO_4$) at a variety of locations in and around St. Louis including sites 100 km north and 200 miles south.

(2) Approach: Collect samples with Lundgren impactor, measure infrared spectra and analyze in terms of aerosol composition.

(3) Progress: A sampling program was initiated July 15 and will continue until September 15.

(This is part of Project MISTT)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Jack Durham	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*		Jack Durham, 919-549-8411, X2181
X	NEGOTIATED CONTRACT TAG	12	RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
65 K	1975	0	6/15/75	12/15/75

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA A 77ACP-12

TITLE OF PROJECT
Atmospheric Boundary Layer Measurements

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Paul Frenzen
Atmospheric Physics Section
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439 (FTS) 312-739-7711

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Energy Research and Development Administration
Argonne National Laboratory
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objective: Parameterize the diurnal variation of the structure of the mixed layer of the lower atmosphere for use in models of pollutant dispersion over mesoscale distances (10-100 km).

(2) Approach: Obtain sequential measurements of the structure of the mixed layer. Measurement techniques will include a semi-automatic, digitized double-theodolite balloon tracking system and low-level, high-resolution radiosondes will be used to obtain precision profiles of wind and temperature through the lower 2 km of the atmosphere; two instrumented micrometeorological towers, one over a corn field, one over a soybean field; unmanned automatic meteorological recording equipment at two outlying sites. Measurements of the verticae distributions of rates of turbulent kinetic energy dissipation and rates of temperature and (possibly) moisture fluctuation degeneration will be made up to a height of 150 to 200 m.

(3) Progress: The measurement program began July 15 and will continue until August 15.

(This is part of Project MISTT)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Jack L Durham	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	A 12	Jack L. Durham, 919-549-8411, X2181
X NEGOTIATED CONTRACT IAG		RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
65 K	1975	1 (est.)	6/15/75	12/15/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACP-C

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Obtain Field Data on Background Hydrocarbons, Measure Oxidant Transport Phenomena and Measure Emissions from a Large Refinery

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. H. Westberg, Dr. R. Rasmussen, & Mr. E. Robinson
Washington State University, Engineering Research Division
Pullman, Washington 99163 (509)335-1526

NAME AND ADDRESS OF APPLICANT INSTITUTION

Washington State University
Engineering Research Division
Pullman, Washington 99163

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract 68-02-2239

The purpose of this work is to (1) determine the emissions from a large modern refinery complex, (2) determine background levels of pollutants at locations for future refineries and (3) assess the degradation in air quality by the introduction of a new refinery.

The data will be obtained by aircraft and by ground sampling sites. C_1-C_{10} hydrocarbons as well as NO_x and O_3 will be measured. Gas chromatographs will be used to measure the hydrocarbons while chemiluminescent type instruments will be employed with the O_3 and NO_x analyses.

The current plans are to look at a large refinery complex located in California.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	J J Bufe	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Joseph J. Bufalini, 919-549-8411, X2422
X	NEGOTIATED CONTRACT	C	RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$121,000	1975	0	6/75	6/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACP-C

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Analyses for Hydrocarbons and Halocarbons in the St. Louis Urban Plume

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. R. A. Rasmussen & M. Holdren
Department of Civil and Environmental Engineering
Washington State University
Pullman, Washington 99163 (509)335-1526

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Civil and Environmental Engineering
Washington State University
Pullman, Washington 99163

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objective: The hydrocarbon and halocarbon budgets of the St. Louis urban plume are not known. The hydrocarbon transport and formation/decay rates are related to aerosol production in the urban plume. The halocarbons serve as a conservative tracer, indicating the path of the plume and its dispersion. Measurements of the concentrations of these pollutants are needed aloft and at ground level as a function of distance of the urban plume from St. Louis.

(2) Approach: Washington State University will provide quantitative analysis of C_2-C_{12} hydrocarbons and F-11 through CCl_4 halocarbons of samples taken aloft and at ground level in the St. Louis urban plume. These measurements will be used to obtain the fluxes, budgets, and formation/decay rates of hydrocarbon gases.

(3) Progress: The Washington State Mobile Lab is located adjacent to the EPA Mobile Lab 100 km north of St. Louis. Sampling and analyses began July 15 and will continue through August 15.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Jack L. Durham Jr.	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	C	Jack L. Durham, 919-549-8411, X2181
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Environmental Sciences Research Laboratory EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 75 K Energy 110k	1975	1 (est.)	7/75	12/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACP-D

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT An Investigation of OH Reactions of Importance in the Perturbed Troposphere and An Investigation of Trace Gases and Particles in Oil Fired Power Plant Plumes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Douglas Davis, Chemistry Department 301/454-2616
Dr. Joseph Silverman
Dr. Gerhard Israel

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Maryland
College Park, MD 20742

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803131

TASK 1: The specific objectives of Task 1 in the second year of funding will be to determine rate constants for reaction of OH with p-xylene, m-xylene and ethyl benzene. In addition to the above rate measurements, mechanistic information will be obtained (i.e. primary and/or secondary products) on the reactions of OH with the compounds propylene, 1-butene, cis-2-butene, tetramethylethylene, benzene, toluene, xylene and ethyl benzene. The techniques to be employed in this study are (1)Flash Photolysis-Resonance Fluorescence and (2) Laser Flash Photolysis-Time Resolved Mass Spectrometry.

TASK 2: The objective of Task 2 will be to collect an extensive data base on the concentrations of the trace gases NO, NO_2, SO_2, Ozone and on particles in oil fired power plant plumes located in northeastern United States. This data will be collected via small aircraft at distances up to seventy miles when possible. Before, during and after each sampling flight, meteorological data will be collected to provide as complete a meteorological history as possible of each sampling expedition. At least two different oil fired power plants will be examined in this study.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Chem. Engineering Chemistry & Meteorology Program		4/16/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	D	Jack Durham 919-549-8411 x2181
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		ESRL, RTP -EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75	1	5/6/74	6/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA 77ACP-D

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Aircraft Monitoring Support for Regional Aerosol Characterization Studies In St. Louis Boundary Layer Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Don Blumenthal
Jerry Anderson
Warren White
Meteorology Research Inc.
464 W. Woodbury Road
Altadena, California 213-791-1901 x. 240

NAME AND ADDRESS OF APPLICANT INSTITUTION

Meteorology Research
464 W. Woodbury Road
Altadena, California

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract No: 68-02-1919

(1) Objective: Derive transformation rate of SO_2 to sulfate in power plant and urban plumes

(2) Approach: Analyze aircraft measurements of SO_2 and sulfate obtained during summer 74 intensive sampling period in St. Louis

(3) Progress: Data is being analyzed

(This is part of Project MISTT)

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William Wilson	August 14, 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	D	William Wilson 919-549-8411 x. 2181
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Environmental Sciences Research Lab/EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
85 K	1975	0	7/1/75	6/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77ACP-D-1
77ACO-C-1

TITLE OF PROJECT
Organic Chemical Characterization of Atmospheric, Automotive, and Model Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Warren E. Schwartz (P.I.)	Research Chemist	Department of Chemistry
Peter W. Jones	Staff Chemist	Department of Chemistry
David F. Miller	Research Chemist	Department of Environmental Systems
Rodger L. Foltz	Research Leader	Department of Chemistry
Robert J. Jakobsen	Staff Chemist	Department of Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle's Columbus Laboratories, 505 King Avenue, Columbus, OH 43201 614/299-3151

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 801174

The objective of the proposed program is the quantitative and qualitative characterization of the organic chemical constituents of selected atmospheric, automotive and model aerosols. Quantitative functional group analyses will be applied to determine concentrations of key organic compound types in aerosol. Qualitative analysis will be directed toward specific identification of principal organic compounds present in the various aerosols. This will be accomplished using techniques including gas chromatography, mass spectrometry, and interferometric infrared spectroscopy.

Model aerosols will be generated from selected individual hydrocarbons under conditions of atmospheric simulation. Reactions studies will include those initiated by NO_x and by SO_2.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		12/11/73

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	D-1	Ronald Patterson 919-549-8411 x 2181
NEGOTIATED CONTRACT	C-1	RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		ESRL, RTP/EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
C-Base 75K energy 110K D-Base 40 K	75	1	6/11/74	12/10/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ACQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Determination of Various Degradation and Transformation Processes for Specific Water Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

James H. Smith (Principal Investigator), Physical Sciences Division, Associate Manager, Analytical, Physical, and Inorganic Chemistry
Nestor Bohonos, Life Sciences Division, Staff Scientist
Steven L. Brown, Engineering Systems Division, Manager, Environmental Analysis Program
William R. Mabey, Physical Sciences Division, Physical Organic Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The major objective of this research program is to provide laboratory data on selected chemical pollutants that can be extrapolated to provide an assessment of the fates of these pollutants in freshwater aquatic ecosystems.

Laboratory experiments will be carried out to determine the relative rates of three general fates: biological degradation, chemical/photochemical degradation (primarily hydrolysis or oxidation), and physical transport processes (volatilization or sorbtion onto sediments). Screening studies will be designed to evaluate the relative rates of these loss processes. Detailed studies to provide better extimates of the rates and to determine the degradation products will be carried out only on the faster processes. A simple systems analysis approach will be used to integrate the laboratory data and to assess the overall fate (s) of the pollutant. The result will be a report for each pollutant studied that will contain a summary of the current literature, the experimental data, and an assessment of the environmental fate of the pollutant based on all the available data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None		

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	George L. Baughman
XX	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		U. S. EPA, Environmental Research Lab-Athens

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
478,000	75	0	6-30-75	6-29-76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACR 01

TITLE OF PROJECT MINERALOGY OF OVERBURDEN RELATED TO GROUND-WATER DEGRADATION IN STRIP MINING OF COAL

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dean A. Kloepper, Director, Energy Resources Div., CO Sch. Mines Res. Inst.
Franklin T. Davis, Director, Environ. Technology Div., CO Sch. Mines Res.
Jerome B. Krause, Senior Scientist for Mineralogy, CO Sch. Mines Res. Inst.
John S. Fryburger, Consultant, Hydrology, Engineering Enterprises,
P. O. Box E, Norman, OK 74820

NAME AND ADDRESS OF APPLICANT INSTITUTION

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
Post Office Box 112
Golden, Colorado 80401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Develop a method of predicting potential ground-water degradation in strip coal mining on the basis of the mineralogy of the overburden. The mineralogy of overburden coal samples will be determined and compared with the mineralogy of similar material that has undergone extensive chemical weathering in old spoil piles. The ground-water quantity and quality will be determined up-gradient and down-gradient from the overburden. The ground-water degradation that has resulted from leaching through the old spoils will also be determined quantitatively and qualitatively. This field-oriented cause and effect approach will help to establish the relationship between the mineralogy of overburden and potential ground-water degradation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Dean A. Kloepper	Aug. 8, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.		PROJECT OFFICER	
	AGENCY STAFF *(Intramural)*	131-1	133-3	Bob D. Newport	405/332-8800
	NEGOTIATED CONTRACT	131-2	331-2		405/253-2210 (FTS)
X	RESEARCH GRANT	131-3	333-3	RESPONSIBLE ORGANIZATION: Robt. S. Kerr Environ. Res. Laboratory Subsurface Environmental Branch/ EPA	

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Energy 325K 131-3 En.50K	75	Five (5)	Sept. 1975	Sept. 1976

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ACT - 01

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Oil Spills: Effect on Arctic Lake Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Robert J. Barsdate
Institute of Marine Science 907-479-7707
University of Alaska
Fairbanks, Alaska 99101

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Alaska
Box 95102
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this project is to assess the effects of crude oil on high latitude aquatic environments with emphasis on the effects of oil on arctic lakes. The principal effort will be an experimental spill on a large lake with observation of the impact and recovery of various trophic levels from bacteria through fish. A pre-spill baseline study will be conducted on the lake and laboratory experiments will be carried out on specific organisms and certain processes as part of the project.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Dr. Ronald Gordon 907-479-7232
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
X	RESEARCH GRANT		Arctic Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
150 K	1975	3 Yrs.	June, 1975	June, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-[illegible] 126 H MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA 77 ACT - 02

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Crude Oil Movement on Permafrost Terrain

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Terry McFadden
U.S. Army Cold Regions Research and Engineering
Alaska Projects Office
Ft. Wainwright, Alaska

NAME AND ADDRESS OF APPLICANT INSTITUTION

U. S. Army
Cold Regions Research and Engineering Laboratory
Honover, New Hampshire 03755

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to evaluate the rate and extent of oil movement in and over the soil active layer, and to determine transport pathways, fate of pollutants, and degradation by-products, following a spill of hot crude oil on a permafrost underlain slope. The approach will be on a plot-study basis in the interior of Alaska and will consist of two spills (summer and winter) of about 50 bbls. each.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	02	Dr. Frederick Lotspeich 907-479-7230
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA Arctic Environmental Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	1975	3 Yrs.	June, 1975	June, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND : 127 ‹Y NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ACT - 03

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Analytical and Experimental Investigation of Oil Movement Due to a Current Under a Uniformly Thick Ice Cover

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Paul C. Deslauriens
Arctec, Inc. 301-730-1030
9104 Red Branch Road
Columbia, Maryland 21045

NAME AND ADDRESS OF APPLICANT INSTITUTION

Arctec, Incorporated
9104 Red Branch Road
Columbia, Maryland 21045

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to develop a full-scale prediction model of the behavior of oil under an ice cover in the presence of flowing water. A series of model tests will be performed in a refrigerated laboratory (Ice Flume). A number of different ice configurations, water velocities, types of oil, and water conditions will be tested. The results will be expanded to provide a full-scale prediction model of oil transport under ice.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Merrett A. Mitchell 907-479-7728
X	NEGOTIATED CONTRACT	03	RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Arctic Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	1975	0	June, 1975	Dec., 1975

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACT - 04

TITLE OF PROJECT
Assessment of the Effects of Bottom Disturbance on the Environment of a Clear Subarctic Stream

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. James E. Morrow
Department of Biological Sciences 907-479-7542
University of Alaska
Fairbanks, Alaska 99701

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Alaska
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The principal objective is to determine what happens to the stream environment when the bottom is disturbed by construction activities such as gravel mining and pipeline excavation associated with the Trans-Alaska Pipeline. Changes occurring in water chemistry, bottom gravels, fish populations, benthic inyertebrates, organic drift, and primary productivity will be determined by stream studies before and after a disturbance.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	Mr. Eldor Schallock 907-479-7679
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
X	RESEARCH GRANT		Arctic Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	1975	3 Yrs.	June, 1975	June, 1978

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EF
1 77 ACZ

TITLE OF PROJECT

"Chlorinated Compounds in Coastal Power Plant Cooling Waters."

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David Jenkins, Principal Investigator, Div. of Hydraulics & Sanitary Eng.
Dr. Jerome F. Thomas, Co-Principal Investigator, Div. of Hydraulics & Sanitary Eng.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of California
Berkeley, CA 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This one-year project is intended to determine the persistence of compounds formed by chlorination of power plant effluents upon mixing in sea water. Primary emphasis will be on power plants in the San Francisco area using high doses of chlorine for anti-fouling purposes. Primary attention will be given to free residual chlorine and combined residual chlorine, as these are the parameters used in specifying water quality criteria. If it can be determined that persistence of these materials is of a short duration and not directly related to water quality management problems, then attention will be directed to, possibly, hydrocarbon materials which heretofore have not been identified as a particularly serious problem in power plant discharges. However, it is known that these compounds can be particularly undesirable in the marine ecosystem, and an attempt will be made to determine their persistence in sea water.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	D. J. Baumgartner
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		Corvallis Environmental Research Lab

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50K	75	0	8/30/75	8/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE [illegible] WHICH MAY NOT BE USED.

INTERIM 803856

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACZ-03

TITLE OF PROJECT
Effects of Thermal Additions on the Dynamics of Fouling Communities at Beaufort, N.C.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John P. Sutherland, Assistant Professor, Zoology
William W. Kirby-Smith, Research Scientist, Duke University Marine Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION

Duke University
Durham, North Carolina 27706

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Funds are requested for the construction of a laboratory system which will provide running seawater at ambient temperature and at 2°C, 4°C, and 8°C above ambient. Fouling development and changes in fouling community structure will be followed at each temperature for several years on clay tile plates (232 cm^2) submerged in October 1975 and April 1976. Larval recruitment at each temperature will also be monitored. Parallel experiments will be conducted simultaneously on plates submerged under the Duke Marine Lab dock. Data will be used to determine the effect of heated effluents on community structure and function.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Duke University		

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	03	Dr. Don Miller 401/789-1071 Ext. 225
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		National Marine Water Quality Laboratory Narragansett, Rhode Island EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Grant-65K Total=100K	75	2	Est. 9/75	9/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACZ 4

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Isolation & Study of Chloro-organics Resulting from Chlorination of Seawater

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. James H. Carpenter (305) 350-7393
University of Miami
4600 Rickenbacker Causeway
Miami, Florida 33149

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Miami
4600 Rickenbacker Causeway
Miami, Florida 33149

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The grant seeks to identify the chlorine-containing organic compounds that are formed when chlorine is added to seawater. Initial emphasis would be on reaction conditions that occur during power plant operations; i.e., up to 2 hours at temperatures up to 38C with and without sunlight. Chlorine-36 would be used so that reaction products could be assayed with liquid scintillation counting. Total organic chlorine compounds yield would be measured. The reaction products would be fractionated, using selective solubility and thin layer chromatography. The fractions would be bioassayed with Acartia tonsa and the most toxic fractions taken for initial work. Characterization would be primarily with gas chromatographic-mass spectral techniques and additional characterization would be based on UV and IR spectra with NMR for special cases.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	/s/ James H. Carpenter Dr. James H. Carpenter	August 5, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	4	Dr. William P. Davis
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
XXX RESEARCH GRANT		Gulf Breeze Environmental Research Lab. Bears Bluff Field Station / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
160 K	1975	3 years	June 1975	June 1978

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACZ-05

TITLE OF PROJECT Field Investigation of Chlorinated and Brominated Organic Compounds Formed in Saline Power Plant Cooling Waters

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. George R. Helz
Box 106, Chemistry Building
University of Maryland
College Park, Maryland 20742 (301) 454-4620

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Maryland
Chemistry Department
College Park, Maryland 20742

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Amounts of chlorine presently used in the drainage basin of Chesapeake Bay, and probably also some other large estuaries, could be large enough to sterilize the Bay if this chlorine were not degraded. A review of degradation processes reveals that perhaps 1% of the total chlorine may be converted to halogenated organic compounds, and it is suggested that some of these may be long-lived and susceptible to biomagnification. Arguments are given to indicate that organic compounds produced by chlorination of estuarine and marine waters may differ fundamentally from those produced by chlorination of river water and sewage in that bromine derivatives may predominate over chlorine derivatives in the marine waters.

A research grant is proposed to test these ideas in the field near a power plant which employs 4-15% estuarine water for cooling, and chlorinates this to control fouling. The site is free of other nearby anthropogenic sources. The objectives of the project will be:

1. Identify and quantify the halogenated organic compounds produced by the plant.

2. Determine chemical factors controlling yields of the various compounds by studying the cooling waters under a variety of conditions.

The project will provide an evaluation of the magnitude of this problem and may provide some indications of how the problem can be minimized by regulation of chlorinating procedures and cooling water quality.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	/s/ George R. Helz Dr. George R. Helz	August 5, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5 A	Dr. William P. Davis
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
XX	RESEARCH GRANT		Gulf Breeze Environmental Research Lab. Bears Bluff Field Station EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
44 K	1975	2 years	6 - 1 - 75	6 - 30 - 77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACZ-05

TITLE OF PROJECT

Sublethal Effects of Chlorine on Marine Vascular Plants and Decapod Crustaceans

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. William J. Hargis, Jr. (804) 642-2111 Ex. 129
Director, Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

NAME AND ADDRESS OF APPLICANT INSTITUTION

Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To determine the effects of chlorine (and its derivatives) on marine vascular plants and decapod crustaceans when exposed for extended periods during the life cycle; to determine germination rates for seeds of the marine vascular plants, Spartina laterniflora and Zostera marina, after exposure to chlorine; to determine growth and survival rates of seedlings of Spartina and Zostera when exposed to chlorine doses; to determine the hatchability of decapod crustacean eggs (Neopanope sayi, Palaemonetes pugio, and Pagurus longicarpus) following exposure to various chlorine doses; to examine the effect of chlorine doses on larval development of decapod crustaceans (Neopanope, Palaemonetes, and Pagurus) including survival to juvenile, intermolt duration, and avoidance response and to define the relationship between gross life history and behavioral parameters; to determine the effect of chlorine exposure on growth rate, long-term survival, and several parameters of reproductive biology for Neopanope, Palaemonetes, and Pagurus, and at least growth and survival of Callinectes sapidus juveniles; to determine the capability of decapod crustaceans to avoid water containing chlorine with special attention to minimum effective levels, and to relate these data to data regarding growth, survival, and reproduction; to examine changes in blood chemistry in Callinectes sapidus (and, if possible, other decapod crustaceans) as a function of exposure to chlorine, and to relate these changes to other responses of this species.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	/s/ William J. Hargis, Jr. Dr. William J. Hargis, Jr.	August 5, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5b	Dr. William P. Davis
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
XXX	RESEARCH GRANT		Gulf Breeze Environmental Research Lab. Bears Bluff Field Station / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
71K	1975	2 years	June 1975	June 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Interim UCSD-0296 804215

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACZ-05

TITLE OF PROJECT
National Marine Pollution Monitoring Program

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Edward D. Goldberg, SS# 548-18-011, Professor of Chemistry
Geologic Research Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
The Regents of the University of California
University of California, San Diego
P.O. Box 109, La Jolla, California 92037

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A surveillance of four collectives of pollutants in U.S. coastal waters will be sought through their concentrations in two sentinel organisms -- mussels and barnacles. The pollutant species include heavy metals (lead, cadmium, mercury, selenium, zinc, silver and copper), chlorinated hydrocarbons (DDT residues, polychlorinated biphenyls, hexachlorbenzene, dieldrin, endrin, heptachlor, benzene hexachloride, cis and trans chlordane and the insecticidal derivatives oxychlordane and heptachlor epoxide); artificial radionuclides (plutonium 238, plutonium 239+240, americium-241 and cesium-137); and petroleum hydrocarbons (to include measures of the concentrations of alkanes, cycloalkanes and aromatics, including 2, 3, 4 and 5 ring polynuclear condensed species).

The program will include sites off the east, west and Gulf coasts of the U. S. as well as off Alaska, Guam and Samoa. One hundred samples will be taken during the first year of the project and analyzed in 8 laboratories, two for each set of pollutants.

The goals of the program will be the assessment of the U. S. coastal waters for the support of marine resources such as food from the sea, the vitality of communities of marine organisms and the continued use of non-living resources such as beaches and harbors and the prediction of future exposure levels of pollutants based upon the best existing information and models.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Scripps Institution of Oceanography		

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	05	Dr. Eric D. Schneider, 401/789-1071 Ext. 200
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		National Marine Water Quality Laboratory Narragansett, Rhode Island / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
380 K	75	0	Est. 10/75	10/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EHB 540-77 ADA

TITLE OF PROJECT
Airborne Monitoring Study: Hyperbolic Cooling Tower Effluents & Interactions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Paul Massicot
Chalk Point Cooling Tower Project
Power Plant Siting Program

NAME AND ADDRESS OF APPLICANT INSTITUTION

Maryland Bureau of Air Quality Control
O'Conor Building, 201 W Preston St.
Baltimore, MD 21201

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The project is basically an airborne monitoring project. Aircraft will be used to provide information to satisfy three main objectives:
1. Characterization of the heat and water vapor emitted from a natural draft cooling tower, Data will be collected on water vapor, temperature, drift, and plume geometry.
2. Evaluation of the interaction between the cooling tower plume and the plumes from three adjacent fossil fueled power plant stacks. Special emphasis will be placed on the formation and fate of acid droplets.
3. Evaluation of turbulence, icing potential, and visibility impairment as related to aircraft safety.
The study will be performed at Potomac Electric Power Company's Chalk Point Power Plant

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	01	B. A. Tichenor
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		EPA Corvallis Environmental Research Lab

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y	STARTING DATE	ESTIMATED COMPLETION DATE
125 K	75	0 136	9/1/75	8/31/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EHA 540, 77 ADD

TITLE OF PROJECT
Modeling of Plumes from Multiple Cooling Towers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Robert C.Y. Koh & Dr. Norman H. Brooks
Engineering and Applied Science
W. M. Keck Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION

California Institute of Technology
1201 E. California Blvd
Pasadena, CA 91125

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1)Objective - The development of a mathematical model for the prediction of plume behavior from multiple cell mechanical draft cooling towers.

2)Approach - Integral analytical methods will be used with mass, momentum, and buoyancy fluxes as the physical dependent variables. The effect of wind, atmospheric stratification, and tower structure will be incorporated into the model. The model will be useful not only in assessing the environmental impact but also in determining the proper orientation spacing, and configuration in the design of mechanical draft cooling towers.

3)Progress - The grant is awaiting carry over funds.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Engineering		

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	01	M. A. Shirazi EPA
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		Corvallis Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75	0	9/1/75	8/31/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-CA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

The Investigation of Oil Persistence in Tundra and its Impact on the Belowground Arctic Ecosystem

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Orson K. Miller, Jr. Biology, VPI &SU, Prof. of Botany 1/4
Dr. Ronald M. Atlas Biology, U. of Louisville, Asst. Prof. of Biology 1/4
Dr. Kaye R. Everett Agronomy, Ohio S.U., Assoc, Prof. of Biology 1/4
Dr. Arthur E. Linkins Biology, VPI&SU, Asst. Prof. of Biology 1/4
Dr. David A. Stetler Biology, VPI & SU, Asst. Prof. of Biology 1/4
Dr. Gary A. Laursen Biology, VPI & SU , Post Doctoral Fellow 3/4

Applicant Institution: Department of Biology/Virginia Polytechnic Institute and State University/Blacksburg, VA 24061

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Widely scattered studies have been initiated by other investigators to determine the influences of various perturbations on tundra soil and vegetation. However, little attention has been directed toward the effects of oil perturbation on: The microorganisms in the soil; the large root biomass below ground; the rate of oil degradation in soil; and the soil complexes as altered environments which result as oil and soil mix.

The objectives of the study are:

1. To continue sampling already existing oil treated plots at Barros, Alaska to detect long term effects of oil perturbations.
2. To initiate new oil treatment plots in several locations.
3. To isolate and culture species of bacteria and fungi from treatment areas to discern species diversity with time.
4. To determine current microbial population levels and recolonization rates.
5. To examine physical change in edaphic characters relative to morphology, recovery, oil fractionation, soil-water relationships and causitive factors which bring about oil degradation.
6. To determine effects of oil perturbation on microbial respiration, metabolism, and on plant root growth.

Dr. R.M. Atlas will examine: The fractionation of oil in the soil as fractions result from evaporation, antioxidation and biodegradation; and the changes in species diversity and biomass of bacteria and yeasts.

Dr. K.E. Everett will address himself to examining the physical changes which will occur in the structure of the soil, the causitive effects, and how soil-water relationships are effected. Dr. D.A. Stetler will examine higher plant roots for changes in growth,

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	D. Orson K. Miller Jr.	

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	I.L. Brisbin
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		4/76	4/78

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metabolism and ultrastructure.

Dr. O.K. Miller will coordinate the activities of all as well as: Examine the changes in species diversity and biomass of soil fungi; and determine the effects of oil perturbations on the decomposition rates of litter.

Dr. A.E. Linkins will direct himself to the questions of respiration and metabolism of free filamentous and mycorrhizal fungi.

Dr. G. A. Laursen will assist in the coordinations of field activities and be responsible for data collection and reduction.

RESULTS TO DATE:

On several treated plots:

1. Initial studies of belowground fungal standing crop biomass.
2. Soil bulk densities.
3. Soil moisture percents.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CC(77BCC)

TITLE OF PROJECT
Development of Biological Indices for Identifying & Evaluating Impacts of Pollutants on Freshwater Ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John Cairns, Jr., Univ. Prof. of Zoology, Biology Dept., V.P.I. & S.U.
Ernest Benfield, Ass't Prof. of Zoology, Biology Dept., V.P.I. + S.U.
Arthur L. Buikema, Assoc. Prof. of Zoology, Biology Dept., V.P.I. & S.U.
Kenneth L. Dickson, Assoc. Prof. of Zoology, Biology Dept., V.P.I. & S.U.
Albert C. Hendricks, Ass't Prof., Center for Environmental Studies

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology and Center for Environmental Studies
1020 Derring Hall
Virginia Polytechnic Institute and State University, Blacksburg, VA 24061

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Structural responses of aquatic communities to pollutional stresses have historically been the principal methods by which biological assessment of environmental perturbations have been evaluated. While community structure responses are often of value, they do not give the investigator sufficient information to understand the impact of stresses on community dynamics, e.g., energetics and nutrient cycling.

The primary objective of this work is to examine a number of major functional processes common to most aquatic communities in terms of developing and evaluating techniques for measurement of those processes and determining their suitability for pollutional stress assessment. A secondary objective of the work will be an attempt to relate data generated by examining functional aspects of communities with standard community structure measurements.

The general areas to be examined in the project include the following: 1/carbon, nitrogen and sulfur cycling in autotrophic and heterotrophic communities; 2/relationship of protozoan invasion and extinction rates to the eutrophication process; 3/behavioral responses of zooplankton subjected to cooling water entrainment; and 4/process of detritus utilization by macroinvertebrates.

Project started June 1, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John Cairns Jr.	

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	David Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		6/75	8/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CC

TITLE OF PROJECT
"Stability Indicators for Freshwater Ecosystems"

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John Harte, Research Scientist
Donald Levy, Research Scientist
Lawrence Berkeley Laboratory
Berkeley, CA 94720 (415) 843-2740

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Berkeley Laboratory
University of California, Berkeley, California

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will initiate and carry out primarily experimental work which relates to stability properties of freshwater ecosystems. It is part of a research program on ecosystem dynamics and stability properties at LBL whose long range goals are: first, to determine what kinds of perturbations can most dramatically disrupt ecosystems, and secondly, to determine what combinations of ecosystem parameters are reliable indicators capable of predicting whether an ecosystem will collapse or significantly change when perturbed.

Our previous theoretical work suggests that understanding the detritus-decomposer link in nutrient cycles is a key to understanding an ecosystem's stability properties. To further pursue this work:

(1) We will set up several aquaria with a limited number of organisms in them. These aquaria would not be completely closed systems, but would have an inflow and outflow of water, varying levels of nutrient supplement and aeration, and some filtering.

(2) We will do taxonomic and mass determinations of the organisms, inorganic nutrients, and organic litter in our systems.

(3) After we gain some competence with culturing and monitoring our systems, we want to begin work on developing techniques for measuring in-situ decomposer properties.

(4) Once we are familiar with our systems, we will moderately perturb them by a thermal, pH, or toxic substance stress and observe how they recoil. We will attempt to correlate observed stability properties with measured values of the stability indicators suggested by our theoretical work.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Energy & Environment Division	Donald Levy	7/17/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	3	D. Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	1975		6/27/75	6/27/76

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CA

TITLE OF PROJECT
Effects of Road Construction Upon Lakes on the Alaskan North Slope

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Vera Alexander, Prof. of Marine Science, U. of Alaska 1/12 yr.
Dr. Robert J. Barsdate, Prof. of Marine Science, U. of Alaska 1/12 yr.
Dr. John Hobbie, Prof. Dept. of Biological Sciences, N.C. State Univ.
Dr. Michael Miller, Ass't. Prof. Biol. Sci., U. of Cinn. 1/12 yr.
Dr. John M. Miller, Ass't Prof., N.C. State Univ. 3/12 yr
Dr. Samuel Mozelly Ass't Prof., University of Michigan 1/12 yr
Dr. W. John O'Brien, Ass't Prof., University of Kansas, 1/12 yr

Applicant Institution: Institute Marine Science, U. of Alaska, Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The research plan involves study of those aspects of arctic limnology which are likely to be affected by road construction. These include the various effects of increased turbidity, such a reduction of phytoplankton and benthic productivity, reduction in food quality assimilated by filter-feeding zooplankton, impairment of the ability of visual feeding fish to find and capture zooplankton, changes in zooplankton and phytoplankton population structure, effects of microbial populations, effects on littoral macrophyte populations and effects of benthic invertebrate populations. Physical effects may include the composition of seston, alteration in runoff and water turnover, changes in light penetration. In addition, the effects on chemical composition and cycles will be studied, as well as the effects on thermal regimens and overall geochemical budget. This program will be carried out in close coordination with the NSF-funded RATE project which is aimed at studying the basic limnology of arctic waters from an ecosystem approach.

This is a new project, and there are no results to date.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Vera Alexander	7/17/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Clayton M. White
X	NEGOTIATED CONTRACT	3	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
61 K	75		7/75	4/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CA

TITLE OF PROJECT
Suspended Sediments &Related Limnology of an Alpine Lake System. Baseline study for sediment impact.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Vera Alexander, Principal Investigator, Prof. of Marine Science, U.ofA. 1/12
Dr. Robert J. Barsdate, Prof. of Marine Science, U. of Alaska, Fairbanks, 1/12 yr
Dr. Warren W. Denner, Assoc. Prof of Marine Science & Dir. Naval Arctic Research Lab., Barrow, AL 1/12 yr
Mr. Jack Mellor, Exec. Officer, Naval Arctic Res. Lab, Barrow, AL 1/12

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dr. Vera Alexander
Institute of Marine Science
University of Alaska
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The work to be carried out has the central aim of providing information needed to assess sediment impact on freshwater ecosystems in the Arctic. We propose to study sediment distribution and related limnological parameters in Lakes Peters and Schrader, using these lakes as laboratory to evaluate the potential of aerial photography in rapidly determining sediment load at the same time as evaluating the role of the variable sediment load distribution within the lake system. If the aerial methodology is successful, we will survey additional lakes in future years to assess the impact of road construction on arctic lake systems. Limnological parameters to be included in the study r are sediment load, transmissivity, water temperature profiles, light penetration, dissolved oxygen, nutrients, trace metals, pH, alkalinity, plant pigment distribution and primary productivity.

This is a new project and no results are available to date. The initial field trip is scheduled for July 28-August 8.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Vera Alexander	7/1/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3.2	Clayton M. White
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
61 K	75		4/76	4/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E-681-CC

TITLE OF PROJECT The Immediate Effects of Effluents from Coal Utilization on the Behavior and Physiology of Freshwater Biota

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. G. Wolf, Research Scientist
D. H. Fickeisen, Scientist
M. J. Schneider, Section Manager

NAME AND ADDRESS OF APPLICANT INSTITUTION

BATTELLE, PACIFIC NORTHWEST LABORATORY
Ecosystems Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research program is designed to provide data for establishing water quality criteria for the protection of freshwater resources and ecosystems and evaluate ways to minimize the effects of pollutants arising from coal utilization. The proposed program will concentrate on the immediate effects on aquatic organisms of thermal and chemical effluents reaching freshwater systems via releases to the atmosphere, surface waters and ground waters due to fossil fuel combustion and utilization. Specifically, this task will demonstrate the immediate effects of effluents from the new technologies, gasification and liquefaction on the behavior and physiology of selected ecologically and economically important freshwater organisms. These shall include such toxicants as heavy metals released through gasification and the mixed effluents arising from liquefaction characterized by such toxicants as phenols.

Selected organisms from various trophic levels of the freshwater ecosystems will be studied, using proven methods for behavioral and physiological research. Behavioral studies employing such parameters as cough and avoidance-attraction responses and predator-prey interactions will be conducted utilizing artificial stream channels and laboratory tanks as observation chambers and closed circuit television and polygraph instrumentation for recording observations and electrographic information. Behavioral responses have been well documented as means by which the effects of low level pollution can be monitored. Physiological parameters proposed for study include respirometry, osmolarity, blood chemistry (specifically blood glucose and lactic acid), mucous precipitation and gill erosion. These tissues are intimate with the physical environment of aquatic organisms and the tissue reactions reflect pollutant toxicity within short periods of time after the initial insult.

Additionally, effects on critically sensitive transitional stages of life histories (e.g., ecdysis of crustaceans, buttoning up of fish) of selected organisms will be studied as indices of physio-ecological stress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	E. G. Wolf	11/6/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	4	David Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomedical and Environmental Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
175 K	75		7/75	3/80

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCC/EPA-IAG-D5-E681-CC

TITLE OF PROJECT
The Contamination of Groundwater by Heavy Metals from the Land Disposal of Fly Ash

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Thomas L. Theis, Principal Investigator, Assistant Professor of Civil Engineering (S.S. 306-54-2709) 0.16 Man Years
Dr. Jerry J. Marley, Co-principal Investigator, Associate Professor of Civil Engineering 0.16 Man-Years

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Civil Engineering
University of Notre Dame
Notre Dame, IN

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Currently, the United States produces approximately 22 million tons of fly ash annually, this quantity is expected to approach 100 million tons by the year 2000. Common disposal practice for this material involves contact with the ground--either by landfilling or ponding--and possible contamination of sub-surface (and perhaps surface) water supplies by leachate products. Of particular concern are the heavy metal contents of many fly ashes which often reach several times natural crustal abundances. Research has demonstrated that arsenic, cadmium, and mercury levels in fly ash consistently exceed 5 times crustal abundance (sometimes reaching as high as 100 times) and many other metals, notably copper, zinc, lead, and chromium are often found at high levels.

SUMMARY OF PROPOSED RESEARCH:

The objectives of the proposed research are to measure and evaluate the impact of heavy metal leachates from fly ash disposal on aquatic resources. Important considerations are the extent to which and the form (chemical) in which the metals leave the fly ash. A further objective is to determine relative distances the metals travel in different soil environments.

Data which is gathered will be of use in the evaluation of various pollution control measures to reduce or control jthe level of leachates which reach the aqueous environment. Specifically, a three part approach to the investigation is proposed. First a series of laboratory soil column experiments will be performed in which fly ash is used as the source of heavy metals. Metal concentrations and other selected parameters will be monitored with distance. Secondly, monitoring wells will be placed

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5	Jackson Blanton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Bio.&Environ.Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250 K	75		12/76	6/89

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near existing fly ash disposal sites. In addition to the comparative values with the laboratory experiments, the type of data gathered in this phase of the investigation should be of immediate use to local and state health agencies regarding the proper location of wells for domestic and industrial usage. Thirdly, the data gathered in stages one and two will be analyzed and used to evaluate an already existing mathematical model to describe attenuation of trace metals in sub-surface aqueous environments. Such a model should be of use to design engineers faced with the sighting and design of coal burning facilities and their associated fly ash disposal sites.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-D5-E-E681-CC

TITLE OF PROJECT Preliminary Assessment of Effects of Gaseous Effluent Mixtures from Coal Conversion Technology on Terrestrial Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. W. Gehrs (PI, 615 - 483-8611, X 3-6617)
S. B. McLaughlin, Jr. (X 3-6268)
D. S. Shriner (X 3-6268)
Environmental Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Environmental Sciences Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objective of this research effort is to provide dose-response data which will permit rapid assessment of the potential dangers to vegetation resulting from release of gaseous coal conversion effluents to the atmosphere. This information will be provided by conducting fumigation experiments in the laboratory initially using a single species, kidney bean (Phaseolus vulgaris), which will be exposed to a pollutant mix collected from the effluent stream of ORNL's coal conversion pilot plant. Specific objectives of the research effort are four-fold: 1) to develop a controlled system for exposure of plants to the potentially hazardous gaseous effluents of coal liquefaction; the complexity of the effluent mixture makes achievement of this objective a crucial first step. This phase of the work is on schedule. 2) to obtain, through close cooperation with Analytical Chemistry and Chemical Technology Divisions, the best practicable chemical characterization of the effluent mix collected and used in our effects studies. This phase of the work is on schedule. Should results warrant more detailed investigations, research will focus on identifying potentially phytotoxic subfractions of the total effluent mix. 3) to identify the potential of bulk effluents from a coal liquefaction facility for causing acute injury to vegetation using Phaseolus vulgaris as a test organism, to assess the resultant effects on primary productivity, and to define the limits of tolerance for those adverse effects measured. 4) to identify the potential for chronic effects of long-term low-level exposure of vegetation to persistant effluent components and reaction products; to determine thresholds for sub-acute effects on productivity. Subsequent experiments will attempt to elucidate the relative toxicities of the principal component gases and the potential long-range dangers associated with chronic exposures to the complete effluent mixture.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Carl W Gehrs	9/25/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	6.3	David Ballantine
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75		6/75	12/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-D5-E681-CC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Transport and Effects of Organic Trace Contaminants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Carl W. Gehrs, Project Supervisor, Environmental Sciences Division
(615-483-8611, ext. 3-6618)
Dr. Stephen E. Herbes, Research Associate, Environmental Sciences Division
(615-483-8611, ext. 3-6618)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: Determination of acute toxicities of coal liquefaction effluents and effluent fractions, and preliminary elucidation of bioaccumulation potential of polycyclic aromatic hydrocarbons (PAH) by aquatic organisms. Initial goal is data accumulation to enable assessment of long-term research priorities in environmental transport and effects of coal liquefaction wastewater effluents.

Approach: Daphnia magna (an aquatic zooplankter) and Carassius auratus (goldfish) will be incubated with coal liquefaction wastewater samples in static bioassays; LC_{50} dilution factors will be utilized as toxicity indices. Effluent fractions obtained by solvent extraction and specific compounds identified in effluents will be tested for determination of components contributing significantly to effluent toxicity. Simultaneously, a ^{14}C-labelled model PAH compound will be incubated with Daphnia magna cultures; uptake and bioaccumulation will be determined by liquid scintillation counting.

Current Progress: Initial data has been obtained confirming high toxicity of several effluent components to Daphnia magna. Preliminary work with ^{14}C-anthracene, a model PAH compound, has indicated rapid uptake and bioaccumulative potential within several aquatic invertebrates.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Carl W Gehrs	9/26/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	6.4	David Ballantine
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75			9/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-D5-E681-CC

TITLE OF PROJECT Biogeochemical Cycling of Trace Elements Derived from Coal Liquefaction Processes in Aquatic Ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. W. Gehrs, Project Supervisor, Environmental Sciences Division (615-483-8611, x 3-6617)
B. G. Blaylock, Research Staff, Environmental Sciences Division (615-483-8611, x 3-6651)
H. G. Hildebrand, Research Associate, Environmental Sciences Division (615-483-8611, x 3-1410)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall object of this research task is to quantify the biogeochemical cycling of select trace elements potentially released to aquatic ecosystems by coal conversion technology. The initial objective is to identify through a review of available literature a set of trace elements present in coal conversion effluents that are potentially toxic to aquatic biota or cycled through aquatic food webs to the point where consumption of aquatic resources may pose a threat to human health. To complement the literature effort, microcosm experiments will be initiated where actual coal conversion aqueous effluents will be added to microcosms and the accumulation and distribution of select trace elements monitored in water, sediments, macrophytes, invertebrates and fish. This microcosm research effort should identify which trace elements in process effluents are available for accumulation by aquatic biota and suggest more detailed research on uptake kinetics, biological turnover, and factors affecting distribution and accumulation in aquatic systems. Aqueous effluents from existing coal conversion pilot plants will be analyzed for trace element composition and concentration. Trace elements identified will provide the focus of the literature review. For elements where substantial information is available a preliminary assessment of potential adverse impacts of aqueous releases will be made. Elements will be identified for which little information is available or where significant gaps exist in our understanding of environmental behavior, distribution or toxicity. Aquatic microcosms will be established with appropriate controls, and single spike of actual aqueous effluents from at least two conversion processes will be added to replicated microcosms. The system components will be analyzed for trace elements and compared with initial and control concentrations to determine distribution and bioaccumulation.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Carl W Gehrs	9/26/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)		David Ballantine
NEGOTIATED CONTRACT	6.9	RESPONSIBLE ORGANIZATION
RESEARCH GRANT	6.10	ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75			6/76, 12/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCC

TITLE OF PROJECT ECOLOGICAL FATE AND EFFECTS OF TRACE CONTAMINANTS FROM COAL COMBUSTION AND PROCESSING

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

L. J. Johnson, Group Leader, Environmental Studies Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Environmental Studies Group (MS490), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are to (1) formulate a long-term policy of rehabilitation of strip-mine tailings; (2) define meteorological influence on the source of airborne contaminants from coal-fired power plants; (3) assess the effects of localized and widespread deposition of contaminants upon the ecosystems of the "air shed" surrounding the Four Corners region; and (4) integrate several disciplines in a systems approach to a sensitive environment in such a way as to mitigate the extraction, utilization, and export of resources from a region that holds abiding interest for the Los Alamos Scientific Laboratory and the people of the region. Long-term considerations are necessary, particularly from the standpoint of rehabilitating the extensive area to be strip-mined and impacted by atmospheric transport of materials, the sensitive nature of the ecosystems and agricultural lands involved, and the appreciable demands upon the water resources in an area of 20-cm annual precipitation. These constraints upon management policies will foreclose many options and require careful selection of priorities in resource management. The results of this research will provide a meaningful basis for integrating the management of several resources (i.e., water, air, soil, agriculture, wildlife, and recreation facilities) in addition to the coal that is often viewed as the sole resource of the region.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	LaMar J. Johnson	9-17-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	7	David Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		7/76	7/80

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E-681-CC

TITLE OF PROJECT
Trace elements from a coal-burning power plant: relationships to a desert environment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Frederick B. Turner, Research Biologist (213) 825-8773
Arthur Wallace, Research Plant Physiologist (213) 825-8739
Wade Berry, Specialist (213) 825-8774
Carl Strojan, Postgraduate Research Ecologist
(all above are members of Environmental Biology Division)

NAME AND ADDRESS OF APPLICANT INSTITUTION
Laboratory of Nuclear Medicine and Radiation Biology
University of California
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are to 1) determine present amounts of trace elements in various compartments of the desert environment surrounding Southern California Edison's Mohave Generating Station in southern Nevada, 2) to determine the mass balance of trace elements in this environment, including inputs from the generating station, 3) to estimate transfer rates between environmental compartments and how such rates are influenced by physicochemical and biological factors, and 4) to develop a model expressing the above relationships and capable of yielding long-term (30-35 year) predictions of trace element concentrations in the desert system. Trace elements of particular interest are cadmium, zinc, lead, nickel, boron, copper and arsenic. Amounts of elements in plant and animal tissues will be determined by emission spectroscopy and atomic absorption. Total inventories will be estimated from standing crops of plants (based on dimension analysis) and population estimates of important consumers. Trace elements in various soil horizons will be determined by atomic absorption. The most important processes influencing movements of trace elements in a desert ecosystem are considered to be 1) surface redistribution by wind and water, 2) leaching, 3) root uptake and translocations, 4) consumption of leaves and soil, and 5) decay. Tracer experiments will be used to evaluate some of these rates.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Frederick B Turner	September 15, 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	8	David Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
130 K	75		7/76	7/79

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA-IAG-D5-E681-CC

TITLE OF PROJECT
Potential of Energy Extraction and Conversion Processes in the Northern Great Plains

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: James J. O'Toole, Ph.D., Ames Laboratory, Iowa State University Ames, Iowa 50011; Co-Principal Investigator: Clarence C. Gordon, Ph.D., Botany Department, University of Montana, Missoula, Montana 59801; Investigator: Frank Munshower, Ph.D., Department of Range & Animal Science, Montana State University, Bozeman, Montana 59715; Richard W. Perkins, Investigator, Radiological Sciences Department, Battelle Northwest Laboratory, Richland, WA 99352

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ames Laboratory, ERDA
Iowa State University
Ames, Iowa 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this study are to evaluate the characteristics and impact of effluents from the initial Colstrip generating unit. Preoperational levels of a wide spectrum of trace elements and gases will be determined in the atmosphere and environment. In the post-operational period we will determine the chemical and physical properties of pollutants in the effluent, the changes in chemical composition during atmospheric transport, and the accumulation of pollutants in soils and vegetation at locations selected from present air models. Major emphasis will be placed on the measurement of pollutants listed as high priority by the EPA: Hg, As, Sb, Se, Zn, Ni, Cu, Pb, Cd, U, Sn and Cr, together with F and SO_2 which are especially phytotoxic.

A mass balance of approximately 30 elements will be established at Colstrip generator #1 to determine the distribution of the incoming coal elements which appear in ash, precipitators, scrubbers and effluent.

Extensive sampling and analysis of the ecosystem will correlate data from air sampling sites, vegetative sites, and endogenous animal species. Multielement analysis is designed to disclose the appearance of polluting elements and their food chain dynamics.

Small watershed studies are designed to note the appearance of polluting elements, their rate of movement in the system and impacts on biota and water quality. Laboratory studies are designed to quantify turnover rates of key elemental pollutants in a grazing herbivore model.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	James J. O'Toole	9-30-75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	9	David Ballantine
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
265 K	75		12/75	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCC (EPA-IAG-D5-E681-CC)

TITLE OF PROJECT
Environmental Impact of Coal Ash on Tributary Streams & Nearshore Waters of Lake Erie

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Kenneth Wood	Biology	Professor	2/3
Robert K. Fahnestock	Geology	Associate Professor	1/3
David P. Dingledy	Chemistry	Associate Professor	2/3
Walter M. Barnard & Donald J. Crowley/Associate Professors/Geology			2/3&1/3

NAME AND ADDRESS OF APPLICANT INSTITUTION

Dr. Kenneth Wood
Biology Dept.
SUNY College at Fredonia, NY 14063

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVE: Determination of movement of trace elements derived from coal wastes within the geochemical pool; (wind, stream and lake transport of particulate coal ash, release of leachates to streams or groundwater), and the trace element burden in the biological pool; development of biological indicators for predicting ecological effects of energy-related pollutants, persistance of trace elements in biota, physiological and behavioural effects.

BACKGROUND: Leachate and runoff from coal wastes at landfill and dump sites in Chautauqua County, N.Y. may eneter streams, groundwater, and Lake Erie at several sites on the lake plain.

PROCEDURES: Collection and identification of species of aquatic biota (emphasis on species of Chironomidae) mapping of streams, monitoring of flow, coring and analysis of stream and lake sediments, analysis of water, sediments and biota for trace elements (primary method is atomic absorption analysis).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	10	David Ballantine
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Env. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		1/76	6/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CF

TITLE OF PROJECT Studies to define the effects of refinery wastes and oil transfer facilities on Pacific Northwest marine coastal ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. R. Vanderhorst, Ecosystems Department, Research Scientist, Marine Biology
R. M. Bean, Sr., Ecosystems Department, Research Scientist, Environmental Chemistry
E. A. Crecelius, Radiological Sciences Department, Research Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory, Sequim, Washington)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The program will survey the marine communities at three sites to: (1) augment the data base that now exists for the Cherry Point-Anacortes region on the effects of refinery wastes, (2) provide baseline data for the Port Angeles region, and (3) develop baseline data for a region that is similar to the above areas but is not likely to receive refinery wastes, products or crude oil contamination.

The initial effort will be to analyze the existing data base to: (1) determine the information available from existing data, and (2) design a sampling program that will provide the information needed to complement and strengthen the existing data.

To facilitate storage, retrieval and data analysis, all data will be placed in computer storage. Where applicable, historical data will be added to the computer stored data bank.

An integral part of the field sampling will be the collection of organisms, sediment and water for contaminant analysis. These samples will be analyzed by now accepted methods and by methods developed by the BNW methodology development program sponsored by the Energy and Research Development Administration.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William L. Templeton W. L. TEMPLETON ASSOCIATE MANAGER ECOSYSTEMS DEPARTMENT	

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	Jackson Blanton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
170 K	75		7/75	12/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

77 BCF (EPA-IAG-D5-E681-CF)

TITLE OF PROJECT

Transport and Dispersion of Refinery Wastes in Freshwater Coastal Regions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Wyman Harrison and Mr. Donald McCown
Environmental Scientists
Energy and Environmental Systems Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
Argonne, Illinois

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Dynamics of oil-fouled lake waters will be examined by tagging water and oily waste with rare earths and determining down-current concentrations of these elements in water samples subjected to neutron activation. This study will begin in waters of southern Lake Michigan.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
----------	Wyman Harrison	Aug. 29, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	2	William A. Sinclair
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Argonne National Laboratory /ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		7/75	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77BCF

TITLE OF PROJECT Transfer and dispersal of organic pollutants from an oil refinery into coastal waters.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M.D. Banus, Scientist II, Head of project; J. Castrillon, Scientist II
J.J. Kimmel, Research Associate III; M. Nutt, Research Associate III

NAME AND ADDRESS OF APPLICANT INSTITUTION

Puerto Rico Nuclear Center
College Station
Mayaguez, P.R. 00708

Marine Pollution Studies, Marine Ecology Div.
(Hydrocarbon studies, EPA)

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: To determine the amounts and types of hydrocarbon pollutants in the air, water, sediments and various biological components of a tropical coastal ecosystem adjacent to the refinery-petrochemical complex at Guayanilla, P.R. To evaluate possible pathways for these hydrocarbons through the ecosystem, identify components which effectively store or degrade hydrocarbons and evaluate effect of hydrocarbons on local commercial seafood. Finally, to develop and test a model of hydrocarbon transport applicable to tropical coasts to help predict impact of a refinery on an unpolluted coast.

Approach: A systematic sampling and analysis of air, water, sediments at potential sites of imput from the chemical plants and over a down-current grid as compared to a pollution-free control. Determination of principal hydrocarbon species. Comparison of pollutant levels during wet and dry seasons. Hydrocarbon analyses on plankton, algae, benthic organisms, fish (two or more feeding types) and mangrove leaves and roots. Mangroves may be a major pool and pathway since the trees and associated organisms are in contact with air, water and sediments, since they are major energy convertors of the ecosystem and, since they are frequently in the border between the industrial complex and the coastal water. Laboratory studies on the weathering or degradation of hydrocarbons in tropical sea water and sediments. Use of analysis of variance and factor analysis to understand the relationship of hydrocarbon levels prior to developing a model.

First Year Plan: Set up sampling grid and schedule for water and sediments. Select and use suitable hydrocarbon extraction and determination methods. Attempt to identify major hydrocarbon components using mass-spectrograph. Start sampling and analysis of air and biological components of ecosystem.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Marine Ecology		Sept. 2, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	3	Jackson Blanton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA Div. of Biomedical and Environmental Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		7/76	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CF

TITLE OF PROJECT: Baseline Data on Benthic Community Structure in the Santa Barbara Channel Oil Lease Area and the Effects of Drilling Mud

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Spies, R.B., Principal Investigator, Biomedical & Environmental Research Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P. O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. The objective of this study is to examine temporal variation in benthic communities in the Santa Barbara Channel Oil Lease Area and to determine the effect of drilling muds on selected benthic organisms. The study is being coordinated with Bureau of Land Management studies in the area.

2. The study involves repetitive sampling of a small number of stations in the Santa Barbara region for infaunal benthic invertebrates to determine community structure and seasonal variation. The effects of drilling muds will be determined by laboratory toxicity tests.

3. Field sampling is scheduled to start in September.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Robert B. Spies	9/19/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	Jackson Blanton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
235 K	75		1/76	12/79

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OMB No. 158-R0051

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCF

TITLE OF PROJECT
Long-term effects of hydrocarbons on selected ecosystems and associated organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. I. Gibson, Ecosystems Department, Program Leader, Marine Biology
J. R. Vanderhorst, Ecosystems Department, Research Scientist, Marine Biology
R. M. Bean, Sr., Ecosystems Department, Research Scientist, Environmental Chemistry

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory - Sequim, WA)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and/or forwarded to investigators who request such information. Your summary is to be used for these purposes.

The program consists of two tasks designed to assess potential effects of long-term exposure to petroleum-derived hydrocarbons on selected communities from coastal ecosystems. The tasks examine: (1) laboratory response of populations and benthic communities to concentrations of single hydrocarbon compounds and aqueous phase petroleum; and (2) in situ response of coastal communities to sediment-bound petroleum.

Laboratory studies will measure effects of single compounds and soluble fractions of crude and refined petroleum on the life history of economically and ecologically important populations. Laboratory populations will be reared through one or more generations while exposed to hydrocarbon contaminant and compared to control groups for growth rate, maturation time, fecundity, and morphological change in individuals. Studies will be at ambient and controlled temperature. Accumulation, site deposition, and purge rates for hydrocarbons will be integrated with life table information.

In situ studies will examine biological availability and effects of petroleum hydrocarbons from contaminated sediments. Effects of continuous exposure to low levels of petroleum hydrocarbons from sediments, either via direct contact, or, through sediment-contaminated water will be investigated by measuring oil in the sediments and compositional changes of established and recruited infauna populations. Hydrocarbon uptake by the fauna will be simultaneously investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William L. Templeton	W. L. TEMPLETON ASSOCIATE MANAGER ECOSYSTEMS DEPARTMENT

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5	Jackson Blanton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Division of Biomedical & Environ. Resear

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250 K	75		12/76	6/80

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D6-E681 - BCF

TITLE OF PROJECT
Transport and Dispersion of Refinery Wastes in Freshwater Coastal Regions

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Wyman Harrison and Mr. Donald McCown
Environmental Scientists
Energy and Environmental Systems Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
Argonne, Illinois

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Dynamics of oil-fouled lake waters will be examined by tagging water and oily waste with rare earths and determining down-current concentrations of these elements in water samples subjected to neutron activation. This study will begin in waters of southern Lake Michigan.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
----------	Wyman Harrison	Aug. 29, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1-8	Warren Sinclair
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory / ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70K	75		3/76	6/80

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DL

TITLE OF PROJECT
Atmospheric Transport and Transformation of Emissions From Coal-Fired Power Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: T. L. Montgomery, Chief, Air Quality Branch, Division of Environmental Planning, TVA, River Oaks Building, Muscle Shoals, AL 35660 (205) 383-4631 ext. 555
Ozzie Huff, Leonard Stockburger III, Gary Shannon, Environmental Scientists
Additional Staffing in Progress

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, Division of Environmental Planning, Air Quality Branch, River Oaks Building, Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary objective of this project is to determine the chemical interactions of constituents of atmospheric emissions from coal-fired power plants with particular emphasis on ascertaining the rates of oxidation of SO_2. The ultimate goal is to develop the capability for predicting the concentrations of all major constituents of such emissions at various locations downwind. Instruments are carried by an aircraft to measure the fluxes of the constituents through the plume at a number of distances downwind. Pertinent meteorological parameters, such as temperature and humidity, vertical temperature profiles, wind speed and direction, and solar radiation, are measured with instruments on the aircraft and a ground station. These data will be utilized to develop a plume chemistry model which will detail the plausible mechanisms and kinetics of chemical reactions occuring in the plume and the meteorological influences on these reactions so that the temporal and spatial distributions and fates of various plume constituents may be better understood and more accurately predicted. Chamber studies of stack gases are also being initiated to obtain some fundamental information on plume chemistry. Emphasis for the immediate future studies is placed on obtaining rates of oxidation of SO_2.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	for T. L. Montgomery	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		T. L. Montgomery
X	NEGOTIATED CONTRACT	Task 1	RESPONSIBLE ORGANIZATION: Division of Environmental Planning, Tennessee Valley Authority
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
175	1976	4	5/7/75	5/6/80

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DL

TITLE OF PROJECT

Atmospheric Transport and Transformation of Emissions From Coal-Fired Power Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: T. L. Montgomery, Chief, Air Quality Branch, Division of Environmental Planning, TVA, River Oaks Building, Muscle Shoals, AL 35660 (205)383-4631 ext. 555
T. L. Crawford, Environmental Engineer (assigned parttime)
Additional Staffing in Progress

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, Division of Environmental Planning, Air Quality Branch, River Oaks Building, Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The sulfur oxide/sulfate issue requires research and collection of a scientific data base to delineate effects of large power plant emissions on remote receptors and regions. This will require the investigation of mechanisms affecting and characteristics of long-range transport of emissions. A long-range transport model describing the conservation balance of SO_2/sulfate complex will be developed and applied to a meso-scale region (~1000 kM) centered over the Tennessee Valley Watershed. Among factors to be considered in this balance are advection by the wind field, diffusion by atmospheric turbulence, source/skin mechanisms and chemical transformation. An emission inventory along with meteorological and monitoring data will be obtained, analyzed, and compared with model predictions. This will yield a preliminary assessment of model validity, importance of various processes, relative importance of TVA coal-fired power plant emissions, and insight as to the significance of the overall problem. During a later phase of the program refined input and comparison data will be collected in a full-scale field study. This data will be used in a more quantitative verification of model predictions. This research project is new. The preliminary project design has been completed and staffing is in progress.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	for T. L. Montgomery	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		T. L. Montgomery
X	NEGOTIATED CONTRACT	Task 2	RESPONSIBLE ORGANIZATION: Division of Environmental Planning, Tennessee Valley Authority
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75	1976	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DM

TITLE OF PROJECT Evaluation and Improvement of Models Used for Radiological Impact Assessment of Gaseous Releases from Nuclear Power Plants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

E. A. Belvin, Ass't. Chief, Radiological Hygiene Branch (Project Director) River Oaks Building, Muscle Shoals, AL 35660 FTS 205-383-4575
J. H. Davis, Health Physicist, Radiological Hygiene Branch
W. H. Wilkie, Health Physicist, Radiological Hygiene Branch
J. M. Smith, Nuclear Engineer, Radiological Hygiene Branch
R. L. Doty, Health Physicist Radiological Hygiene Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut St., Rm. 268
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objective: Evaluation and improvement of models used for radiological impact assessment of gaseous releases from nuclear power plants.

Approach: Direct radiation levels will be measured around an operating nuclear power reactor. Pressurized ionization chambers will be utilized for this purpose. Parametric analyses will be performed in conjunction with literature searches in an effort to improve the dispersion and transfer coefficient portions of the model.

Current Plans: External radiation exposure levels in the vicinity of the Browns Ferry Nuclear Plant will be measured, and the results will be utilized in the development of accurate computer codes for calculating doses. Pressurized ionization chambers will be used for the measurements. These systems will detect gamma radiation from radioactivity in gaseous effluents and from radioactivity within the nuclear plant components. Development of computer codes will be required to calculate the two components of the gamma radiation exposures.

Dispersion studies will involve a thorough search of the literature to gather information bearing on the parameters in the effluent dispersion model. Discussions have been held with Atomic Industrial Forum personnel regarding effluent dispersion experiments which are being considered for several operating nuclear power plants. A few studies of this type have been completed and the data are available for verification of the dispersion computer codes. Work is currently underway to make comparative analyses of the dispersion code results with various data and also with various parametric changes. A similar approach is planned for the transfer coefficient portion of the model.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Ernest A Belvin	8-21-75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-5	James A. Oppold
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION TVA Division of Environmental Planning
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50K obl.; $50K est. exp.	1975	4	May 7, 1975	May 6, 1980

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DN

TITLE OF PROJECT
Simulation of Thermal Dispersion and Fluid Mechanics at Critical Locations in Streams & Reservoirs

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Richard J. Ruane, Supervisor, Spec. Proj. Staff, 401 Chestnut St., Rm. 246, Chattanooga, TN 37401 (615) 755-3167
William R. Waldrop, Res. Eng., Eng. Lab., P. O. Drawer E, Norris, TN 37828 (615) 494-7137
Richard C. Farmer, Consultant, Eng. Lab., P. O. Drawer E, Norris, TN 37828 (615) 494-7137

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, 401 Chestnut Street, Room 248, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study is to extend and verify a theoretical computer model of thermal effluents from power generating plants. Such effluents are generally three-dimensional and turbulent. The computer model which will be utilized is a three-dimensional unsteady finite difference technique. This model is unique in that the conservation equations of all three directions are solved in an efficient manner. Most previous models have attempted to describe a thermal effluent with two-dimensional equations or at the very most made restricting assumptions concerning transport in the third dimension.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Richard J. Ruane	8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-8	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$35K est. exp.	1975	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EN

TITLE OF PROJECT
Environmental Assessment of Northern Puget Sound and the Strait of Juan de Fuca

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Howard S. Harris, Project Manager
Environmental Research Laboratories/NOAA
3711 15th Ave., N.E.
Seattle, WA 98105
Phone: (206) 442-0199

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA
Rockville, MD 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is designed to provide the ecological data required for making management decisions concerning regional development and for assessing the potential impact of petroleum hydrocarbons on the ecosystem. The results of this research will be immediately applicable to decisions on the location of deepwater ports, expansion of refinery capacity at existing sites verses the development of new sites, and the regulation of tanker traffic in parts of the sound.

Investigations will be based on existing ecological and environmental data augmented by field and laboratory investigations. Priority will be given to evaluating the ecological factors of risk from the instantaneous release of a large volume of oil. Second priority will be given to the ecological factors of risk from the chronic effects associated with transport, transfer, and processing of oil and oil products. Output products will include: (1) description of existing ecological and environmental conditions, (2) the nature and variability of possible petroleum related pollutants, (3) a state-of-art oil spill trajectory model for northern Puget Sound and the Strait of Juan de Fuca, and (4) an ecosystem model to provide prediction of fate and effects of selected pollutants on components of the marine ecosystem.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Howard S. Harris	11 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1.1 - 1.7 (7)	John W. Townsend, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/ERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$ 919K	1975	4	1 September 1975	1 September 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EN

TITLE OF PROJECT
HYDROCARBON STUDIES IN PUGET SOUND AND OFF THE WASHINGTON COAST

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. Carpenter, Assoc, Prof. Oceanography	1/3 man-yr
J. Lewin, Prof. Oceanography	1/24 man-yr
A.W. Fairhall, Prof. Chemistry	1/5 man-yr
Robert Barrick, Ass' t Oceanographer	1 man-yr

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Washington, Seattle, WA. 98195
Departments of Oceanography and Chemistry

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Seasonal samplings of phytoplankton, zooplankton and neuston will be made in a number of areas within Puget Sound and off the west coast of Washington State. The samples will be subjected to solvent extraction to remove hydrocarbons which will then be identified by gas chromatography and/or mass spectrometry. Selected fractions will be counted to establish the ^{14}C levels and the $^{13}C/^{12}C$ ratio will also be determined. The purpose of these measurements is to establish the natural distribution of hydrocarbons in local marine organisms and to determine the extent to which they may be contaminated by petroleum hydrocarbons from oil spills. Some of the regions to be sampled are in comparatively remote areas which are unlikely to receive significant oil pollution while other samples will come from areas near petroleum refineries or along shipping lanes where oil spills are known to occur. In addition to sampling of organisms, cores of sediment will be collected and analysed in a similar manner. After dating the sediment by the lead-210 method to determine sedimentation rate, it is expected that it will be possible to reconstruct the past history of oil pollution in polluted areas through the record revealed by the sediments.

The project has just begun. The first suite of samples has been collected but there are no measurements to report.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1-4	Howard R. Harris
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERL/NOAA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
88 K	75			9/78

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E693-E0

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Comparison of Ecosystem in Active Oil Field Area and Undisturbed Area

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Joseph W. Angelovic, Project Manager
Gulf Coastal Fisheries Center
National Marine Fisheries Service/NOAA
4700 Avenue U
Galveston, TX 77550
Phone: (713) 763-1501

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA
Rockville, MD 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will provide a description of changes in a marine environment related to oil exploration and production, a description of existing environmental conditions, a predictive model for oil spill trajectory and ecosystem models for use in predicting probable impact of oil development and extractions on marine ecosystems of varying characteristics and complexity.

Both historical and new environmental survey data will be used to describe the biological, chemical and physical characteristics in the environments of an active oil field and of a nearby undisturbed area. Surveys conducted in both the oil field and undisturbed area will describe the hydrography, water quality parameters, sediments, pollutants and the abundance, distribution, diversity and habitat of major planktonic, benthic and pelagic communities. Investigations will determine the qnantities and rate of movement of pollutants through components of the ecosystem and attempt to identify effects. A separate survey will define the effects of structures themselves on the local ecosystem including community composition and aggregation of species.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Joseph W. Angelovic	11 August 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2.1 - 2.5 (5)	John W. Townsend, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/NMFS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$ 980K	1975	4	1 September 1975	1 September 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

HEALTH EFFECTS

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ABS 01 to 03

TITLE OF PROJECT

Water Exposures and Their Effects: Heavy Metals and Toxic Organic Chemicals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The toxicological properties of methyl benzimidazole; dibenzofuran; methyl benzofuran; 1,2,4 - trimethylbenzene; and thallium will be determined in a rat lifetime feeding study, a mutagenic translocation study, and a reproductive/ teratologic study. Each chemical will be administered orally in 3 graded doses. Appropriate positive controls will be used for responses to validate each major response parameter. The principle objectives are to determine the chronic toxicity of each chemical, the ability to induce genetic mutations, teratogenic potency, and alteration of reproductive functions.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1,2,3 and 4	Robert G. Tardiff
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Water Quality Division Health Effects Research Lab., Cinti. Ohio

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
1780 K	1975		6/77	6/80

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ABV-01-02

TITLE OF PROJECT Comparative Toxicological Assessment of Fly Ash from Western and Eastern Coal

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. William E. Pepelko, Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

Interim Report

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the proposed investigation is to provide sufficient data on the potential toxic effects arising from exposure to airborne effluents from coal combustion. Since coal from the Western parts of the country will undoubtedly be used in increasing amounts in the future, it would be prudent to evaluate the potential hazards of emissions from Western vs Eastern coal. Only limited data is presently available concerning the toxicological effects of coal fly ash and none is available from Western coal sources.

Fly ash samples will be collected directly from the effluent of a power generating plant, downstream from an electrostatic precipitator. Two sources, one burning Western coal and one burning Eastern coal, will be utilized. The ash samples will be analyzed for trace elements as well as major components.

Two types of studies will be conducted. The first will be acute (1-7 days' duration) to establish lethal concentrations. The second will be chronic (6-11) months. Concentrations of fly ash aerosols will range from just below lethal levels down to that found under ambient conditions in the immediate vicinity of the generating plant.

At least 3 species of animals will be tested. Measurements will include survival, growth, pathology, blood analysis including acid-base measurements, hematology, and pertinent blood chemistry and enzyme determinations, tissue analysis for trace metals and a variety of pulmonary function tests.

Present plans are to award the contract during late 1975 and begin work by January 1976.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	01 and 02 77 ABV	Dr. William E. Pepelko
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA, ORD, Health Effects Research Laboratory, Cin.
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
250 K	1975	----	5/75	6/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77 ABV-03

TITLE OF PROJECT Investigation of effects of prolonged inhalation of Ni, B, and Cr-enriched Western coal fly ash in Syrian Golden hamsters

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Wellington Moore, Project Officer

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

INTERIM REPORT

Scope of work being changed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	03 77 ABV	Wellington Moore
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA, ORD, Health Effects (Cincinnati) Research Laboratory, Toxicology Division
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
130 K	FY 75	-	5/75	12/75

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77ABV-04
Contract #68-03-2011

TITLE OF PROJECT Chemical Characterization and Toxicity of Metal Binding Components of Emissions from Mobile and Stationary Energy Sources

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Vincent N. Finelli, Ph.D., Asst. Prof., Dept. of Environ. Health (Principal Investigator), Les. W. Michael, Ph.D., Asst. Prof., Dept. of Environ. Health (Co-investigator), Harold G. Petering, Ph.D., Prof. and Robert Christian, Ph.D., Assoc. Prof.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Institute of Environmental Health
School of Medicine
University of Cincinnati, Cincinnati, Ohio

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objective of this study is to isolate and characterize metal-binding agents from mobile and stationary exhaust emissions and to assess the biological damage which may be caused by the interaction of these agents with essential metals metabolism. This research is based on the hypothesis that some of the adverse health effects linked by epidemiological studies to air pollution may be due to the impairment of essential metals metabolism by ubiquitous metal-binding chemicals, toxic metals and their chelates. Alteration in the absorption, transportation, storage and functions of the biologically essential metals may contribute to the development of several chronic diseases such as emphysema, hypertension, and cardiovascular and atherosclerotic diseases. The isolation and characterization of the metal-binding components along with the assessment of damage in enzyme systems, cell cultures and organism due to the exposure to these agents may furnish a valuable tool in the comparative evaluation of various types of emission. We have already established the presence of agents which bind transition metals in the automobile emissions along with their presence in other pyrolytic products. A model copper-binding drug has been found to alter cholesterol metabolism in rats. Dietary copper prevented cardiovascular lesions in rats under controlled nutritional protection will be emphasized.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Medical	/s/ Vincent N. Finelli	8/6/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	04 77ABV	S. D. Lee and K. I. Campbell
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA, ORD, Health Effects Research Lab., Toxicology Division, Cin.
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
104.6 K	1975	1	6/20/74	6/20/77

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ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AN

TITLE OF PROJECT
IN-VIVO Screening for Gene Mutations in Mouse Germ Cells and Somatic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

L. B. Russell - Ext. 3-7639
W. L. Russell - Ext. 3-7211

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratories
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In screening for mutagenic agents it is important to include mammalian tests for gene mutations. In this project, identification of mutagens associated with coal and oil shale technologies that can induce gene mutations and small deficiencies will be accomplished by scoring for (a) transmitted specific-locus mutations induced in germ cells and (b) somatic mutations in coat color genes.

The specific-locus method developed by us has been employed extensively in radiation work and has already proved its usefulness in chemical mutagenesis studies. It is the only established, reliable and definitive test for transmitted gene mutations and small deficiencies currently available in mammals.

In order to make the method economically efficient for screening purposes, it will be used to test whether there is anything mutagenic in a whole mixture of compounds, for example, in an effluent. Since it is the mutagenic risk in the spermatogonial stem cells that is of prime interest in the male, and since these cells exist through the whole reproductive life of the animal, it is possible to give, over an extended period, fractionated doses of a compound, or a mixture of compounds, in order to build up the mutation frequency to an economically detectable level, even for a weak mutagen. The same can be done in the female to build up the mutation frequency in the resting oocytes which persist from birth until shortly before ovulation.

A method to detect the induction of somatic gene mutations (or small deficiencies) was developed by us and has proved practical in a radiation experiment. The effects of 100 R X-rays were easily detectable with only small numbers of animals. Matings between appropriate stocks produce embryos heterozygous for several coat-color markers.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	L. B. Russell	10/7/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	10	G.E. Stapleton
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
175 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E-681-AN

TITLE OF PROJECT In Vitro Chemical Carcinogenesis of Estrogens and Progestins - Responsive Cultured Endometrial Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: L.E. Gerschenson, M.D., Associate Professor in Pathology
(213) 825-8714 (See address below)
Personnel: H. Masuji, Ph.D., Post Graduate Researcher, Cytogeneticist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine and Radiation Biology
900 Veteran Avenue
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A technique to culture rabbit endometrial cells in chemically defined medium has been developed. Diethylstilbestrol was found to promote cell division, while progesterone had an opposite effect.

We propose here to study "in vitro" the effect of both hormones upon a) the cytotoxicity of chemical carcinogens and b) the chemical carcinogens of endometrial cells in culture. It is expected that the study of chemical carcinogenesis and the hormones - carcinogens interaction will help to further the understanding of I) The mechanism of chemical carcinogenesis and its modification by well defined substances and II) the etiopathogenesis of endometrial adenocarcinoma in particular and hormone-related neoplasia in general.

Preparation of cultures: Primary cultures derived from the uteri of 6-8 months old New Zealand virgin rabbits will be grown in a modified Ham's F-12 medium in an atmosphere of 5% CO_2 and air at 37° C in plastic petri dishes (Falcon Plastics, Inc.). In summary, the technique used to isolate endometrial cells consists in everting the isolated uterine horns, to tie both extremes and incubate the horns in a solution of collagenase, hyalurondidase and trypsin. After serial incubations in the dissociating solutions, only endometrial cells are obtained. The cells are then plated in a chemically defined medium in plastic dishes and incubated at 37° C. Autoradiographic studies using ^3H-thymidine have shown that the cells divide actively in this medium during the first week of culture. The rate of cell division decreased dramatically afterwards.

Cytoxicity studies: The inhibitory effect of several carcinogenic polycyclic hydrocarbons on DNA synthesis and the effect of several steroid hormones upon this inhibition will be studied.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		Sept 17 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	11	G.E. Stapleton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75		1/76	1/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AN

TITLE OF PROJECT
Chemical Induction of Chromosomal Aberrations in Mouse Germ Cells by Coal Conversion

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Products

W. M. Generoso - Ext. 3-7401
W. L. Russell - Ext. 3-7211

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A study has begun on three polycyclic hydrocarbon compounds for chromosomal aberration effects in male and female mice.

For each chemical the following experiments will be performed:

(a) Determination in males and females of maximum tolerated doses for single treatment and for repeated treatment (daily administration for four weeks).

(b) Dominant-lethal and heritable translocation studies on treated postmeiotic and late meiotic male germ cells. This will be done on matings within one week after the last day of treatment of males given repeated doses.

(c) Dominant-lethal study on early meiotic spermatocytes and differentiating gonia. In this study males treated with a single acute dose will be mated during 30 to 42 days after treatment.

(d) Dominant-lethal and total reproductive capacity studies on dictyate oocytes of females that received single acute dose.

(e) If dominant-lethal effects are induced in treated females, an X-chromosome loss study will be performed to determine whether the effect is maternal or genetic.

(f) Dominant-lethal studies on postcopulation germ cells. Two experiments will be done -- one shortly after sperm entry and another during the first DNA synthesis prior to cleavage.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	W. M. Generoso	10/9/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	12	G.E. Stapleton
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75		7/76	7/77

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PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AO

TITLE OF PROJECT
Development of Cytochemical Markers for Cell Transformation and Carcinogenesis

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mayall, B.H., Principal Investigator, Biomedical and Environmental Research Division
Carver, J.H.
Jensen, R.H.
Koshiver, J.E.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P. O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To develop rapid, sensitive, and economical systems for the in vitro and cytological assay for carcinogenic effects of substances involved in the extraction, conversion and utilization of nonnuclear energy sources, with particular consideration of in situ coal gasification, shale-oil utilization, coal-burning power plants, and geothermal power plants.

Our approach is based on the development of cytochemical markers for cell transformation, and on our ability to quantitate such markers by microfluorometry and by flow system analysis and sorting. There are two phases to this work: (a) the development of appropriate test systems whose response is defined by well characterized and representative carcinogenic agents, and (b) the application of such systems to substances released by energy technologies, and including testing with whole and fractionated samples of effluents.

Progress not applicable - new project.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	B.H. Mayall	9/19/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	G.D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
325 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAO (EPA-IAG-D5-E681-AO

TITLE OF PROJECT
EFFECTS OF AGENTS ASSOCIATED WITH COAL AND OIL SHALE EXTRACTION, CONVERSION, OR UTILIZATION ON CELL-CYCLE KINETICS AND ON CHROMATIN/CHROMOSOME STRUCTURE

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. A. Tobey, Staff Member, Cellular and Molecular Biology Group

H. A. Crissman, Staff Member, Biophysics and Instrumentation Group

NAME AND ADDRESS OF APPLICANT INSTITUTION
Cellular and Molecular Biology Group (MS886) and Biophysics and Instrumentation Group (MS888), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is essential that the ERDA/EPA provide a means for detecting and monitoring damage to human populations as a result of exposure to various toxic chemical and physical agents. To obtain an idea of the parameters to be monitored in humans, it is necessary first to establish the effects of agents on cells in simpler model systems. Earlier experience with drugs which act as carcinogens and teratogens has convinced us that changes in population cell-cycle distribution and alterations in chromatin structure may provide useful early indicators of sublethal damage to cells exposed to hazardous agents. We propose to examine alterations in these parameters following exposure to specific energy-related toxic substances in currently available tissue-culture systems which show promise as a predictive indicator of response of human populations. A technique has been developed that allows preparation of both cycling and noncycling cell populations in tissue culture, mimicking these classes of somatic cells in humans. By combining autoradiography, cell number enumeration, and flow microfluorometry, it will be possible to obtain highly detailed information regarding the cellular kinetic response of both arrested and cycling populations to treatment with toxic agents.

77 BAO

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Robert A. Tobey	9-17-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)		G. D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT	2	ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		1/1/76	7/1/77

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E-681-AO

TITLE OF PROJECT Development and Use of Differentiated Cell Culture Systems for the Evaluation of Toxicological Agents. I: Lead and Hydrocarbons Regulation of Gene Expression and Growth in Cultured Cell Lines

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: L.E. Gerschenson, M.D., Associate Professor in Pathology
(213) 825-8714 (See address below)
Co-Investigators: J. de Vellis, Ph.D.; I. Harary, Ph.D.; and H. Herschman, Ph.D.
Personnel: L. Lake, Ph.D., Postdoctoral Fellow, Toxicologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine and Radiation Biology
900 Veteran Avenue
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We propose the study of the pathological effect(s) of several energy-related agents upon established mammalian cell lines, which retain organ-specific functions in culture. These differentiated "in vitro" models may provide with rapid, simple and reliable systems for a) screening of technology conditions and products to establish the presence of substances exhibiting adverse biological effects; and b) trying the modification of these toxic products effects by well defined substances such as hormones, enzymes, inhibitors, etc.

We are planning, in this first part of the proposed research, to probe the effects only of some pollutants, which have been shown to have well defined toxic effects on human health. However, we are planning to test subsequently other hazardous chemicals of known or unknown effects, according to the dictates of the public health concern. Chemicals to be used: Lead Nitrate; 7,12-Dimethylbenz(α)anthracene(DMBA); 3-Methylcholanthrene(MCA); Benzo(α)pyrene(BZP). Controls to be used: Sodium Nitrate (Control for lead nitrate); Benzo(α)anthracene(Control for chemical carcinogens).

The effect of these chemicals on general macromolecular synthesis will also be determined by measuring labeled amino acids incorporation into proteins, labeled uridine incorporation into RNA; and transport of labeled α-aminoisobutyric acid and methylglucose. Reversibility of the toxic effects (by transferring the cells to medium without additions) will be also determined.

Karyotypic studies will be conducted in the cell lines. Ultrastructural changes induced by the chemicals mentioned below in the cultured cells will be studied in selected cases using electron microscopy.

Parallel studies using similar concentrations of these compounds will also be performed on a wide variety of differentiated functions in cell culture systems.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		Sept 17 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	3	G.D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AO

TITLE OF PROJECT
Development of Permanent Epithelial Cell Lines with High Transformation Efficiency and Normal Function in Modification of Potential Carcinogens

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. T. Kenney - Ext. 3-5644

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: (1) To develop the means by which chemicals associated with non-nuclear energy generation, especially agents arising from coal and oil shale extraction, can be screened for potential carcinogenic activity reliably, quickly and cheaply relative to current animal exposure techniques; (2) To utilize appropriate cultured cells developed in (1) for the study of hydrocarbon carcinogen metabolism to active forms and the mechanism of chemical carcinogenesis.

Approach: A research group with two discrete but closely related approaches to these problems is being developed. These are (1) Cell Biology. The major focus here will be the development of permanent cell lines of epithelial origin (human, when possible and appropriate) which possess the enzymatic equipment for carcinogen activation and which are transformable with high frequency. (2) Biochemistry. Principal focus will be the study of metabolism of polycyclic hydrocarbons in various cell lines developed in approach (1), to establish with certainty the "ultimate" carcinogenic metabolite, using primarily high pressure liquid chromatography techniques.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	F. T. Kenney	10/7/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	G.D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		1/76	7/77

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EP
77 BAO (EPA-IAG-D5-E681-AO)

TITLE OF PROJECT: Development of Method for Utilizing Teeth as an Indicator of Tissue Dose for Trace and Heavy Metals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Louis G. Stang, Jr., Dept. of Applied Science, Head-H.L.Division

William Sachs, DAS, Associate Chemist, 100%

NAME AND ADDRESS OF APPLICANT INSTITUTION

Brookhaven National Laboratory
(Associated Universities, Inc.)
Upton, New York 11973

SUMMARY OF PROPOSED WORK — (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: To develop and demonstrate a simple rapid inexpensive method for determining trace concentrations of toxic energy-related elements in the human body. To utilize this method to establish "normal" baseline concentrations, to search for causal relationships between increased amounts of given elements and occupational, environmental, and individual health factors, and to determine whether the baseline concentrations for given elements are already increasing with time. Background - For many chemical elements little is known about what constitutes "normal" concentrations in the human body now or at various prior stages of industrialization or about how these concentrations vary with the individual or with intensity and duration of exposure. Yet many of these elements have already been detected in the environment and others are likely to be added. (2) Approach: Teeth, being ideal biopsy samples easily and readily available from statistically large numbers of people, will be analyzed for all elements having Z>15 and the results will be statistically analyzed in a search for correlations and trends. (3) Current Plans and/or Progress: Since this work is being initiated in FY 1976, the only work to date has been an extensive but preliminary literature search, which supports the hypothesis that teeth should make excellent indicators of trace element concentrations in contemporary and historical man. Many chemical elements have already been shown to deposit in teeth, accumulating apparently indefinitely, and neither sample preparation procedures nor mortuary practices are likely to interfere.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	L. G. Stang, Jr.	10/7/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	5	G.D. Duda
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: ERDA
RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
55 K	75		1/1/76	7/1/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
The quantitative evaluation of hazardous chemicals using a closed aquatic test system

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Setlow, R. B., Senior Biophysicist, Biology Department
Hart, R. W., Consultant, Assoc. Prof. Radiology, Ohio State University

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Department
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) To develop a new comparative test system, using clones of the fish Poecilia formosa, capable of detecting the carcinogenicity of chemicals by treatment of cells in vitro or by treatment of whole animals.

2) The fish P. formosa may be grown in clones and hence there is no immunological barrier to the transplantation of cells from one animal to another. The fish are easily raised in large numbers for comparatively low costs. Past work has shown that if cells from thyroid tissue are treated in vitro by UV radiation or by N-acetoxy-AAF and then injected into isogenic recipients, they give rise to large numbers of invasive thyroid carcinomas. We have reasonable dose response curves for these effects.

3) We propose to test the carcinogenicity of a number of potentially hazardous agents associated with coal and oil shale technologies by 1) treating cells in vitro with the presumptive carcinogen, injecting the cells into fish and scoring the recipient fish for tumors one to two years later, and 2) to introduce the presumptive carcinogens directly into the water of fish tanks to assess their effects on the whole animal.

The fish will be maintained at 25-50 fish per 30-gallon tank. The water is purified by filtration and UV radiation in an irradiator external to the tank. Under such conditions we do not expect much, if any, loss of animals from infection or disease. Special tanks will be set aside for the treatment of whole animals. Individual dose points will normally use approximately 50 fish.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	R B Setlow	October 20, 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	6	G.D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION ERDA/Div. of Biomedical and Environmental Research
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AO

TITLE OF PROJECT
Develop Trachael Graft Model System for Evaluating Toxicity and Carcinogenicity of Polycyclic Hydrocarbons

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. Griesemer - Ext. 3-7881
B. Pal - Ext. 3-5535
P. Nettesheim - Ext. 3-7646

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The tracheal graft system developed in our group represents a new approach to studying respiratory tract carcinogens and cocarcinogens using a defined target, dose, and exposure time.

The system is ideal for identification of materials suspected to be carcinogenic for respiratory tract epithelium.

The purpose of the proposed studies is to refine the tracheal transplant model to allow controlled release of chemicals such as carcinogenic polycyclic hydrocarbons and cocarcinogens or promoters such as phenoles and to determine the sensitivity of the tracheal graft system for detection of substances that are toxic, carcinogenic, or cocarcinogenic for respiratory tract epithelium.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	for R. Griesemer, Paul Nettesheim	10/7/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	7	G.D. Duda
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/76	7/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AP

TITLE OF PROJECT DEPOSITION, RETENTION AND DOSIMETRY OF INHALED REACTION PRODUCTS WHICH MAY RESULT FROM SO_2-PARTICLE REACTIONS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. B. Snipes, Radiobiologist 505-264-1648

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Studies will be conducted to define the dispersion and retention patterns of inhaled non-nuclear pollutants in lung and other critical tissues of several animal species. These pollutants are produced as a consequence of using organic fuels for generation of electrical energy. Knowing their accumulation and retention patterns is necessary to accurately describe doses to critical tissues for these inhaled materials. Primary emphasis will be placed on sulfur compounds resulting from chemical and physical interactions of SO_2 with air and airborne particulates. Results will include 3-dimensional dose distribution or toxicant concentration maps for critical tissues as functions of time after inhalation exposure. Tissue areas having the highest concentrations of the toxicants will be noted and comparisons made with pathology data where possible. A study is being designed in which a ^{35}S-labeled, sulfur-containing compound of interest (either ammonium sulfate or sulfuric acid) will be used to expose a group of Syrian hamsters to achieve lung burdens which produce demonstrable respiratory irritation. Photographic, autoradiographic and computer procedures will be used to define the initial distribution pattern of the irritant in the lungs of these animals as well as the time course for dissipation or redistribution of the labeled compound. Results will in essence yield a 3-dimensional model for irritant distribution in lung tissue for several time intervals after exposure.

77 BAP

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Morris B. Snipes	December 2, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1	Murray Schulman
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
115 K	75		1/1/76	7/78 continuing

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-AP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
METABOLISM OF INHALED TRACE METAL EFFLUENTS FROM COMBUSTION PROCESSES

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. G. Cuddihy, Radiobiologist 505-264-2306

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Metal oxides are common components of effluents generated from combustion processes used for the production of electrical and mechanical power. A number of metals have been found in high concentrations in lung tissues as compared to other body tissues in humans in the United States implicating inhalation as a primary route of exposure. Aluminum and titanium, two natural air pollutants, are retained almost exclusively in lung tissues although they are not generally considered toxic at normal environmental levels. Nickel, beryllium, cadmium, tin, antimony, lead and bismuth have all been identified in environmental air samples and all have known toxic properties. Pulmonary retention of these metals is greatest for cadmium, tin and beryllium, whereas nickel and lead apparently distribute rapidly throughout other body tissues depending upon the biological solubility of the inhaled chemical species. Since the toxicity of metals such as these is dependent upon both the exposure and deposited doses of the toxicant in lung and other tissues of the body, it is necessary to develop detailed metal dose distribution relationships to correlate pathologic observations with inhaled air concentrations. Efforts to date have been mainly concerned with identification of metal oxide aerosols for future studies. Presently studies are anticipated with aerosols of nickel, cadmium and arsenic to be conducted in a small rodent species. These studies will be designed to measure pulmonary retention of the oxide aerosols, the relationship to chemical solubility of the particles and subsequent internal organ distribution patterns.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Richard G Cuddihy	December 2, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	Murray Schulman
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
111 K	75		1/1/76	1/78 continuing

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OMB No. 158-R0081

PRC ___ NO. (Do not use this space)

SSIE

EPA 77 BAP (EPA-IAG-D5-E681-AP)

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT: Synthesis of labeled organic and organometallic compounds for use in metabolism and catabolism studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Alfred P. Wolf, Chemistry Department, Senior Chemist

Joanna Fowler, Medical Department, Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Brookhaven National Laboratory
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Methodology will be developed (where necessary) for producing labeled organic and organometallic atmospheric pollutants. The classes of compounds for intended study are hydrocarbons, compounds formed by the photooxidation of hydrocarbons from auto exhaust in the presence of nitric oxide (photochemical smog; such as formaldehyde, peroxyacetyl nitrate, acrolein, etc.) and certain organometallics. Incomplete combusion of hydrocarbon-containing fuels such as gasoline and oil and incomplete combustion of coal lead to a variety of organic and organometallic compounds. Pollution from natural sources also adds physiologically active materials to the environment. The metabolism, site of sequestration and mechanisms of action of many of these compounds is little known at the present time. Radioactive tracing of these hydrocarbons in mammals will be used as a sensitive means of determining their disposition and potential site of damage.

The tissue distribution and/or subcellular distribution of these materials and their metabolites in mammals will be determined after short term inhalation. Information relating to (1) the identification of the target organs which sequester the pollutants, (2) the identification of metabolites and the time sequence for formation of metabolites of these pollutants, and (3) determination of the particular subcellular site of binding within the target organ will be used to assess the potential hazard to mammals caused by the inhalation and metabolism of these materials.

Representative compounds will be chosen for synthesis, the labeling agents being C-13 and C-14 depending on whichever is appropriate for the study. A limited number of pollutants will be chosen for study of the in-vivo effect on lung metabolism using a model being developed in this laboratory in another project. Some dynamic imaging and in-vivo kinetics of metabolism and catabolism can be studied using C-11 labeled materials. Finally, selected organometallics will be labeled with radioisotopes of the metal for similar studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
B N L	Alfred P. Wolf	July 18 '75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
___ AGENCY STAFF (Intramural)	4	MURRAY SCHULMAN
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
___ RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		7/1/76	12/31/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AO

TITLE OF PROJECT CYTOGENETIC STUDIES OF LUNG CELLS FOLLOWING INHALATION OF FLY ASH, CHEMICAL MUTAGENS AND EFFLUENTS FROM POWER RELATED INDUSTRY

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Antone L. Brooks, Ph.D., Cytogeneticist 505-264-6830
David E. Bice, Ph.D., Immunologist 505-264-1406
Nora Hackett, Ph.D., Physiologist 505-264-8676

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The goals of this project are directed toward better understanding the potentially mutagenic effects of effluents from fossil fuel conversion, processing and combustion for power production. The major effort is to develop methods for evaluating cytogenetic changes in various lung cell populations following inhalation of such effluents. Additional effort will be directed toward obtaining a better understanding of pulmonary cell kinetics. The cytogenetic changes will serve as a measure of the mutagenicity of compounds released which, coupled with cell turnover data, may be useful in predicting long-term effects such as the carcinogenicity of the materials. Cytogenetic and cytokinetic changes in a variety of pulmonary cells in the Chinese hamster will be studied. Cell systems being considered are tracheobronchial epithelium, alveolar macrophages, fibroblasts, alveolar epithelium and endothelium. Fly ash (collected both hot and cold from a coal burning power plant) will be used as a particulate carrier material for the inhalation studies. The ash, with its associated heavy metals and organic materials, will be characterized and possible dose response relationships for chromosome and cytokinetic changes determined. It will serve as a carrier for studies with known mutagens and with crude and partially fractionated materials from fuel conversion plants. To provide a basis for comparing the effectiveness of these chemicals to radiation in producing chromosome changes, the cells will be exposed to ^{60}Co and dose-response relationships established. This will calibrate the cell systems and provide information which will be useful in defining potential mutagenic hazards and in determining comparative risk estimates for these technologies. Techniques have been developed for obtaining tracheal epithelial cells and preparation of metaphase chromosomes. A study is currently under way using autoradiography with ^{14}C and ^{3}H-thymidine labeling *in vivo* to determine cell turnover rates in normal Chinese hamster lung.

77 BAQ

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Antone L Brooks	December 2, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	T. H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
126 K	75		1/1/76	1/1/78 continuing

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OMB No. 158-R0082

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAQ/ EPA-IAG-D5-E681-AQ

TITLE OF PROJECT: Factors Influencing Cross-Placental Transfer and Teratogenicity of Metallic Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. R. Sikov, Ph.D., Biology Department
D. D. Mahlum, Ph.D., Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will be concerned with heavy metals for which there is direct or inferential evidence for deleterious effects on prenatal development. It will define the specific influences of factors which affect the qualitative and quantitative aspects of the cross-placental transfer of certain of the heavy metals associated with energy production and their distribution throughout the fetoplacental unit as a function of time after exposure to define the tissues at risk and provide quantitative estimates of dose. In the initial studies, which will involve lead and vanadium, transfer and distribution will be evaluated at four different gestational ages selected to represent stages in the continuum of embryonic and placental development. The intravenous, oral, and inhalation routes of administration, which will provide differences in the rate at which the metals are presented to the placenta as well as possible differences in their chemical binding in blood, will be compared. Since metabolism may be influenced by the mass administered, a low dose level as well as one in the teratogenic range will be studied. This will also provide a reference point for comparison with available data on teratogenesis and provide a basis for design of studies we will perform to establish dose-response relationships.

MEDICAL PROFESSIONAL SCHOOL INVOLVED (Medical, Vet. etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA		7/22/75

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REPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
Agency Staff (Intramural)	2	T. H. Roderick
X Negotiated Contract		RESPONSIBLE ORGANIZATION
Research Grant		ERDA

OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		1/76	7/78

FORM SI-SIE 76-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 BAQ/EPA-IAG-D5-E681-AQ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Genetic Effects from Electric Fields at the Chromosomal Level of Drosophila

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. P. Hungate, Ph.D., Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary purpose of this project is to test for genetic effects of electric fields at the chromosomal level, using Drosophila strains bearing appropriate markers to detect frequencies of offspring bearing new linkage relationships. A mechanism by which environmental factors can affect karyotype has been known since the 1943 work of Sax showed that dislocation of broken chromosome ends leads to increased frequencies of aberrations. If the ends are not disturbed, restitution with no resultant detectable lesion is the rule. Since the chromosome has uneven charge distribution, electric fields may cause movement of the broken ends of spontaneously broken chromosomes with increased frequencies of aberrations. This could be a factor in increasing frequencies of dominant lethals in germinal cells and in producing aberrant karyotypes in somatic cells. Microorganisms will also be used in the study to supplement and extend the data. DC fields will be studied initially with follow-on work on AC fields.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	T. H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		1/76	1/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AQ

TITLE OF PROJECT Use of the Mouse Specific-locus Method to Quantify the Gene Mutation Hazard from Mutagens Associated with Non-nuclear Energy Technologies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

W. L. Russell - Ext. 3-7211

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratories
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There are two important aspects to quantification of mutagenesis in mammalian systems that score transmitted mutations. First, for compounds that are clearly mutagenic it is important to be able to evaluate what the mutation frequency would be at exposure levels likely to be experienced by the human population. Some chemicals have already shown a dose-response curve much steeper than linear, and the possibility of a threshold dose level exists. Second, for chemicals that show no mutagenicity in the sample of animals examined in a mammalian test system, it is important to have the sample size adequate to justify a quantified statement that the observed zero mutation rate excludes, with high confidence, the possibility that any mutagenicity of the compound could be higher than a certain low, acceptable level.

The specific-locus method in mice, the only reliable and definitive test for transmitted gene mutations currently available in mammals, will be used. Priority for these quantitative (e.g. dose-effect relationship) tests will be given to those compounds which meet at least some of the following criteria, namely, chemicals which are:- (a) mutagenic in our screening test with the specific-locus method, (b) mutagenic in our screening test for mouse somatic mutations in vivo, (c) mutagenic in any mammalian test system for transmitted chromosomal aberrations, (d) mutagenic in any other mammalian test system, (e) mutagenic in non-mammalian test systems, (f) chemically related to known mutagens.

The extent of the test for a proved mutagen will depend on the potency of the mutagen and on the level of exposure expected in the human population.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	W.L. Russell	10/2/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	T.H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 200k Energy 175 K	75		7/76	7/77 continuing

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681- AQ

TITLE OF PROJECT
Mutagenicity and Carcinogenicity of Energy Related Pollutants in Cultered Mammalian Cell Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Abraham W. Hsie - Ext. 3-5526

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

The objective is to determine simultaneously the mutagenicity and carcinogenicity of energy-related pollutants such as various polycyclic hydrocarbons, heavy and trace metals--using two cultured mammalian cell systems. Knowledge and documentation of such environmental hazards are urgently needed to effectively control long-term genetic hazards and short-term onset of cancers in human populations. The mutagenicity of these environmental agents will be quantitated using specific gene locus mutational assay systems of Chinese hamster ovary cells, and the carcinogenicity measured in an in vitro transformation system of mouse Balb/3T3 cells. With the recent advances in mammalian cell biology, it is now possible to quantitate specific gene locus mutations induced by physical and chemical agents in cultured mammalian somatic cells. Similarly, several in vitro systems for cell transformation by various agents have been established as a rapid means for screening carcinogens.

The hypoxanthine-guanine phosphoribosyl transferase mutational system will be used to quantitate the mutagenicity of various environmental agents. In addition, we have already undertaken to adapt a mutational system resulting in ouabain resistance, an autosomal-linked co-dominant marker, in CHO cells. The mouse Balb/3T3 cell (clone 31) system is known to be suitable for quantitative transformation in vitro. This system has been adapted in our laboratory. We are employing the 3T3 cell system to test the ability of various pollutants to cause transformation in vitro. Polycyclic hydrocarbons will be activated whenever this seems appropriate. Finally, attempts are being made to develop a mutation detection system for the Balb/3T3 mouse cell system.

Establishment of the same mammalian cell system for simultaneous quantitation of malignant transformation and mutation will provide a simple, rapid and quantitative estimate of the mutagenicity and carcinogenicity of environmental agents. The system will also provide a reliable means to study the relationship between carcinogenicity and mutagenicity, and ultimately to establish the role of somatic mutations in cancer.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Abraham W. Hsie / S.F. Carson	Oct. 7, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5	T.H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		1/76	7/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AO

TITLE OF PROJECT The Use of Selected Teratogenic Test Systems to Identify Hazardous Agents Associated with Non-nuclear Energy Technologies, and to Determine Effective Levels of Such Agents

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

L. B. Russell - Ext. 3-7639

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratories
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Damages to developing embryos from environmental agents are important to determine for two reasons: (a) they are the subject of an immediate human concern; and (b) they are indicative of other possible damages to dividing and/or differentiating tissues.)

Instead of surveying major portions of the gestation period, we propose to concentrate on specific sensitive systems that were developed by us in the course of earlier work with radiation. One (or two) stages will be tested during the period of embryonic differentiation, and one (or two) during the period of the division of totipotent cells. For the former, we propose to choose a strain of mice whose natural potentialities cause it to straddle the threshold for certain quantitative characters (number of ribs, sternebrae, lumbo-sacral border). In this labile situation, the effects of even small chemical disturbances at a known stage in development would presumably be recognizable. With X rays, it was possible to detect doses as low as 25 R in relatively small experimental groups. Treated embryos would be allowed to come to term and would be studied in skeletal preparations. -- If necessary, a second stage during organogenesis would also be tested at which, according to the experience of our radiation work, maximal incidences of externally recognizable anomalies can be induced with minimal disturbance from mortality.

To test effects during the period of totipotency we shall choose stages determined earlier to be exceedingly sensitive, namely the early pronuclear stage and/or the time of the second cleavage. Treatment will be in vivo and survival will be scored by uterine dissection approximately two weeks later.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	L.B. Russell by Liane B. Russell W.R. Jones	10/7/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	6	T.H. Roderick
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AQ

TITLE OF PROJECT
The Mouse Oocyte System as a Monitor of Chemical Toxicity

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dobson, R.L., Principal Investigator, Biomedical & Environmental Research Division
Kwan, T.C.
Wuebbles, B.J.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P. O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research project is directed at measuring effects produced in the intact mammal by exposure to chemical pollutants. Effects are measured at the cell population level, in vivo. Focus is on evaluating the teratogenic cytotoxicity of hydrocarbons and metals associated with nonnuclear energy production. Ovarian oocytes of developing mice are the cell population studied. Selected chemical agents are administered to groups of mice, each agent in several differing concentrations. Administration is by way of the pregnant mother during gestation and to offspring postnatally. Biochemical procedures and chemical assays are done as required to provide necessary quantitative dosimetry information. After exposure, surviving oocytes are enumerated microscopically in ovaries and compared to unexposed controls. In this way quantitative dose-response curves are obtained.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	R. Lowell Dobson	9/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	7	T. H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		1/76	7/77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E-681-AQ

TITLE OF PROJECT Teratogenic and Mutagenic Effects of Trace Metals and Carcinogenic Hydrocarbons on Cultured Mammalian Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Jean de Vellis, Ph.D., Associate Professor of Anatomy
(213) 825-8734 (See address below)
Co-Investigators: L. Gerschenson, Ph.D.; H. Herschman, Ph.D.; and I. Harary, Ph.D.
Personnel: K. McCarthy, Ph.D., Postdoctoral Research Fellow, Toxicologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Nuclear Medicine and Radiation Biology
900 Veteran Avenue
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We have developed primary cell cultures as model systems for investigations in developmental biology. Cultures from embryonic nervous tissue, liver and muscle express in vivo developmental programs with respect to several organ-specific functions and hormonal regulation. It is proposed here to utilize these cultures as fast, easy, quantitative and reliable test systems to evaluate the potential teratogenic and mutagenic effects of trace and heavy metals and carcinogenic hydrocarbons released during the combustion of fuels. We will first focus on lead and dimethyl benzathracene (DMBA), a known carcinogen, because of their release or production during fuel combustion and their known toxicity to humans. Our primary aim will be to determine the dose-effect relationships on growth, development of differentiated functions and mutagenesis during long-term cultures.

Primary cultures from embryonic cells express the development program of tissue specific functions within a 3-4 week period. After the first two days in culture, the cells will be exposed to lead nitrate (10^{-10} to 10^{-4} M) or carcinogenic hydrocarbons (10^{-9} to 10^{-5} M) by addition of these chemicals to the culture medium until the cultures are harvested for assays of biochemical markers. Cultures will be collected for assays every three days over the 4 week period mentioned above. To assess how much lead is retained by the cells, ^{210}Pb radioisotope will be added to lead nitrate. The uptake and retention of DMBA in cells will be measured by using ^{3}H-DMBA to assess cumulative doses. The above compounds will be added every three days in fresh medium when the old medium is discarded. In addition to establishing the effect of pollutants on the developmental profile of tissue specific functions, the effect on growth will be evaluated by measuring total DNA, RNA, proteins and the incorporation of radioactive precursors into these compounds. The effect of the chemicals on the fine structure of the cells will be studied by electron microscopy. Shorter exposure times will be conducted to determine if there is a particularly vulnerable period. Reversibility of the effect of lead will be tested by putting cells in fresh medium ± a chelating agent. Isolation of lead resistant mutants will be attempted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		Sept 17 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	8	T. H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/76	1/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAQ/EPA-IAG-D5-E681-AQ

TITLE OF PROJECT
Chronic Irradiation and Brain Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Stephen Zamenhof, Ph.D., Professor of Microbial Genetics and Biological Chemistry Department of Microbiology and Immunology. Principal Investigator. 20percent man yrs.

Edith Van Marthens, D.V.M., Assoc. Veteriranian, Department of Psychiatry. 25 per cent man years.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Department of Microbiology and Immunology, School of Medicine
University of California / Los Angeles, CA 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The proposed project will be concerned with the effect of low level of chronic radiation (radioactive pollutants) on mammalian (rat) brain development over several generations, emphasizing the dose-effect relationships.

First approach: 1. The pregnant rats (F_0) and their fetuses will be exposed to chronic low level radiation that does not produce sterility. 2. Some of the newborns (F_1) will be examined for first generation effects on brain development. 3. The remaining F_1 females will be raised without further addition of radioisotopes, mated with non-irradiated males, and their offspring F_2 examined for cerebral parameters.

Second approach: The possibility of cumulative effect of radiation over generations will be investigated by continuous (chronic) exposure of pregnant mothers and of their progeny to low (non-sterilizing) level of radiation (radioisotopes), and examination of the brains in consecutive generations (first through fifth) as described above.

This project is just starting.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	9	T. H. Roderick
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
44 K	75		1/76	1/77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAR/ EPA-IAG-D5-E681-AR

TITLE OF PROJECT
Combined Effects of Acute and Chronic Exposure to CO, NO_2, SO_2, and Fly Ash

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. K. Craig, Ph.D., Biology Department
S. M. Loscutoff, Ph.D., Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will evaluate the biological effects of daily inhalation exposure to four air pollutants CO, NO_2, SO_2, and fly ash administered at twice current threshold limit values. Initial experiments will employ hamsters exposed either acutely for studies of deposition and retention or chronically for studies of pulmonary function and for periodic histopathological evaluation. During the first year groups of animals will be exposed to SO_2, fly ash, and SO_2 plus fly ash. During the second year, groups of animals exposed to NO_2 and CO will be added to the study. The effect of relative humidity on biological effects of SO_2 and fly ash will also be examined during the first year since humidity is known to be important in the interaction of SO_2 with various particulates.

Several different testing procedures will be used to evaluate both seperate and possible synergistic effects of those pollutants. Pulmonary deposition and retention of different pollutants following short term inhalation exposure to labelled material will be performed to determine where the material is depositing in the respiratory tract, particularly the fly ash, and whether pollutant gases will effect the clearance of fly ash from the lung. Pulmonary function testing will be performed including, possibly, measurements of pulmonary resistance and compliance to evaluate acute and progressive response to pollutant exposure. Detailed histopathological evaluations will be made of the lungs and systemic organs to describe lesions associated with pollutant exposure. Based on information gained from pulmonary function testing and histopathologic evaluations, biochemical processes sensitive to pollutant exposure and responsible for the observed changes will be defined and these biochemical processes will be examined in detail.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	B. O. Stuart
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
150 K	75		1/76	6/78

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAR/ EPA-IAG-D5-E681-AR

TITLE OF PROJECT
Effects of Sulfur Pollutants on Lung Physiology and Biochemistry

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

S. M. Loscutoff, Ph.D., Biology Department
R. D. Phillips, Ph.D., Biology Department
R. P. Schneider, Ph.D., Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this study is to determine which of several possible vasoactive agents (catecholamines, histamine, acetylcholine, prostoglandins, and serotonin) are responsible for changes in airway resistence associated with the inhalation of sulfur pollutants. The guinea pig is extremely sensitive to inhaled sulfur compounds and develops a bronchoconstriction and increased airway resistance. During the first year, awake guinea pigs and artificially perfused and ventilated guinea pig lungs will be exposed to sulfuric acid (H_2SO_4) mists to evaluate the role of different vasoactive agents in mediating sulfur related bronchoconstriction. The role of different vasoactive agents will be determined by pharmacologically blocking the agent with its specific inhibitor and determining whether the bronchoconstriction and increased airway resistance during inhalation of H_2SO_4 mist is affected. If the normal bronchoconstriction during inhalation of H_2SO_4 mist is modified by a blocking agent, the vasoactive agent being blocked will be assumed to be involved in the bronchoconstriction. Following initial experiments with H_2SO_4 mist, vasoactive agents mediating responses to SO_2 and SO_2 plus a characterized aerosol of fly ash will be defined. Completion of this work will provide information required for a detailed examination of the metabolism of vasoactive agents mediating the responses to inhaled sulfur compounds. The metabolism of these agents can then be correlated with physiological and pathological responses to acute and chronic SO_2 exposure.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)		B. O. Stuart
X	NEGOTIATED CONTRACT	2	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		1/76	6/77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AR

TITLE OF PROJECT EFFECT OF ACID SULPHATE PARTICLES AND SO_2 ON THE BACTERIAL ANTI-VIRAL AND PARTICLE CLEARANCE MECHANISM IN THE LUNG

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. F. Hahn, Experimental Pathologist 505-264-4040
Barbara Kingsley, Microbiologist 505-264-2775

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Air pollution due to fossil fuel combustion is a mixture of chemical substances of varied toxicity of which sulfur oxide and particulates are major components. Although the ultimate toxicants of air pollution due to fossil fuel are not known, SO_2-particle interaction products, such as various acid sulfates, are suspected to be of prime importance. The present studies are designed to determine what effects acute and chronic exposures to various well-defined acid sulfate particles have on various nonrespiratory functions of the lung, specifically resistence to viral and bacterial infection, and early and long-term clearance of insoluble particles from the deep lung. These studies will be compared with those of animals similarly exposed to SO_2. The resistence to pulmonary bacterial infection will be determined by exposing groups of rodents to relatively high and ambient levels of various acid sulfate particles and then testing their ability to kill inhaled bacteria. The resistence to pulmonary viral infection will be assessed by challenging acid sulfate-particle-exposed mice with influenza or parainfluenza virus. At various intervals after initiation of exposure, groups of animals will be removed and challenged with an influenza virus. The lethality, mean survival times, and pulmonary virus replication will be determined in the sulfate-particle-exposed animals and be compared with parallel studies with SO_2-exposed and control animals. The retention of insoluble particles in the deep lung will be determined in animals exposed to SO_2 and acid sulfate particles. At various intervals after exposure, groups of animals will be removed and exposed to aerosols of monodisperse particles of aluminosilicate labeled with ^{137}Cs. The retention in the lung will be determined by periodic whole-body counting.

77 BAR

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Robert K Jones for F F Hahn	December 2, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	B. O. Stuart
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/76	1/78 continuing

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AR

TITLE OF PROJECT
CARDIOPULMONARY INJURY AND REPAIR AFTER INHALED ACID SULFATE AEROSOLS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. L. Mauderly, Physiologist 505-264-1169
R. L. Beethe, Research Associate 505-264-5694
S. A. Benjamin, Experimental Pathologist 505-264-1990

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Acid sulfate particulates represent one important emission product from fossil fueled power generation plants. Once inhaled, such aerosol may result in adverse pulmonary responses in human lungs, therefore the physiological and pathological effects of inhaled acid sulfate aerosols will be evaluated in a series of three interrelated studies. The first study will involve acute exposures of guinea pigs to two concentrations of each of two aerosols with simultaneous monitoring of breathing pattern and lung mechanics. The second study will involve similar acute exposures of dogs to the same agents and concentrations to establish the comparative response of dogs and guinea pigs. The third study will involve chronic exposures of dogs to a selected concentration of the two aerosols for a nine-month period with serial cardiopulmonary function testing. At the end of the exposure period, one-half of the dogs will be sacrificed for histopathological evaluation and the remainder will be allowed to breathe clean air for an additional three months. The dogs breathing clean air will be evaluated with serial function measurements and sacrificed at the end of the period to determine whether observed pathophysiologic or morphologic changes persisted or resolved. Exposure chambers and aerosol generation and characterization techniques are being developed. Sulfuric acid mist and ammonium sulfate particles have tentatively been chosen as the agents for exposure. Concentrations in the 0.1 to 1.0 mg/m^3 range have been selected for study.

77 BAR

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	J. L. Mauderly	December 2, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		B.O. Stuart
X	NEGOTIATED CONTRACT	4	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
175 K	75		1/76	1/78 continuing

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AR

TITLE OF PROJECT Effects of Carbon Monoxide Hydrogen Sulfide & Other Energy Products on Neutrons in Tissue Culture

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Cornelius A. Tobias
Professor of Medical Physics
Lawrence Berkeley Laboratory
Berkeley, CA 94720 (415) 843-2740

NAME AND ADDRESS OF APPLICANT INSTITUTION

Donner Laboratory
Lawrence Berkeley Laboratory
University of California 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Tissue cultures of neurons and of other types of mammalian tissues will be used to assess the effects of certain toxic gases at the cellular level. These are primarily carbon monoxide and hydrogen sulfide, byproducts of various types of fuels and of geothermal energy. Initially, mainly carbon monoxide and anoxia will be studied. We shall attempt to determine whether the effect of carbon monoxide on the nervous system is secondary to anoxia, or if there are intrinsic effects also. Neuronal communication in cerebellar cultures will be studied; the effects on differentiation and development will be assessed by neuroblastoma cultures.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	C. A. Tobias	August 1, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	6	B. O. Stuart
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	1975	229	7/1/75	6/30/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77 BAS/ EPA-IAG-D5-E681-AS

TITLE OF PROJECT
Temporal Aspects of Tumor Response to Individual and Mixed Carcinogen Exposure

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Roy E. Albert, M.D., Professor, Dept. of Environmental Medicine, 20 per cent
Bernard Altshuler, Ph.D., Professor, Dept. of Environmental Medicine 30 per cent
Sidney Laskin, B.S., Professor, Dept. of Environmental Medicine 20 per cent
Fredric J. Burns, Ph.D., Assistant Professor, Dept. of Environmental Medicine, 75 percent
Martin Vanderlaan, Ph.D., Associate Research Scientist, Dept. of Environmental Med. 50 per cent

NAME AND ADDRESS OF APPLICANT INSTITUTION:

New York University Medical Center
550 First Ave
New York, NY 10016

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A better under standing is being sought of the temporal aspects of tumor induction by exposing animals for varying durations to single carcinogens and combinations of carcinogens and analyzing the resulting response patterns. Temporal response patterns for initiation-promotion and whole carcinogenesis will be determined in mouse and rat skin and hamster lung for representative carcinogens, including, ionizing radiation, ultraviolet light, benzo (a) pyrene, 4-nitroquinoline-1-oxide and diepoxybutane. Cell proliferation kinetics and lethality in tumors and normal tissue will be studied as comparative bases for carcinogenicity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1	G.E. Stapleton
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA/Div. of Biomedical&Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
330 K	75		1/76	1/79

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-AS

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Role of Irritant Gases on the Susceptibility of Respiratory Tract Epithelium to Tumor Induction

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. A. Cresia - Ext. 3-7413
P. Nettesheim - Ext. 3-7646

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Man is only rarely exposed to carcinogen doses large enough to cause cancer by themselves. For this reason, investigations of co-factors, cocarcinogens and promoters which enhance the carcinogenic efficacy of subthreshold levels of transforming agents, are of great practical importance.

The experiments are designed to determine whether and under what condition irritant gases, that are common by-products of fossil fuel combustion, increase the susceptibility of respiratory tract epithelium to tumor induction or whether such by-products have cocarcinogenic or promoter like activity. These experiments are carried out by exposing the respiratory tract of laboratory rodents to either systemic or topical carcinogens and simultaneously or subsequently to irritant gases such as nitrogen dioxide, formaldehyde, or acrolein. The temporal relationship between carcinogen exposure and cocarcinogen exposure will be investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	for D. A. Cresia Paul Nettesheim	10/9/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	G.E. Stapleton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
85 K	75		1/76	7/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-AS

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Organ Culture Studies with Trachael Mucosa Pre-Exposed in vivo to PCH

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. Marchok - Ext. 3-7270
R. Griesemer - Ext. 3-7881
P. Nettesheim - Ext. 3-7646

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

It is important to define criteria by which various epithelial lesions can be classified in terms of their biological potential, i.e. normal and abnormal growth behavior, nutritional requirements, cell turnover, differentiation, etc. since the histopathological and cytopathological criteria used for diagnosis of pre-cancerous lesions are very unsatisfactory.

The purpose of the studies is to determine the growth behavior of epithelial lesions induced in vivo by carcinogens. This will be accomplished by placing tracheal explants in vitro and observing the growth behavior of such epithelium under various in vitro conditions. The stability of preneoplastic lesions induced by different dose levels of polycyclic hydrocarbons will be investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	for A. Marchok Paul Nettesheim	10/7/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		G.E. Stapleton
X	NEGOTIATED CONTRACT	3	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		1/76	1/77

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PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AS

TITLE OF PROJECT
INFLUENCE OF IRRITANT GASES ON LUNG TUMOR INDUCTION ON MICE EXPOSED TO URETHANE

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Hardin B. Jones, Ph.D., Professor of Medical Physics and Physiology
Margaret R. White, A.B., Biochemist
Alexander Grendon, M. Biorad., Biophysicist
Lawrence Berkeley Laboratory, Berkeley, CA 94720 (415) 843-2740

NAME AND ADDRESS OF APPLICANT INSTITUTION

Donner Laboratory
Lawrence Berkeley Laboratory
University of California
Berkeley, CA 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Investigations will be made on the effects of the gaseous air pollutants NO_2 and SO_2 on the lung using the mouse as the experimental animal. The objective is to detect early changes at very low levels of exposure, and to determine if there is a relationship to carcinogenesis. In a recent study we have reported on an apparently general dependence of the latent period in carcinogenesis on an inverse power of the dose of carcinogen. The effects of toxic agents on latent period, as well as on total tumor incidence, will be studied. A sensitive method for detecting and measuring additive or cocarcinogenic effects is the use of mice exposed to urethan to test effects of other substances. These mice will be used to test for possible additive carcinogenic effects of airborne toxic substances by exposing them to the pollutants before and after administration of urethan. Part of the treated animals will be serially sacrificed beginning after exposure to the toxic agents and both conventional and scanning electron microscopy used to search for early structural alterations, and to explore the possibilities of recognizing incipient tumors at an earlier stage than has heretofore been possible.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Hardin Jones	June 11, 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)		G. E. Stapleton
X	NEGOTIATED CONTRACT	4	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
90 K	1975		7/1/75	6/30/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AS

TITLE OF PROJECT Multi-mode Scanning Electron Microscope Analysis of Individual Pollutant Particles in the Lung.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Thomas L. Hayes, Adjunct Professor, Medical Physics.

James B. Pawley, Biophysicist.

Lawrence Berkeley Laboratory, Berkeley, CA 94720 (415) 843-2740

NAME AND ADDRESS OF APPLICANT INSTITUTION

Donnner Laboratory, Lawrence Berkeley Laboratory, University of California, Berkeley, CA. 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data) In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Determine the usefulness of characteristic x-rays, secondary ion mass spectrometry and cathodoluminescence for identifying the size, shape, chemical composition and position of particulate pollutants in situ in the lung.

Report data and investigate the ways in which micromanipulation in the SEM, particularly of frozen samples, can enhance these capabilities by separating particles of interest from the bulk sample.

Report data and develop other instrumentation and experimental procedures for viewing relatively thick (1 - 2 μm) freeze-dried sections of lungs by transmission SEM in order to locate sub-surface particulates which may then be characterized by the techniques mentioned above and comparing the SEM results to those obtained by high voltage electron microscopy on these thick samples.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	T. Thomas L. Hayes	June 27, 1975

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	5	G. E. Stapleton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	234	7/1/75	6/30/76

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAS/ EPA-IAG-D5-E681-AS

TITLE OF PROJECT

The Role of 1 2 Benzanthracene in Enhancing Hepatic Tumor Development in Rats Fed AAF

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Carl Peraino, Biochemist
R. J. Michael Fry, Senior Physiologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory, Division of Biological and
Medical Research, Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Procedures developed in this laboratory for studying the mechanism of hepatic tumorigenesis in the rat have proven useful as a means of detecting tumorigenic enhancers in the environment. Briefly, the test protocol involves short-term feeding of the liver carcinogen, 2-acetylaminofluorene (AAF), in an amount designed to produce a low incidence of liver tumors. This treatment is followed by the feeding of the substance under investigation for the remainder of the experiment. The incidence of liver tumors in the animals on this sequential feeding regime is compared with that in rats receiving only the limited AAF treatment or the prolonged exposure to the test substance. A higher tumor incidence in rats receiving both the AAF and test substance in comparison to rats given AAF alone, with no evidence of tumore production in rats given the test substance alone, classifies the substance as a tumorigenic enhancer. Studies using this procedure indicate that phenobarbital and DDT are potent enhancers, whereas amobarbital and diphenylhydantoin are not effective.

Since the sequential feeding procedure is evidently capable of discriminating among agents differing in enhancing ability it would appear to be an appropriate method for screening energy-related pollutants, such as polycyclic hydrocarbons, for relative enhancing activity. The proposed research will examine this possibility by using the sequential feeding regime to test the polycyclic aromatic hydrocarbon 1,2 benzanthracene for tumorigenic enhancing activity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Carl Peraino	Sept. 2, 1975

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	6	Warren K. Sinclair
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Argonne National Laboratory ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
85 K	75		1/76	1/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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EPA
EPA-IAG-D5-E681-AT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Chemical and Molecular Interactions of Pollutants with Key Biological Molecules

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Steven S. Danyluk, Senior Scientist, Division of Biological and Medical Research
Clint F. Ainsworth, Scientific Assistant, Division of Biological and Medical Research

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A detailed investigation will be undertaken of basic mechanisms of interaction between toxic pollutants and key biological molecules at molecular levels of organization. Among the principal objectives of this work are (i) an identification of specific target sites or reactive groups on susceptible biomolecules, (ii) a correlation of toxicant chemical properties with biological reactivity, and (iii) an elucidation of the role of structural and conformational constraints in damage production. The study will focus on chemical and molecular interactions of constituents from two target sites, cell membranes and nucleic acids, with four categories of pollutants, nitrogen and sulfur oxides, volatile trace metals and organometallics, protonic acids, and selected polycyclic hydrocarbons. Working with appropriate model systems, the reaction intermediates and products will be characterized chemically and their structural and conformational features determined by a variety of spectroscopic approaches including optical and magnetic resonance spectroscopy.

In the initial phase of the study, phospholipid and cholesteric spin labels incorporated in bilayer membrane systems are being used to monitor and quantitate the effect of volatile toxicants on membrane dynamical structure. Experiments are also in progress to isolate and characterize reaction products formed between nucleic acids and activated polycyclic hydrocarbons.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Steven S. Danyluk	9-9-75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	1	Clement M. Sanders
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Argonne National Laboratory / ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		1/1/76	7/1/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
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TITLE OF PROJECT
MOLECULAR DAMAGE OF DNA AND PROTEINS CAUSED BY HAZARDOUS METALS, METAL IONS AND ORGANIC COMPOUNDS ASSOCIATED WITH COAL AND OIL SHALE TECHNOLOGIES

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. F. Ward, Ph.D.[1] and L. S. Myers, Jr., Ph.D.[2]

[1]Associate Research Chemist [2]Research Radiobiologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

UCLA - Laboratory of Nuclear Medicine and Radiation Biology, 900 Veteran Avenue, Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives

A study of the interactions of nucleic acids, proteins and their components with hazardous substances related to coal and shale oil technologies.

Approach

Determine 1) which hydrocarbons, other organic compounds, and trace metals can be expected to reach cellular DNA or critical proteins 2) what is the extent of reaction with these substances and 3) would the type of damage produced be expected to be deleterious?

Current Plans

1) Determine affinities of metal ions for DNA and Proteins
2) Measure binding of hydrocarbons to DNA
3) Effect of metals or hydrocarbons on macromolecular structure
4) Effect of metals or hydrocarbons on biochemical functions of DNA

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	J. F. Ward L. S. Myers	10 Sept 1975 10 Sept 75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		1/76	7/77

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
STUDY OF AUTOXIDATION OF LIPIDS OF BIOMEMBRANES AND OF LUNG SURFACTANTS INITIATED BY OXIDATIVE POLLUTANTS AND OF ITS INHIBITION BY ANTIOXIDANTS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

James F. Mead, Res. Biochem., LNMRB; and Prof. of Biol. Chem., Dept. of Biol. Chem.
David R. Howton, Res. Biochem., and Prof. of Biol. Chem., Dept. of Biol. Chem.
Guey-Shuang Wu, Assist. Res. Biochem., LNMRB
Vida Slawson, Staff Res. Assoc., LNMRB
Fumiko Hirahara, Staff Res. Assoc., LNMRB

NAME AND ADDRESS OF APPLICANT INSTITUTION
Laboratory of Nuclear Medicine and Radiation Biology, UCLA
900 Veteran Avenue
Los Angeles, California 90024

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Autoxidation of unsaturated fatty acyl groups in lipids of biomembranes, initiated by known major atmospheric pollutants and inhibited by natural antioxidants, is being studied, using both rat liver microsome membrane vesicles (bilayer) and mixtures – composition of which can be varied at will – adsorbed (as monolayers) on silicic acid as representative or model systems. Autoxidative alteration of unsaturated fatty acyl groups as a function of composition and ordered arrangement is followed primarily by gas chromatographic techniques. In the monolayer system, saturated fatty acids retard the autoxidation rate whereas tocopherols introduce a lag period but do not change the rate. Cholesterol enhances the autoxidation rate. In the microsomal system, rates of autoxidation are low as long as any tocopherol remains in the membrane unless Fe and ascorbate are present.

Alteration of unsaturated fatty acyl groups of types present in alveolar fluid surfactant lipid monolayers initiated by exposure to nitrogen dioxide and oxygen (e.g., cis → trans isomerization and autoxidation) is being investigated via efforts to establish relative rates of alternative pathways followed after initial addition of NO_2 to olefinic centers, kinetic spectrophotometric techniques being employed primarily. Early findings suggest that olefinic center isomerization and autoxidation may be competitive rate-wise under conditions typical of exposure of such lipids to air containing NO_2 in the parts-per-million range.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
UCLA	James F. Mead David R. Howton	9/16/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	3	R.A. Jensen
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Effect of pollutants on biochemical properties of lung membranes during development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Fred Snyder, Ph.D., Chief Scientist, Biochemistry, Medical and Health Sciences Division
Robert Wykle, Ph.D., Scientist, Biochemistry, Medical and Health Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION
Oak Ridge Associated Universities
P. O. Box 117
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The goal of this project is to determine the extent that long-chain aliphatic and aromatic hydrocarbons, NO_2, SO_2, and organic particulates produced in manufacture of energy from nonnuclear fuels, alter the biochemical integrity of membrane structure and organelles of mammalian lungs. Changes in the biochemical and morphological properties of the lung membranes caused by these pollutants will be correlated with pulmonary functional parameters (e.g., production of surfactant) and development of pulmonary disease.

The experimental approach is designed to determine the effect of typical pollutants on the quantitative distribution of intact lipoproteins, and enzymes associated with specific membranes (glucose-6-phosphatase, cytochrome c oxidase, ATPase, 5'-nucleotidase, galactosidase, glycerolipid acyltransferases, acyl-CoA synthetase, acyl-CoA desaturase, and P-450 associated hydroxylases). Alterations in the biomolecular organization and enzymic properties of the membranes will be correlated with the pathological changes found in lung tissues after exposure of animals to atmospheric pollutants.

Results from this investigation are expected to provide a critical assessment of how sensitive biochemical indicators of lung injury respond when exposed to environmental chemical hazards. Such information is needed for (1) establishing realistic safety limits for nonnuclear pollutants as they become identified, (2) developing methods for their detection, and (3) developing agents for the prevention of lung damage.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		4 September 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: ERDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		1/76	7/77

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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT EFFECTS OF HAZARDOUS AGENTS ASSOCIATED WITH COAL AND OIL SHALE TECHNOLOGIES ON INFORMATIONAL AND REGULATORY MACROMOLECULES OF MAMMALIAN CELLS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. D. Enger, Staff Member, Cellular and Molecular Biology Group

C. E. Hildebrand, Staff Member, Cellular and Molecular Biology Group

A. G. Saponara, Group Leader, Cellular and Molecular Biology Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Cellular and Molecular Biology Group (MS886), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study will define the defects in RNA metabolism caused by toxic agents such as mercury, lead, cadmium, selenium, lactones, epoxides, aromatic amines, activatable polycyclic hydrocarbons, and other less well recognized components associated with coal and oil shale processing and utilization. It is our general premise that toxicants are more likely to disrupt complex metabolic systems and that the severity of the cellular effects elicited will be related to the importance of that metabolic system for particular cellular functions. Viewed within that context, ribonucleoprotein effects will be a sensitive and significant end point, since (1) ribonucleoproteins are complex in both their manner of assembly and in the stringent structural relationships required for their functioning and (2) ribonucleoproteins are necessary for many cellular functions such as protein synthesis, control of macromolecular synthesis, and initiation of DNA replication. The effects of toxic agents on synthesis, processing, and function of messenger-related ribonucleic acids will be analyzed. Initial studies will determine the effects on synthesis of heterogeneous nuclear RNA; processing this RNA via trimming, association with proteins, and polyadenylation; appearance of free and ribosome-associated RNA in cytoplasm; and functional capability of messenger RNA and other components of the cell protein synthesizing system.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	M D Enger	9-17-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5	R. A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/1/76	7/1/77

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PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAT/EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Effects of Environmental Contaminants on Gene Function

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigators: E.A. Popenoe, Scientist, Medical Department, BNL
D.N. Slatkin, Scientist, Medical Department, BNL
H.F. Wang, Assistant Scientist, Medical Department, BNL
Assistant Scientist - To be appointed

NAME AND ADDRESS OF APPLICANT INSTITUTION

Medical Department
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, L.I., New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).. In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The burning of fossil fuels, and particularly of coal, is known to release into the atmosphere a number of metals in the particulate discharge. Among those which have been measured are chromium, copper, lead, nickel, titanium and vanadium. Lead is known to produce chromosome aberrations in humans, and both nickel and cadmium (not listed above, but probably also present) have been implicated in carcinogenesis in humans or other animals. The interaction of most if not all of these environmental contaminants with the process of replication of the genetic material has not been explored.

A study of the effects of these trace metals on the interactions of purified DNA polymerases, from humans and other higher organisms, with DNA or with DNA·RNA hybrid templates is proposed. Although these interactions are complex, it should be possible, by enzyme kinetic analysis, to determine with which component of the system the metal interacts and to extrapolate the observed effects down to the concentrations normally found in tissues. This type of extrapolation in relatively simple systems would have much more validity than extrapolations of observed effects on whole animals down to ambient concentrations.

The above study will be extended to include the effects of polynuclear hydrocarbons and their epoxides on DNA polymerase systems and to explore the possibility that metals and hydrocarbons might act synergistically.

This project is currently beginning.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Edwin A. Popenoe	July 23, 1975

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	6	R. A. Jensen
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		1/76	7/78

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
MOLECULAR MECHANISMS OF CHEMICAL CARCINOGENESIS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT

Professor Melvin Calvin, Director Laboratory of Chemical Biodynamics-Principal Invest.
Dr. James C. Bartholomew, Senior Staff Laoratory of Chemical Biodyn.-Co-Principal Invest.
Dr. Edward Bennett, Associate Director LCB-Senior Investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

Laboratory of Chemical Biodynamics
Lawrence Berkeley Laboratory

University of California
Berkeley, CA 94720

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is considerable evidence that environmental pollutants produced by the combustion of fossil fuels are involved with the onset of cancer. Polycyclic aromatic hydrocarbons (PAH) have been shown conclusively to produce malignancies in experimental animals and cells grown in culture. The widespread distribution of these hydrocarbons as a result of the combustion of fossil fuel, both in moving and in stationary power plants, as well as in the combustion of agricultural wastes, makes them important environmental carcinogens. The objective of our research will be to define the chemically reactive positions of PAH and to determine how these hydrocarbons and/or their reactive intermediates interact with biological macromolecules. The approach is to study the metabolic activation of PAH and the subsequent transformation of mammalian cells. Ultimately, the information gained in this study will help understand what biological reactions of PAH are involved with the malignant transformation of mammalian cells.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	7	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		1/76	7/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681- AT

TITLE OF PROJECT
Characterization and Control of Frameshift Mutations

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

I. Tinoco, Jr., Chemist, Chemical Biodynamics Laboratory, LBL and Professor of Chemistry, Chemistry Department, UCB.
Lawrence Berkeley Laboratory, Berkeley, CA 94720

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Berkeley Laboratory

Berkeley, CA 94720 (415) 843-27-40

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We propose to study the interaction of frameshift mutagens with double stranded deoxynucleotides of defined sequence. The thermodynamics and kinetics of the interaction will be studied using optical techniques. The goal is to learn abouth the nature of the DNA sites of intercalation and chemical reaction for frameshift mutagens and carcinogens.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	8	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	75		1/76	7/77

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PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Characterization of Damage to DNA Caused by Chemical Agents: Emphasis on Synergistic Effects in Combination with Sunlight

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. O. Rahn - Ext. 3-5792
W. L. Carrier - Ext. 3-7291
E. G. Bernstine - Ext. 3-5247

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A wide variety of chemicals undergo photochemical reactions in solution leading to reactive intermediates capable of attacking DNA. The objectives of the proposed project are to identify and quantitate the spectrum of damage present in DNA following exposure to a given compound in the presence and absence of light. Emphasis will be placed on polycyclic hydrocarbons and organic peroxides. Low levels of damage in the form of chain breaks or endonuclease sensitive sites will be studied using alkaline sucrose sedimentation techniques. The expression of alkaline labile bonds will be eliminated by the alternative use of gradients containing organic denaturants in place of alkali. Defects in DNA secondary structure caused by base damage will be characterized by their ability to induce unwinding of the helix in the presence of formaldehyde (kinetic formaldehyde analysis). Postlabeling of DNA with iodine-125 will be investigated as an alternative to the often difficult task of incorporating radioactive precursors into a generating cell system. The use of fluorometric as well as phosphorometric assay will also be explored as possible alternatives to the task of preparing radioactive labeled DNA.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	R. O. Rahn R.O. Rahn	10-6-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	9	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75		1/76	7/77

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PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Regulatory Processes in Damaged Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

F. T. Kenney - Ext. 3-5644

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, TN 37830 Tel. 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this project are: (1) To utilize model cell regulatory systems wherein genetic transcription, translation, and turnover of key nucleic acids and proteins can be analyzed and manipulated to determine mechanisms of cellular damage to these processes by hazardous agents associated with coal and oil shale technologies; (2) To determine if partial or total expression of oncogenic viruses is involved in malignant transformation by polycyclic hydrocarbons.

Our approach is as follows: The H35 cell line, developed from a rat hepatoma and containing the inducible tyrosine aminotransferase system, will be exposed to hydrocarbons associated with coal liquefaction and other fossil fuel conversion processes. Initial studies will monitor induction by hydrocortisone (transcription), and turnover of the tyrosine aminotransferase and its mRNA. The outcome of these studies will determine the nature of further analyses to identify the specific regulatory function affected. Mouse embryo cells (AKR), known to carry the genetic information for synthesis of leukemia virus, will be exposed to hydrocarbons associated with coal conversion (and their metabolites, if necessary) and synthesis of specific virus components will be monitored and correlated with transforming capacity. Preliminary experiments indicate that carcinogenic hydrocarbons strongly influence the induction of tyrosine aminotransferase by hydrocortisone. The induced steady state is reached much earlier than in cells treated with hormone alone, suggesting that the induced mRNA may be stabilized in the presence of hydrocarbon. Viral induction experiments in AKR cells have not yet been initiated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	F. T. Kenney	10-17-75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	10	R.A. Jensen
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 Base 40 Energy	75		7/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT Damage and Repair to DNA in Specific Germ Cell Stages of Mammals Following in vivo Exposure to Products Associated with Coal Conversion Utilization

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. B. Cumming - 3-5532

G. A. Sega - 3-5532

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Division
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830 Telephone 615-483-8611

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Recent work done in the Mammalian Genetics Section of the Biology Division at Oak Ridge has, for the first time, established that DNA repair occurs in vivo in several germ cell stages of male mice when exposed to known chemical mutagens. This finding represents an important and useful tool in the screening of potential mutagenic agents since DNA repair is prima facie evidence that the suspected agent (or one of its metabolites) has reached the germ cell DNA, produced lesions and initiated a repair process which may, by itself, lead to mutations if the repair is not totally "error free."

One important problem that can be addressed using this in vivo DNA repair assay in mouse germ cells is the mutagenic potential of some of the various polycyclic hydrocarbons produced in coal conversion. Several such compounds, such as benzopyrene, dimethylbenzanthracene, and 3-methylcholanthrene are already known to be carcinogenic in mammals, but their mutagenic potentials are not as well understood. Toxicity studies are currently being performed using these three compounds in $(C3Hf \times 101)F_1$ hybrid males in preparation for studying their ability to induce DNA repair in mouse germ cells.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Gary Sega for R. B. Cumming	10/7/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	11	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
122 Base 70 Energy	75		7/76	7/77

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PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT Interactions between damage (and repair of damage) resulting from hazardous agents associated with coal and oil shale technologies and ultraviolet damage

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Setlow, R. B., Senior Biophysicist, Biology Department
Schoenborn, B. P., Senior Biophysicist, Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biology Department
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) To compare the amounts of excision and postreplication repair in bacterial and mammalian cells treated with combinations of chemical agents and UV radiation so as to determine whether they act independently, additively or synergistically. To determine the effects of volatile agents on protein structure and function so as to obtain estimates of effects on repair and recombination enzymes and on oxygen binding proteins.

2,3) The molecular nature of the lesions resulting from UV radiation of DNA are well known in all prokaryotic and eukaryotic systems studied. The excision repair of these lesions tends to become saturated at high doses; for example, in mammalian cells the repair systems are able only to remove pyrimidine dimers up to some fixed maximum that depends upon species. The unrepaired dimers are presumably bypassed by a post-replication (recombination) repair system in bacteria. The latter process is in part error-prone and the error-prone part seems to be induced by UV radiation itself. If the same repair systems act on both chemical and UV damage then the amount of repair measured radioautographically as a result of a combined treatment should be no greater than that observed with UV alone. Moreover, the maximum numbers of dimers excised in a combined treatment will be less than observed with UV alone. Thus we shall measure in mammalian cells unscheduled DNA synthesis for a combined treatment and dimer excision for such combined treatments

In a complementary study the effects of chemicals, primarily volatile agents, on protein function and conformation will be measured in terms of their effects a) on purified repair enzymes acting in vitro, and b) on the conformation of well characterized proteins, such as hemoglobin which is known to be affected, by x-ray and neutron diffraction studies and by spectroscopic analyses. The latter work will suggest the mode of action of such compounds on other enzyme systems.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	RB Setlow	October 20, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	12	R.A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 163 K Energy 60 K	75		7/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Damage Repair Studies Related to Cell Function and Molecular Processes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

M. M. Elkind, Senior Biophysicist
A. Han, Guest Scientist
R. D. Ley, Assistant Scientist
Division of Biological and Medical Research.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In reference to non-nuclear energy-related pollutants, the objectives of this research are to assess: whether such materials are biologically active; whether or not they interact with other agents (nuclear and non-nuclear) in the environment; what are the natures of the molecular lesions involved; and if mammalian cells can repair the damage produced. For this purpose, primarily cultured cells will be used and cell killing, mutation, and neoplastic transformation will be measured. As required, test of neoplastic change will be made using appropriate hosts.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	M. M. Elkind	August 28, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	13	Warren Lewis
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 122 K Energy 70 K	75		1/76	7/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BAT /EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Repair of DNA treated with γ-irradiation and chemical carcinogens

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Goldthwait, David A. — Principal Investigator
Ramanathan, R. — Research Associate-50 per cent
Kirtikar, D. — Research Associate- 50 per cent

NAME AND ADDRESS OF APPLICANT INSTITUTION

Case Western Reserve University
2109 Adelbert Road
Cleveland, OH 44106

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The project involves the mechanism of repair of DNA treated with chemical carcinogens and γ-irradiation. An enzyme, Endonuclease II, has been purified extensively from E. Coli and breaks phosphodiester bonds of DNA treated with methylmethanesulfonate, dimethylsulfate, methylnitrosourea, 7-bromomethyl-12 methyl benzanthracene, and γ-irradiation. The enzyme also hydrolyzes phosphodiester bonds in depurinated DNA and releases selectively methylated bases. It is proposed to investigate with the E. coli enzyme the nature of the depurination reaction and the phosphodiester bond hydrolysis to determine if they are due to one or two enzymes, to reexamine the site of the phosphodiester bond hydrolysis, to define other chemical carcinoq carcinogens which when reacted with DNA produce a substrate and to define the substrate recognized in irradiated DNA. Similar enzymes are being purified from calf liver and human placenta and levels of enzyme will be surveyed in normal and tumor tissues and in various lines of cultured cellls.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	14	R. A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
35 K	75		1/76	1/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AT

TITLE OF PROJECT
Biological Damage Processes of Hydrocarbons: Molecular Activation and Binding Evaluated by EPR.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigators: D.C. Borg, Scientist, Medical Department, BNL
Assistant Scientist - To be appointed

NAME AND ADDRESS OF APPLICANT INSTITUTION

Medical Department
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, L.I., New York 11973

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The goal of the first task is to develop information about the fundamental molecular and cellular damage associated with possible carcinogenesis/mutagenesis from hydrocarbons and other pollutants derived from fossil fueled energy conversion and utilization processes. There is evidence that metabolic activation of some, or many, classes of carcinogens/mutagens produces free radical forms which are the ultimate reactants with nucleic acids or other target biomolecules. In this work special continuous-flow reactors designed at BNL for use with electron paramagnetic resonance at Q-band (35 GHz) will be used in an effort to detect and identify short-lived free radical addition compounds formed with nucleic acids, their components, and related biochemicals. A two-stage mixer will be used (the first stage to produce reactive free radical forms of carcinogenic compounds and their derivatives and the second to react with these test nucleic acid components), following further development of a prototype already available at BNL.

The second task will seek to use spin-label methods to provide a rapid, presumptive test for DNA binding of test substances (following incubation with activating enzyme systems, where appropriate). The goal is to develop a cheap and easy semi-empirical procedure of broad applicability. If successful, the spin-label test would screen for a chemical property of test compounds that should correlate with carcinogenesis (and mutagenesis), possibly being a necessary -- if insufficient -- condition for carcinogenesis to ensue.

This project is currently beginning.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R.B. Anderson for D.C. Borg	8/12/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	15	R. A. Jensen
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		1/1/76	1/1/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)* SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA-IAG-D5-E681-AU

TITLE OF PROJECT Reparative and Adaptive Mechanisms in Respiratory Systems of Rodents and Monkeys Exposed to Sulfur Compounds and Particulates (Goldman and Tyler)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Marvin Goldman (Administrative Responsibility), Prof. & Director, Radiobiology Lab.
Walter S. Tyler (Scientific Director), Prof. & Director, Calif. Primate Research Ctr.
Daniel Chang, Asst. Prof., Dept. of Civil Engineering.
Carroll Cross, Assoc. Prof., Dept. of Internal Medicine, School of Medicine.
Donald L. Dungworth, Prof. & Chairman, Dept. of Veterinary Pathology.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of California
Davis, California 95616

Lester W. Schwartz, Asst. Prof. Pathology, Calif. Primate Research Ctr.
Jerry R. Gillespie, Assoc. Prof., Dept. of Physiological Sciences.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives:

(a) To determine the functional and morphological consequences of injury to the respiratory system of rodents and monkeys by inhalation of effluents from coal-burning power sources. Sulfuric acid and particulates will be used as models of injury.

(b) To determine the site and sequence of biochemical, immunological, and cellular mechanisms responsible for the injury.

(c) To determine cellular and subcellular mechanisms of adaptation and repair according to intensity and duration of injury, and to plot the extent to which recovery is possible as a function of exposure concentration and time.

(d) To examine the relationships between the factors involved in the balance between injury and adaptation/repair, and to assess their relative roles in the development of chronic bronchitis, emphysema, interstitial fibrosis, and proliferative states capable of increasing the risk of carcinogenesis.

(2) Approach and (3) Current Plans:

Our primary goal is to study the nature of the reparative and adaptive mechanisms taking place in the respiratory system in response to damage by energy-related pollutants. This we propose to do by investigation of the intermediate-term effects of sulfuric acid and/or particulates such as SiO_2 and flyash on the respiratory tracts primarily of rodents and nonhuman primates. Principal efforts will be directed to studies of the sequential development of lesions during exposures of the order of 90 to 120 days and the cellular and subcellular events occurring during a recovery period of similar length. Damage, repair, and adaptation will be studied using sensitive techniques of respiratory physiology, biochemistry, immunology, and pathology/morphology

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
School of Veterinary Medicine	Marvin Goldman Walter S. Tyler M. Goldman W.S. Tyler	9/23/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	M.L. Minthorn, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
200 K	75		1/76	7/78

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AU

TITLE OF PROJECT LUNG CELL INJURY AND REPAIR AFTER INHALATION EXPOSURE TO PARTICULATE ACID SULFATE (EPA)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. O. Slauson, Experimental Pathologist 505-264-1406

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute
Lovelace Foundation
P. O. Box 5890
Albuquerque, New Mexico 87115

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The use of fossil fuels for the generation of electric power results in a stack release of various gases, particulates and vapors. The interaction products of these emissions may represent a health hazard to humans if inhaled repeatedly over a long period of time. Acid sulfate particles represent one such interaction product which, following inhalation, may damage sensitive cells comprising the respiratory tract. Research on the nature and response of the cells at risk in the respiratory tract after acid sulfate inhalation will be directed at four potentially important target cell types: tracheobronchial epithelium, alveolar epithelium, alveolar macrophages, and pulmonary capillary endothelium. Changes in cell populations in response to injury and cytopathologic alterations in individual cells will be studied by correlative light and electron microscopy as well as by selected histochemical methods in an effort to define the nature of the injury and repair process as it occurs in the injured lung. Initial studies will be undertaken using exposures of Syrian hamsters to atmospheres containing 1.0 or 0.1 mg/cubic meter sulfuric acid mist or ammonium sulphate. Both repeated and chronic exposures will be done. Progress to date has been related to the evaluation of inhalation exposure chambers, aerosol generation approaches and characterization control procedures required for maintenance of constant exposure environments through repeated or chronic animal exposures.

77 BAU

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Robert K Jones for D O Slauson	December 2, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2	M.L. Minthorn
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		1/1/76	7/1/78

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77 BAU/EPA-IAG-D5-E681-AU

TITLE OF PROJECT
Alveolar Clearance of Inhaled Metal Oxides

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. L. Sanders, Ph.D., Biology Department
R. R. Adee, B.S., Biology Department
G. J. Powers, Biology Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Biology Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project will study the role of the alveolar macrophage, alveolar epithelium and other pulmonary cells in influencing the spatial-temporal distribution and alveloar metal clearance of inhaled metal oxides common to fossil fuel effluents. It is highly probable that the "processing" of these metals by the alveolar macrophages, and the effects of the metal on these cells may play a key role in the metals toxicity to the whole organism. Hamsters and rats will be exposed by inhalation to the metal monoxides PbO, CdO, and HgO. Metal concentrations at intervals of up to 60 days will be determined in tissues and excreta. A quantitative analyses of metal oxides in pulmonary cells, particularly alveolar macrophages will be performed, and an attempt will be made to compare the particle distribution in pulmonary cells with clearance of the metal and translocation rate. Early ultrastructural alteration of the macrophage will also be examined as an index of pulmonary toxicity.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA		7/22/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	3	M. L. Minthorn
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
60 K	75		1/76	7/80

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PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-1AG-D5-E681-AU

TITLE OF PROJECT Effects of Chemical Toxicants Associated with the Production and Consumption of Fuel on the Physiology and Pathophysiology of Phagocytic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

John L. Skosey, M. D., Ph. D.
Associate Professor of Medicine &
The Franklin McLean Memorial Research Institute
The University of Chicago, Box 420

950 E. 59th Street
Chicago, Illinois 60637
(312) 947-5062

NAME AND ADDRESS OF APPLICANT INSTITUTION

The University of Chicago
Office of Sponsored Programs

5801 So. Ellis
Chicago, Illinois 60637

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). To the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

There is a three fold rationale for studying the effects of chemical toxicants on the function of phagocytic cells. Firstly, chemical toxicants may interfere with the function of phagocytic cells in defenses against external agents such as bacteria and viruses. Secondly, pathological effects of certain toxicants such as silica and asbestos particles may be mediated through their effects on phagocytic cells. Thirdly, phagocytic cells mediate the pathological consequences which result from agents responsible for, e.g., rheumatic diseases; chemical toxicants may alter responses of phagocytic cells to these agents and to their adverse effects.

Studies designed to elucidate the mechanism by which phagocytic cells may mediate the pathological effects of particles (e.g. silica, asbestos, quartz, carbon) are in progress. We have shown previously that neutrophils respond to monosodium urate crystals coated with immunoglobulin by releasing lysosomal enzymes. This secretion of enzymes occurs without significant cell death. Studies are in progress to determine if other particles which initiate inflammatory tissue damage similarly interact with immunoglobulin and to determine the effects of such immunoglobulin coated particles upon neutrophils. In parallel, studies are in progress to determine the effects of pollutant gasses upon physiological and pathophysiological responses of neutrophils and to determine the mechanisms of these effects. Initial studies have demonstrated that the responses of neutrophils are dependent upon the oxygen tension of the medium used for incubation. Reduction in oxygen tension results in increased release of lysosomal enzymes in response to phagocytable particles, an increased rate of anaerobic glycolysis (reflected in increased lactate production) and a decreased rate of glucose oxidation. Studies are in progress to determine the mechanism of these effects of altered oxygen tension.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, Dental, etc.) The University of Chicago, Division of Biological Sciences and Pritzker School of Medicine

SIGNATURE OF PRINCIPAL INVESTIGATOR

DATE
September 10, 1975

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	4	M. L. Minthorn
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA-Division of Biological & Environmental Res.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$50,000	1975	4 years	5-1-75	7-1-80

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PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AU

TITLE OF PROJECT EVALUATION OF THE MECHANISMS OF ENERGY-RELATED TOXIC AGENTS ON THE MAMMALIAN HEMATOPOIETIC SYSTEM USING FLOW MICROFLUOROMETRIC ANALYSIS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

J. A. Steinkamp, Staff Member, Biophysics and Instrumentation Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biophysics and Instrumentation Group (MS888), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this health effects research program is to identify and determine quantitatively the mechanisms of energy-related physical and chemical toxic agents on the mammalian hematopoietic system. This includes the assessment of toxicological dose-damage relationships to mammalian blood cell formation by analysis of peripheral blood cell composition and blood formation tissues (e.g., bone marrow, lymph nodes) for maturation and survival of the various cell types. We propose to apply rapid and sensitive blood cell analysis techniques to the determination of the effects of exposure to and recovery from nonnuclear toxic agents on the production of blood cells in animal test systems, with the objective of defining the changes applicable to exposed human populations. Initial experiments will concentrate on further characterization of small-animal peripheral blood and bone marrow cells by existing staining (fluorescence) and flow-analysis methods. Development of simple microstaining techniques for blood cell suspensions will also begin, permitting peripheral blood samples to be obtained without animal sacrifice. Further developments of analytical techniques for characterizing bone marrow cells will be initiated. Once satisfactory blood cell characterization is completed on normal animals, blood cells from animals grown in experimental toxic environments will be analyzed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		9-17-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	5	M. L. Minthorn, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 50 K Energy 50 K	75		1/1/76	1/1/78

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PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EP
EPA-IAG-D5-E681-AU

TITLE OF PROJECT Functional and Quantitative Changes in Immunocompetent Cells, Induced by a Carcinogenic Product of Coal and Oil Utilization

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Bernard N. Jaroslow, Immunologist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We propose to investigate recovery from the effects of a carcinogenic polycyclic hydrocarbon on the size and the proliferative and functional capacity of different sub-sets of immunocompetent cells. There is abundant evidence that carcinogens are immunosuppressive, but recovery and stabilization of different functional populations of the immune system from acute and low-dose chronic exposure have not been studied.

We will examine the dose response to a compound, such as methylcholanthrene, administered at different critical times in the development of the immune response in mice. The toxicity of the chemical on the size and the differential sensitivity of specific sub-sets of the population will help us to quickly identify the cell types most sensitive to the test compound. This approach will permit us to measure the decline, recovery and the level of stabilization of the immune system during carcinogenesis. We will also assess the effects of a chronic low-level dosage of the carcinogen, given in manner, amount and frequency similar to the common mode of exposure to such an industrial product or pollutant. The changes in the immune system will be traced through length of life studies.

The changes in the immune system, resulting from treatment of mice with the chosen carcinogen, will be followed in three ways: 1) The production of antibody-forming cells to T-dependent and T-independent antigens. 2) Specific cell-mediated immunity will be measured by the cytotoxicity assay to allogeneic cells. 3) Changes in the number of cells in different sub-sets of immunocytes in the spleen will be measured.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Bernard N. Jaroslow	9/9/75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	6	Warren R. Sinclair
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 134 K Energy 52 K	75		1/76	7/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*

SSIE

EPA

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA-IAG-D5-E68-AU

TITLE OF PROJECT

ENVIRONMENTAL CARCINOGENIC STUDIES IN A SUBHUMAN PRIMATE

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Nazareth Gengozian, Ph.D.
Chief Scientist
Department of Immunology
Medical and Health Sciences Division

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge Associated Universities
P. O. Box 117
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this proposal is to study the immunosuppressive and potential carcinogenic activity of an environmental pollutant, polychlorinated biphenyls, in a subhuman primate. Two species of marmosets were chosen, *Saguinus oedipus oedipus* and *Saguinus fuscicollis*, the former because of its innate sensitivity to an identified carcinogenic (environmental ?) agent as exemplified by the high incidence of spontaneous colon cancer in this species and the latter because of its apparent resistance to the same agent. Polychlorinated bi- and triphenyls have been shown to induce a hyperplastic response in a variety of organs in other primates (rhesus), one of the primary target tissues being the gastric mucosal cells. As a positive control, groups of each of these two species will also be exposed to 2,4 dimethylhydrazine, a known potent colon carcinogen in mice, rats, and hamsters. Independent of any possible carcinogenic activity, a major interest will be the alterations induced in the immunologic apparatus of these animals during treatment with the two chemical compounds. This will be monitored by both in vitro and in vivo test procedures. Current studies have focused on establishing the background values for a variety of immunologic assays prior to initiation of drug treatment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Nazareth Gengozian	9-4-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	7	M. L. Minthorn
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 BAse 55 Energy	75		1/76	1/77

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PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AU

TITLE OF PROJECT (*Do not exceed 100 characters*)
PROCESSES BY WHICH LABORATORY MAMMALS RECOVER FROM DAMAGE BY EXPOSURE TO POLLUTANTS ASSOCIATED WITH COAL GASIFICATION AND SHALE DISTILLATION, WITH EMPHASIS ON THE SEQUENCE OF EVENTS OCCURRING IN THE IMMUNE SYSTEM

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

D. M. Smith, Staff Member, Mammalian Biology Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Mammalian Biology Group (MS880), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The health implications for people being exposed to quantities of potentially hazardous materials such as sulfur, crude phenols, naphtha, tar oils, tars, ammonia, and crude methanol are obvious. Many of these by-products (e.g., tar oils and tars) have a notorious history of carcinogenicity. Crude phenols have high systemic toxicity and are potentially synergistic with a variety of disease processes, as they are highly irritant to epithelia and may interfere with cell replacement mechanisms. The immune system acts as a sensitive, finely tuned instrument to recognize foreign agents of biological origin and to mobilize specialized body mechanisms to neutralize such agents. We propose to study the importance of immunocompetence in recovery from various insults, including carcinogenesis. Specific first phases of the study will include (1) monitoring changes in the immune system occurring during aromatic hydrocarbon-induced carcinogenesis of the respiratory tract and chemically induced (nitrosamines, dimethylhydrazine) carcinogenesis of the gastrointestinal tract and (2) determining the carcinogenic properties of aromatic hydrocarbons alone and along with other potentially synergistic agents in immunologically deprived animals.

77 BAU

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	David M. Smith	9-17-75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	8	M.L. Minthorn
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
90 K	75		1/1376	1/1/78

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PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AU

TITLE OF PROJECT EVALUATION OF THE DOSE-EFFECT RELATIONSHIPS FOR THE IMMUNE RESPONSE TO BIOLOGICALLY ACTIVE AGENTS ASSOCIATED WITH COAL GASIFICATION TECHNOLOGIES

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

L. S. Cram, Staff Member, Biophysics and Instrumentation Group

NAME AND ADDRESS OF APPLICANT INSTITUTION

Biophysics and Instrumentation Group (MS888), Health Division, Los Alamos Scientific Laboratory, University of California, Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The unique and rapid cell-analysis and sorting instrumentation at the Los Alamos Scientific Laboratory will be used to quantitate certain cellular aspects of the human immune response to specific hazardous agents generated by coal gasification and oil shale production technologies. Flow microfluorometry (FMF) is currently being used to provide a sensitive means for measuring lymphocyte stimulation *in vitro* before and after addition of specific and nonspecific mitogens. It is proposed to extend this work to determine the dose-effect relationship of lymphocytes to undergo immunostimulation following *in vivo* (animal model systems) and *in vitro* exposure to specific hazardous agents. Second, macrophage ingestion of specific nonnuclear particulate matter will be quantitated. The subsequent effect on the ability of such a macrophage to participate in its role of immunostimulation will be determined on a per cell basis using rapid cell-analysis techniques. It is anticipated that these studies will provide information relating to defense mechanisms of the immune response (i.e., the role suppression plays in this most important response to hazardous agents).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	L. S. Cram	9-17-75

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SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	9	M. L. Minthorn, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		1/1/76	7/1/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-AU

TITLE OF PROJECT
Therapy of Non-Radioactive Toxic Metal Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. Lindenbaum, Biochemist, Div. of Biological and Medical Research (principal investigator)
D. W. Baxter, Research Associate, Div. of Biological and Medical Research (Summer,1975)
N. G. Doan, Student Aid, Div. of Biological and Medical Research (Summer, 1975)

NAME AND ADDRESS OF APPLICANT INSTITUTION
Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The hazard to man represented by many toxic metals of environmental concern (e.g., Pb, As, Cd, Hg) depends upon the extent to which they become concentrated and retained in critical compartments of living tissues. By measuring the degree to which a metal will undergo hydrolysis, protein binding, and/or incorporation within cells in selected animal species, the critical parameters necessary to devise effective therapeutic measures may be determined. The basic objectives of this work, therefore, are to identify and measure critical concentrations of toxic metals in organs, cells, and subcellular organelles of mammalian species and to devise therapeutic procedures for reducing these concentrations to acceptable levels.

Two parallel and interdependent lines of investigation are planned: (1) Baseline measurements of the tissue distribution (mice, dogs) of sublethal amounts of these metals in whole organs and in microscopic tissue loci, mainly after i.v. administration; (2) development and application of effective therapeutic removal procedures.

For two reasons, initial efforts are concentrated on lead. First, lead is one of the most ubiquitous of environmental pollutants. Second, some of our recent work on actinide decorporation may offer a direct therapeutic application in the case of lead poisoning. Our first studies have demonstrated differences in the deposition of two lead compounds, lead acetate (A) and lead citrate (C), in mouse tissues. At 1 hr after A the liver contained 51% of the injected dose per gram (% ID/g) and the spleen contained 18% ID/g. In mice injected with C the comparable values were about 18% ID/g and 4% ID/g, respectively. Between 1 hr and 14 days after A, there was a large and rapid reduction in liver and spleen deposition and more than a two-fold increase in femur deposition. Up to 14 days after both A and C, the low but nearly constant brain levels were of further note. At the physiological pH range C apparently remains soluble in the tissues, whereas A undergoes hydrolysis, with subsequent uptake in reticuloenthelial tissues.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Arthur Lindenbaum	9-9-75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	10	
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Argonne National Laboratory / ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
170 K Base 50 K Energy	75		1/1/76	7/1/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI[illegible] 260 H MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA - IAG-D5-E681-AU

TITLE OF PROJECT
Therapy of Non-Radioactive Toxic Metal Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

A. Lindenbaum, Biochemist, Div. of Biological and Medical Research (principal investigator)
D. W. Baxter, Research Associate, Div. of Biological and Medical Research (Summer,1975)
N. G. Doan, Student Aid, Div. of Biological and Medical Research (Summer, 1975)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory
9700 S. Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The hazard to man represented by many toxic metals of environmental concern (e.g., Pb, As, Cd, Hg) depends upon the extent to which they become concentrated and retained in critical compartments of living tissues. By measuring the degree to which a metal will undergo hydrolysis, protein binding, and/or incorporation within cells in selected animal species, the critical parameters necessary to devise effective therapeutic measures may be determined. The basic objectives of this work, therefore, are to identify and measure critical concentrations of toxic metals in organs, cells, and subcellular organelles of mammalian species and to devise therapeutic procedures for reducing these concentrations to acceptable levels.

Two parallel and interdependent lines of investigation are planned: (1) Baseline measurements of the tissue distribution (mice, dogs) of sublethal amounts of these metals in whole organs and in microscopic tissue loci, mainly after i.v. administration; (2) development and application of effective therapeutic removal procedures.

For two reasons, initial efforts are concentrated on lead. First, lead is one of the most ubiquitous of environmental pollutants. Second, some of our recent work on actinide decorporation may offer a direct therapeutic application in the case of lead poisoning. Our first studies have demonstrated differences in the deposition of two lead compounds, lead acetate (A) and lead citrate (C), in mouse tissues. At 1 hr after A the liver contained 51% of the injected dose per gram (% ID/g) and the spleen contained 18% ID/g. In mice injected with C the comparable values were about 18% ID/g and 4% ID/g, respectively. Between 1 hr and 14 days after A, there was a large and rapid reduction in liver and spleen deposition and more than a two-fold increase in femur deposition. Up to 14 days after both A and C, the low but nearly constant brain levels were of further note. At the physiological pH range C apparently remains soluble in the tissues, whereas A undergoes hydrolysis, with subsequent uptake in reticuloenthelial tissues.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Arthur Lindenbaum	7-7-75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	11	Warren C Sinclair
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 170 K Energy 50 K	75		1/76	7/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U.S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO

TITLE OF PROJECT

Computer In Vivo Detection of Mutations in Somatic and Germinal Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

PROJECT OFFICER: H. V. Malling, Head, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(a) Somatic mutations in vivo

The purpose of this investigation is to develop methods by which the frequency of somatic point mutations at several genetic loci in experimental animals and human beings can be measured. Because blood is a readily available source of somatic cells that have a high turnover rate, we will initially attempt our studies with the use of blood. Methods based on differential staining of mutated and non-mutated cells will be developed. Antibodies flagged with fluorescent moieties will be produced to identify cells containing aberrant mutant proteins.

This system will utilize automatic detection of variant cells by a cytograph and the data will be stored and analyzed with the computer.

(b) Point mutations in male germinal tissue

The purpose of this investigation is to develop methods by which point mutations can be detected directly on spermatogonia, spermatid and sperm. The mutant cells will be detected by differential histochemical stains. Several enzyme systems will be employed, some common for somatic cells and the germinal tissue, some specific for the sperm.

Detection of aberrant sperm cells will involve the use of an automatic scanning microscope which will be hooked into the computer.

Task ERR 1.3

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	H. V. Malling	8/21/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY

NIEHS//Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$85,000 75			

RPH-1946 (FORMERLY PHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772- CO

TITLE OF PROJECT

Development of a System for Detecting Lethal Mutations in Mice

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractor's Project Director: Thomas H. Roderick, Ph.D., The Jackson Laboratory, Bar Harbor, Maine

Project Officer (NIEHS): William Sheridan, Ph.D., Mammalian Genetics & Cytogenetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute of Environmental Health Sciences
P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Inversions are induced by irradiation and/or chemical agents in the chromosomes of mice. Bearers of inversions are detected by analysis of anaphase bridges in individual males. It is intended to establish strains of animals carrying marked inversions for the purpose of detecting induction of recessive lethal mutations by environmental agents in a manner comparable to that existing in Drosophila melanogaster.

Task: ERR 1.4

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS// Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$69,000 75	263		

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO

TITLE OF PROJECT
Development of a New Mouse Strain to Maximize Sensitivity of a Point Mutation Assay

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractor's Project Director: Thomas H. Roderick, Ph.D., The Jackson Laboratory

Project Officer (NIEHS): Lawrence R. Valcovic, Ph.D., Staff Fellow, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangel Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A specific locus mutation system has been developed for mice. In this system it is possible to detect mutations in nine isozyme loci. The efficiency for detection of mutations in such a system increases with the number of isozyme loci which can be screened per mouse. Among the various inbred mouse strains, there are several enzyme polymorphisms. The mouse strain C57BL/6J is of a different origin than most other common mouse strains. This difference can be increased by incorporating other known enzyme polymorphisms into this strain. Crosse of the various strains (each to C57BL/6J) have begun. The F_1's will be backcrossed in order to obtain a homozygous strain, to C57BL/6J. Three generations of backcrossing to C57BL/6J have been completed for most of the enzymes.

Task 1.5

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY: NIEHS RTP// Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$39,000 75	264		

NIH-1946 (FORMERLY PHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO

TITLE OF PROJECT

Amplification of Point Mutation System: Characterization of Mouse Esterases by Isoelectric Focusing

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: Dr. Robert Allen, Medical University of South Carolina, Charleston, South Carolina

PROJECT OFFICER (NIEHS): Dr. L. R. Valcovic, Acting Assistant Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The research seeks to characterize esterases of C57BL/6J and DBA/2J mice with gel isoelectric focusing. Esterases from plasma, red blood cells and kidney of both strains as well as the F_1 interstrain hybrid shall be subjected to two-dimensional analysis. Discontinuous gel zymograms of these enzymes have been described previously and hence this technique will be used for the first dimension separation. Subsequently, isoelectric focusi will then be conducted using thin slab acrylamide gels. Various pH ranges will be employed in order to determine the isoelectric point of each esterase band.

Since the projected use of this technique involves screening large number of mice, this contract should entail a sufficiently large sample to place a reliable confident interval for the isoelectric point of each esterase band.

Task:1,7

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	LR Valcovic	8/21/75

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SUPPORTING AGENCY: NIEHS// Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
50 K 75	265	6/75	6/76

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO
C

TITLE OF PROJECT

Development of a Polygenic Assay for Induced Point Mutations in Mice

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractor's Project Officer: John W. Crenshaw, Jr., Ph.D., Georgia Institute of Technology

Project Officer (NIEHS): Eugene R. Soares, Ph.D., Staff Fellow, Mammalian Genetics and Cytogenetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangel Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This research will be designed to develop an understanding of the mutagenic effects of compounds as measured by mean and variance changes in polygenic characters. This system should be designed such that four or more easily measured polygenic traits will be tested. Inbred strains such as DBA/2 and C57BL/6 are to be used in this study. Use of such strains will allow for comparisons of results from this investigation with those of experiments now being conducted at NIEHS. It will be necessary to: (a) test the effects of chemicals of known mutagenicity, which have differing effects at various stages of germ cell production such as mitomycin-C, TEM and MMS, (b) test all stages of germ cell (spermatogenesis) production, (c) develop dose-response curves for the compounds used, (d) develop a design such that genetic effects in both F_1 and F_2 progeny may be ascertained, and (e) include in the design provisions for incorporation and coordination of this system with cytological assays for chromosomal aberrations.

Task:ERR 1,8

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY: NIEHS:RTP// F Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$70,000 75	266		

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO

TITLE OF PROJECT

Detection of Point Mutations in Somatic Cells

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: Dr. Peter E. Nute, University of Washington, Seattle Washington

PROJECT OFFICER (NIEHS): Dr. H. V. Malling, Geneticist, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Traingle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this investigation is to develop a simple system to measure point mutations in readily accessible human somatic cells. Antibodies to each of two types of fetal hemoglobin will be produced and used to search for individual mutant cells within a population of cells. Some monospecific antibodies to variant human hemoglobins have been acquired and purified. These antibodies will be used in developing tests for detecting a human mutation rate.

Task:ERR 1.9

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	H V Malling	8/21/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY NIEHS// Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$82,000 75			

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CO

TITLE OF PROJECT

Development of Faster, More Efficient and Less Costly Methods for Determining Teratogenic Changes

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractors's Project Director: Dr. Franklin M. Johnson, Research Triangle Institute

Project Officer (NIEHS): R. E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Mouse and rabbit embryos will be exposed to gaseous coal by products such as SO_x and NO_x during culture in the preimplantation period, and, to sulfur-and nitrogen-containing compounds by intrauterine injection during the postimplantation period of gestation. Subsequent effects on the developmental process will be compared to those noted after exposure to the same test agents by inhalation.

Task: ERR 1.11

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS//Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$50,000 75			

NIH-1946 (FORMERLY PHS-166)

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

College of Physicians & Surgeons of Columbia University, Department of Pediatrics
630 West 168th Street, New York, N. Y. 10032

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Arthur D. Bloom, 033-24-3679, Professor, Departments of Pediatrics and of Human Genetics and Development
Herbert S. Rosenkranz, 096-28-7438, Professor, Department of Microbiology
William T. Speck, 149-30-2147, Instructor, Dept. of Pediatrics; Attending Physician, Babies Hospital
Sherie L. Morrison, 554-60-7614, Assistant Professor, Dept. of Microbiology
Barbara Travis, 118-28-1883, Research Associate, Dept. of Human Genetics & Development
Bezalel Gutter, 106-54-0400, Research Associate, Dept. of Microbiology

TITLE OF PROJECT

Mutagenesis in Cultured Lymphocytes

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

This project involves the development of mammalian lymphoid culture systems to test for the mutagenicity of environmental agents. Compounds which are known mutagens (such as alkylating agents, and frameshift mutagens) will be tested in human and lymphoid cell lines for the induction of mutations at the hypoxanthine-guanine phosphoribosyl transferase and the argininosuccinic acid synthetase loci, and in murine lymphoid cells for the induction of altered immunoglobulin. The induction of chromosomal breakage in these cell lines will be studied using the G and H banding techniques. In addition, the research will utilize bacterial test systems to determine the relationship between mutagenicity in simpler organisms and in more complex, differentiated mammalian cells.

LEAVE BLANK

Task: ERR 1.13
Agency: NIEHS
Funding: $178,000
Project Officer: Dr. Fred de Serres

SECTION I

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-C0

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of Texas System Cancer Center, M. D. Anderson Hospital & Tumor Institute
Houston, Texas 77025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT. BEGINNING WITH PRINCIPAL INVESTIGATOR

Michael J. Siciliano, Department of Biology, M. D. Anderson Hospital & Tumor Institute, Principal Investigator, Assistant Professor and Assistant Biologist. 067-30-5509.

Ronald M. Humphrey, Department of Physics, M. D. Anderson Hospital & Tumor Institute, Co-Investigator, Chief Section of Cellular Studies, Dept. of Physics. 460-44-5590

T. C. Hsu, Department of Biology, M. D. Anderson Hospital & Tumor Institute, Co-Investigator, Chief Section of Cell Biology. 467-60-6146

TITLE OF PROJECT

MULTIPLE LOCI SCREEN FOR MUTATIONS IN MAMMALIAN CELLS

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is our intention to develop a new system for testing the mutagenic potential of various environmental agents on mammalian somatic cells. The basis of the procedure is to expose cells to mutagen and plate out single cell clones. Clonal isolates, after being grown up to 40 x 10^6 cells, are then screened for electrophoretic variation of the products of over 40 genetic loci. Where a clonal variant is detected, it is isolated and its heritability determined by subcloning and subsequent electrophoresis. The procedure avoids many of the problems associated with the detection on selective systems of recessive mutations (auxotrophic, drug resistant, and temperature sensative) in diploid mammalian cells since electrophoretic mutations are co-dominant. Lack of enrichment for mutants by selection is also compensated for by the increased probability of obtaining an electrophoretic shift in a protein as the result of a single nucleotide substitution in its gene as opposed to the complete loss of function by such an event and, the study of the products of a large number of loci. Additional attributes of the procedure are that: each variant may be associated with a specific genetic locus, mutations in a wide range of genetic loci may be studied, the system requires no change in the medium limiting the cause of any observed variation to intracellular events, and mutations in both structural genes as well as those affecting gene expression can be specifically detected.

Our preliminary studies using Chinese hamster ovary cells (CHO) have revealed that we can electrophoretically characterize the products of 51 structural enzyme loci and detect variants at both structural and control loci. We wish to continue these studies in order to optimize various parameters of the procedure -- dosage of mutagen, time of cloning and stage of the cell cycle for mutagen treatment -- and to use the system to study mutation frequencies under a variety of conditions.

LEAVE BLANK

TASK: ERR 1.14
Agency: NIEHS
Funding: $120,000
Project Officer: Dr. Fred de Serres

NIH 398 (FORMERLY PHS 398)
Rev. 1/73

SECTION 1

NOT FOR PUBLICATION OR PUBLICATION REFERENCE	DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE RESEARCH OBJECTIVES	LEAVE BLANK PROJECT NUMBER EPA-IAG-D5-E772-CO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, California 94025

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

A. D. Mitchell (459-62-8786) Principal Investigator, Cell Biologist, Biomedical Research Department

K. Stefos (452-68-7179) Postdoctoral Fellow in Cell Biology, Biomedical Research Department

M. V. McMacken (583-09-4277) Biochemist, Biomedical Research Department

TITLE OF PROJECT

Development of DNA Repair for Monitoring Human Health

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The nation's response to the needs for energy self-sufficiency could increase the number of hazardous agents that are released into man's daily environment. Efficient and economical systems are needed to predict human susceptibility to hazardous agents and to monitor human populations for adverse genetic effects which may be caused by unforseen mutagens. There is a high probability that these needs could be met by further development of DNA repair synthesis. The utility of the present in vitro DNA repair synthesis tests can be enhanced by developing in vivo DNA repair synthesis to measure organ and tissue specificities of responses to hazardous agents and by using these same tissues as the sources of metabolic activation enzymes for in vitro DNA repair synthesis assays. The significance of DNA repair synthesis will be further enhanced by examinations of DNA repair in prematurely condensed chromosomes and by correlations of the extent of DNA repair with measurements of cytogenetic aberrations, with mutagenesis of mammalian cells, and with carcinogenesis as measured by cell transformation.

LEAVE BLANK

TASK: ERR 1.15
Agency: NIEHS
Funding: $60,000
Project Officer: Dr. Fred de Serres

SECTION 1

DEPAR ENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CO

NAME AND ADDRESS OF APPLICANT ORGANIZATION

New York State Dept. of Health, 84 Holland Ave., Albany, N.Y. 12208 and Health Research, Inc., Roswell Park Div. 666 Elm St., Buffalo, N.Y. 14263

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Chester C. Huang (127-34-3846) Principal Investigator, Senior Cancer Research Scientist, Springville Laboratories.

TITLE OF PROJECT

A Modified Host-Mediated Assay Using Human Cells

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The purpose of this proposal is to develop a modified host-mediated assay system by using cultured human lymphoid cells as target cells for screening chemical mutagens and carcinogens. Induction of chromosome damage will be used as an indicator of possible mutagenicity or carcinogenicity of a given compound. First, the growth and cytogenetic characteristics of several selected human lymphoid cell lines will be studied in vitro and after inoculation of such cells in heterologous hosts, second, effects on chromosomes of human lymphoid cells in host by several known mutagens and carcinogens will be tested in this modified host-mediated system and third, the mutagenicity and carcinogenicity of several pesticides in common use will be evaluated by using the modified host-mediated assay developed.

LEAVE BLANK

Task: ERR 1.16
Agency: NIEHS
Funding: $34,342
Project Officer: Dr. Fred de Serres

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

77 BCP/EPA-IAG-D5-E772-CP

TITLE OF PROJECT

ERR 2.1 Metabolism and disposition of selected radiolabelled hydrocarbons and some of their chemically reactive epoxides by the isolated, perfused rabbit lung and by solubilized, reconstituted pulmonary biotransformation systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

J. R. Bend, Ph.D., Visiting Associate, Pharmacology Branch
R. M. Philpot, Ph.D., Senior Staff Fellow, Pharmacology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The metabolism of pure, radiolabelled unsaturated hydrocarbons of different types (aliphatic, alicyclic and polycyclic aromatic) and of their epoxides will be studied in the isolated, perfused rabbit lung and in the isolated, perfused rat liver. Major metabolites will be identified and quantitated; the relative importance of epoxide hydrase and glutathione S-epoxidetransferases as deactivation pathways for the chemically-reactive epoxides will be assessed. Covalent binding, if present, will be quantitated in both liver and lung homogenates. The effect of glutathione depletion on this covalent binding will also be measured.

TASK: 2

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John R. Bend	8.18.75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Dr. Robert L. Dixon (Project Officer)

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☒ Other (Specify) Direct

FUNDS OBLIGATED CURRENT F.Y.		NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
20 K Base	75			
40 K Energy	75	273	7/75	7/77

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D5-E772-CP

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27514

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Lorcan A. O'Tuama, M.D., 385-54-9164, Ass't. Prof. Of Medicine (Neurology) and Pediatrics and Research Scientist, Biological Sciences Research Center
John T. Gatey, Ph.D., 159-30-3973, Assoc. Prof. of Pharmacology
C.S. Kim, 400-72-1617, Graduate Assistant, Pharmacology

TITLE OF PROJECT

Regulation of Neural Distribution of Lead

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Factors regulating the entry and distribution of inorganic lead in the nervous system will be studied under control and selected abnormal conditions. In the guinea pig, in vivo CSF perfusion will quantitate the disappearance rate of ^{210}Pb and ^{45}Ca across the blood-CSF barrier. The uptake of ^{210}Pb and ^{45}Ca across the blood-brain barrier will be measured by an indicator dilution technique. These measurements will be correlated with levels of lead and calcium attained in brain, meninges, choroid plexus and ependyma. These indices will be determined for control animals and for animals acutely lead-poisoned. The affinity of the neural tissues for lead and calcium in the absence of an intact barrier will be assessed by measuring in vitro uptake and release of ^{210}Pb and ^{45}Ca. This will be determined under control conditions; after inhibition of general, oxidative and glycolytic metabolism; after changes in medium electrolyte composition and after exposure to reagents that act as ligands. An effort will be made to distinguish solute accumulation due to binding within neural tissue from that due to movement across the tissue using excised bullfrog choroid plexus and meninges which can be mounted as "polar" membranes, allowing direct measurement of transepithelial flux. This parameter will be studied in control and acutely poisoned frogs and contrasted with the results of in vitro uptake and release experiments in the same species. The behavior of ^{109}Cd, a non-neurotoxic metal, will also be observed in several of the above experimental situations, so as to suggest patterns of uptake and distribution that are not correlated with neurotoxicity. These studies will (a) establish how the disordered flow of lead across neural barriers that we have noted in lead encephalopathy contributes to its pathogenesis; (b) allow development of predictive tests for neural toxicity of potential toxins and pollutants by testing their effects on barrier function.

LEAVE BLANK

TASK: ERR 2,7
AGency: NIEHS
Funding: $59,000
Project Officer: Dr. Robert L. Dixon

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER
EPA-IAG-D5-E772-C

NAME AND ADDRESS OF APPLICANT ORGANIZATION

The University of South Dakota, Vermillion, South Dakota 57069

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Frank O. Brady, 280-40-3462
Assistant Professor
Department of Biochemistry

TITLE OF PROJECT

Function of Metallothionein in Heavy Metal Metabolism

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORD (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The low molecular weight, cysteine rich protein, metallothionein will be studied under a variety of conditions in order to elucidate its function in heavy metal metabolism. Its involvement in the mechanisms of incorporation, metabolism, deposition and turnover of hazardous toxic metals, which are becoming increasingly prevalent in the environment as byproducts associated with various energy related technologies, will be elucidated. Specifically, the focus of these studies will be on the mechanisms of action and sites of localization and transfer of heavy metals in perfused rat lungs, and possibly livers and kidneys, (both *in vivo* and *ex vivo*) and in rats (both adults and neonates). The heavy metals of interest in this study are zinc, copper, cadmium, mercury, nickel, and thallium. Initially, these will be studied individuall as a preliminary to more important experiments which will involve the study of interactions of two or more of these metals, e.g., a situation which is more likely to occur under environmental conditions. The goal of these studies is to establish whether metallothionein is functioning in detoxification of toxic heavy metals or has another role in the normal metabolism of essential heavy metals, the presence of toxic heavy metals serving to interfere with these normal processes.

LEAVE BLANK

TASK: ERR 2.8
Agency: NIEHS
Funding: $73,000
Project Officer: Dr. Robert L. Dixon

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CP

TITLE OF PROJECT

ERR 2 and ERR 6 Environmental Teratology Information Center (ETIC)

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Robert E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch

Interagency Agreement, Oak Ridge National Laboratories (Contact: John S. Wassom)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

NIEHS is establishing a computerized information system for teratology to meet the need of government agencies and scientists-at-large for knowledge of the teratogenic potential of environmental components. Data on warmblooded animals judged to be useful for determining the teratogenic potential of environmental factors will be extracted in tabular form. Information will be collected from published and unpublished studies, whether the result is positive or negative. On-going studies will also be included.

TASK: ERR 2.9

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R E Staples	August 22, 197

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY NIEHS//Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
3A1 $150,000 75 4D1 $150,000	276		

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CQ

TITLE OF PROJECT

'Respirable forms of volatile chemical and particulate reaction products

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Otto G. Raabe, Ph.D., Head, Aerosol Physics Department (Contractor's Project Director)
Hsu Chi Yeh, Ph.D., Aerosol Physics Department
George Newton, Aerosol Physics Department
Phillip J. Walsh, Ph.D., Physicist, Environmental Biophysics Branch (Co-Project Officer, NI
Robert T. Drew, Ph.D., Supervisory Physical Scientist, Pharmacology Branch (Co-Project Officer, NIEHS)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Inhalation Toxicology Research Institute, 5200 Gibson Boulevard, S.E.
Albuquerque, New Mexico

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Summary of proposed work:

1. Study of gaseous chemical behavior and gas-particle interactions
2. Evaluation of standardized chemical-particle forms with respect to respiratory tract deposition
3. Deposition studies in physical models
4. Deposition studies in animals

Task: ERR 3.2

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Phillip J. Walsh	8/20/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS// Project Officer: Dr. Larry G. Hart

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
Base 200 K 75 Energy 100 K 75	2	7/75	7/78

NIH-1046 (FORMERLY PHS-166)

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLA
PROJECT NUMBER
EPA-IAG-D5-E772-CQ

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Harvard School of Public Health
665 Huntington Avenue, Boston, Mass. 02115

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Mary O. Amdur 013-26-1512 Assoc. Professor of Toxicology Dept. of Physiology
Dwight W. Underhill 579-50-2490 Assist. Professor of Environ. Health Engineering Dept. of Physiology

TITLE OF PROJECT

Factor Affecting Irritant Potency of Gases and Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We propose to examine the joint toxic action of sulfur dioxide and ozone. Concentrations used will be in the range of 0.2 - 0.8 ppm of each gas. They will be combined in equal concentration as well as in varying ratios. The criteria of irritant response will be alterations in the respiratory mechanics of guinea pigs. The response to the combination will be compared to previously observed changes produced by sulfuric acid. We also plan to study the uptake of sulfur dioxide by wetted wall tubes with and without the addition of aerosols. We plan to study the solubility and reactivity of sulfur dioxide in solutions of various salts which have been shown to potentiate the biological response.

LEAVE BLANK

Task ERR 3.3
Agency: NIEHS
Funding: $68,000
Project Officer: Dr. Larry G. Hart

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CR

TITLE OF PROJECT

ERR 4.3 Effects of energy-related pollutants on female reproductive tract function

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

George W. Lucier, Ph.D., Research Chemist, Environmental Toxicology Branch
John A. McLachlan, Ph.D., Research Associate, Environmental Toxicology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

We are proposing to study the effects of exposure of pregnant animals to energy-related pollutants on male and female reproductive tract function in F_1 offspring. Forced-breeding and serial mating techniques will be used to evaluate fertility. Endocrinology and histopathology parameters will be studied in reproductively abnormal animals. Screening procedures will be done on contract and further mechanistic studies will be attempted in intramural laboratories.

TASK: ERR 4.3

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	George W Lucier	August 22, 197

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$100,000 75			12/75

NIH-1946 (FORMERLY PHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CR

TITLE OF PROJECT

ERR 4.4 Effects of 60 Hz fields on the mammalian central nervous system

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Donald I. McRee, Ph.D., Mechanical Engineer, Environmental Biophysics Branch
W. Ross Adey, M.D., Professor, Anatomy and Physiology, Director of Space Biological Laboratory, Brain Research Institute, UCLA (Contractor)
S. M. Bawin, Ph.D., Space Biological Laboratory, UCLA (Contractor)
R. Gavalas-Medici, Ph.D., Space Biological Laboratory, UCLA (Contractor)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research project is to determine the effects of 60 Hz fields from high voltage transmission lines on the central nervous system of mammals.

Specific studies to be accomplished include:

1. Effects on biological rhythms in rats,
2. Effects on conditional behavior in primates,
3. Effects on neuroendocrine mechanisms in rats and primates,
4. Effects on the neurochemistry of brain tissue.

TASK: ERR 4.4

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Donald I. McRee	August 22, 197

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS// Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☒ Other (Specify) Direct

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
100, 000 75		7/75	7/78

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CR

TITLE OF PROJECT

ERR 4.5 Respiratory and cardiovascular functions in pollutant exposed animals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

R. T. Drew, Ph.D., Supervisory Physical Scientist, Pharmacology Branch
E. W. Van Stee, D.V.M., Physiologist, Pharmacology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is directed toward the detection of functional changes in the cardiovascular system associated with the inhalation of energy-related pollutants. The function of isolated, perfused rabbit, rat, and guinea pig hearts will be monitored. Animals may be previously exposed to contaminants followed by excision and perfusion of hearts or the hearts may be exposed acutely in vitro. Myocardial mechanical, electrical, and metabolic activity may be monitored concurrently.

TASK: ERR 4.5

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	E W Van Stee	August 22, 19

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY NIEHS// Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☒ Other (Specify) direct

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$97,000 75		7/75	7/78

NIH-1946 (FORMERLY PHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CR

TITLE OF PROJECT

ERR 4.6 Effects of gestational exposure

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Robert E. Staples, Ph.D., Research Physiologist, Environmental Toxicology Branch
B. A. Schwetz, D.V.M., Ph.D., Dow Chemical Company (Contractor)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences, P O Box 12233, Res Tri Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pregnant mice and rabbits are being exposed in inhalation chambers to sulfur dioxide, sulfur dioxide plus carbon monoxide or various particulates, and to sulfuric acid aerosol to determine the effect of these pollutants on development of the conceptus. The offspring are examined just before birth for the presence of external and internal structural alterations.

TASK: ERR 4.6

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R E Staples	August 22, 19

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY NIEHS // Project Officer: Dr. Robert L. Dixon

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$100,000 75			

NIH-1946 (FORMERLY PHS-166)

SECTION I

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CR

NAME AND ADDRESS OF APPLICANT ORGANIZATION

New York University Medical Center
550 First Avenue, New York, New York 10016

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Bernard D. Goldstein, M.D., SS# 107-30-3693 - Assistant Professor of Environmental Medicine and Medicine

Walter Troll, Ph.D., SS# 346-12-4757 - Professor of Environmental Medicine

Toby Rossman, Ph.D., SS# 119-34-7549 - Assistant Professor of Environmental Medicine

TITLE OF PROJECT

Arsine Toxicity: A Potential Environmental Hazard

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The proposed studies will evaluate the toxicity of arsine, a potential by-product of coal gasification technology, in two experimental systems.

1. Human red cells will be exposed to arsine in vitro in order to determine the mechanism of action of this hemolytic gas. In particular, the possibility that arsine hemolyzes the red cell through production of free radicals or peroxides will be assessed.

2. The possible carcinogenic potential of arsine will be indirectly studied in E. Coli and mammalian tissue culture cell lines by evaluating whether asine interferes with DNA repair processes as has been observed with its presumed end product arsenite.

In each of these studies the levels of intracellular and extracellular arsenic compounds following arsine exposure will be measured and the results compared with parallel experiments using similar levels of arsenite or, if indicated, arsenate.

LEAVE BLANK

TASK: ERR 4.7
Agency: NIEHS
Funding: $51,000
Project Officer: Dr. Robert L. Dixon

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

EPA-IAG-D5-E772-CR

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Stanford University Stanford, California 94305

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

S. David Holtzman, M.D., Ph.D.
329-34-6056
Assistant Professor, Pediatrics and Neurology
Head, Division of Pediatric Neurology

TITLE OF PROJECT

Lead toxicity and energy metabolism in immature brain

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Lead is a ubiquitous toxic pollutant. The most serious manifestation of pediatric lead poisoning is an acute encephalopathy. In addition, the rising burden of environmental lead may be producing significant brain damage, without overt encephalopathy, in young children, in the unborn fetus, and the neonate. Pathologic studies suggest that lead produces edema and capillary changes at a "critical" time in the immature brain of the human and in a rat model of lead encephalopathy. This "critical" period in the rat contains many age-dependent changes in energy metabolism including activities of the electron transport chain (ETC) as described by this investigator and others. Lead does act on the ETC in other tissues. However, there are no studies in immature brain of lead effects on the ETC, a probable basic step in the pathogenesis of lead encephalopathy.

Preliminary results are presented on effects of lead on oxidative phosphorylation in immature rat brain mitochondria. Within 2 days of feeding lead to 2 week old animals, respiration with NAD-linked substrates is uncoupled, reflecting an increased state 4 rate. During the subsequent 2 week pre-encephalitic period of lead feedings, both state 3 and 4 rates become increasingly depressed. Cytochrome oxidase activity shows the same changes. These effects are more significant in cerebellar than in cerebral hemisphere mitochondria. Importantly, these effects of lead occur earlier than previously reported changes in brain fluid, electrolytes, and morphology.

Considering the preliminary results and observations outlined above, investigations are proposed based on these hypotheses: a) the primary effect of lead in developing brain is on energy metabolism; specifically on sites in the ETC; and b) this effect is basic to the toxic effects of lead. Experiments are designed to delineate the sites and mechanisms of action of lead to learn more of the properties of the ETC in immature brain and of the pathogenesis of lead encephalopathy. Younger animals will be studied to delineate potential effects of lead on the brain of the human fetus and neonate.

LEAVE BLANK

Task: ERR 4.8
Agency: NIEHS
Funding: $94,000
Project Officer: Dr. Robert L. Dixon

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CR

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California, Department of Chemistry, Davis, California 95616

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

August H. Maki	078-22-4549	Professor	Chemistry
Steve Siegel	013-38-7607	Research Assistant	Chemistry
Tiao-te Co	256-96-6936	Research Assistant	Chemistry
- -	-	Postdoctoral Fellow	Chemistry

TITLE OF PROJECT

Binding of CH_3Hg^+, an Environmental Hazard, with DNA

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

We intend to determine the extent to which DNA of chromosomes binds alkyl and aryl mercury in living cells. Also, we wish to obtain information on the molecular level concerning the nature of the complexes. The method to be used is a spectroscopic one, optical detection of magnetic resonance, odmr, by means of which magnetic resonance transitions in photoexcited triplet states are detected optically. A heavy atom effect caused by mercury binding to an aromatic chromophore such as a heterocyclic base of DNA makes the resulting triplet state a highly radiative trap which is especially sensitive to odmr. The odmr method thus selects the mercury-perturbed chromophore which then can be identified by the magnetic resonance frequencies, and other properties of the phosphorescent state. Selectivity by the heavy atom effect is especially good in DNA which normally is not highly luminescent. As a major system for study, we intend to use Allium cepa for which cytological data of chromosomal aberrations of root cells caused by mercurial treatment exists.

LEAVE BLANK

TASK: ERR 4.9
Agency: NIEHS
Funding: $60,000
Project Officer: Dr. Robert L. Dixon

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CS

TITLE OF PROJECT

Chemical and Environmental Mutagen Studies Utilizing the Tradescantia Test System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Contractor's Project Director: Arnold H. Sparrow, Ph.D., Brookhaven National Laboratory

Project Officer (NIEHS): Frederick J. de Serres, Ph.D., Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of the proposed research are: (a) to demonstrate the usefulness of and further develop the Tradescantia somatic mutation test system as a quantitative monitor in environments containing known or suspected mutagens; (b) to use special genetic clones of Tradescantia to establish the relative mutagenicity of a limited number of mutagens (primarily in gaseous form), as to magnitude of effect, specificity of action, and possibility of reversion; (c) to look for evidence of genetic repair of DNA injury produced by chemical mutagens and to look for possible threshold levels below which induced mutation rate is negligible; and (d) to determine in greater detail the time and dose response for several loci for one selected gaseous mutagen, comparing these with presently available radiation data and with results observed in animal cells. Two different clones of Tradescantia (Clone 02 and Clone 4430), which are heterozygous for a flower petal color mutation, will be used to develop an assay system for detecting mutagenic activity of airborne environmental chemicals. During the next year, the development of standard conditions of exposure will be continued and the effects of various environmental factors on the level of response determined. Emphasis will be placed on obtaining precise dose-response curves after treatment with different mutagens and to determine whether there is any evidence for thresholds.

TASK: ERR 5.1

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS//Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
180 K 75			

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CS

TITLE OF PROJECT

Compilation and Tabular Abstracting of Literature on Mutagenic Effects of Energy Related Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: John S. Wassom, Oak Ridge National Laboratory, Oak Ridge, Tennessee

PROJECT OFFICER (NIEHS): Dr. H. V. Malling, Head, Biochemical Genetics Section, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The tasks the Environmental Mutagen Information Center will carry out are to compile the past and present literature on mutagenesis testing of energy related pollutants. This information will then be processed into EMIC's data bank noting bibliographic details, and keywording of chemicals, organisms, and system studied. A special tabular abstract of the papers containing original test data will be made. This table will have the same format as the tabular abstract made for the Food and Drug Administration on a selected series of food additives. In order to make these data easily available, bibliographies containing agent, organism, test object, chemical abstract services (CAS), registry number and a KWIL index will be printed and distributed to interested individuals.

TASK: ERR 5.3

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	H. V. Malling	8/24/73

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY

NIEHS//Project Officer: Dr. Fred de Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$130,000 75			7/75

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CS

TITLE OF PROJECT

Electrophoresis of Mouse Tissue: Testing of Offspring After Parental Treatment with Energy Related Pollutants

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

CONTRACTOR'S PROJECT DIRECTOR: Dr. F. M. Johnson, Research Triangle Institute, Research Triangle Park, North Carolina

PROJECT OFFICER (NIEHS): Dr. L. R. Valcovic, Acting Assistant Chief, Environmental Mutagenesis Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

NIEHS, P. O. Box 12233, Research Triangle Park, North Carolina 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The study of specific enzyme mutations using electrophoresis has the capability of detecting mutations that result in either a non-functional protein or a functional protein with altered electrical charge. Our objective is to use a single mammalian test system that will detect both electrophoretic mobility (EPM) and inactive enzyme (IAE) mutations in the same loci. Two inbred mouse strains which differ with respect to nine enzyme loci have been selected for this system. Adult males of each strain were treated with gamma radiation and mated to unirradiated females of the other strain to produce F_1 hybrid offspring. Tissue samples are obtained surgically and electrophoresis is conducted on crude homogenates. This procurement contract will perform the electrophoresis on mouse tissue samples from experiments conducted at NIEHS. The current experiment will provide data on the induction of gene mutations induced by radiation and current plans are to initiate tests using energy related chemicals.

TASK: ERR 5.6

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	LR Valcovic	8/21/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY NIEHS Project Officer: Dr. Fred De Serres

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$140,000 75			6/75

NIH • 1946 (FORMERLY PHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D50E772-CT

TITLE OF PROJECT

Development of Statistical Methodology for Low Dose Extrapolation

Project No.: Z01 ES 41002-01 EBB
Previous Project No.: None

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

H. A. Guess, Ph.D., Staff Fellow, Environmental Biometry Branch (Principal Investigator)
K. S. Crump, Ph.D., Louisiana Tech University (Principal Investigator)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P. O. Box 12233, Research Triangle Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A new statistical technique is being developed for obtaining, from experimental data, maximum likelihood estimates of low dose carcinogenic risk. The statistical properties of the technique, such as error estimates, are being investigated.

TASK: ERR 6.1

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NIEHS	Harry A. Guess	8/22/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
NIEHS/Project Officer: Dr. David G. Hoel/

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☐ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☐ Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$5,000 75			

SECTION 1

DEPARTMENT HEALTH, EDUCATION, AND WELFARE
BLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IA G-D5-E772-CT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Department of Statistics
367 Evans Hall
University of California
Berkeley, California 94720

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

J. Neyman, 561-46-6637, Director, Statistical Laboratory, Professor of Statistics
L. LeCam, 572-58-5796, Professor of Statistics
E. L. Scott, 559-58-4487, Professor of Statistics
F. N. David, 572-68-5929, Chairman, Department of Statistics, Professor of Statistics
H. Lewy, 220-22-0146, Professor Emeritus of Mathematics

TITLE OF PROJECT

STATISTICAL STUDIES OF PROBLEMS OF HEALTH AND BIOLOGY

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is intended to work on the development of statistical and probabilistic subdisciplines particularly important in the studies of biology and health problems. Whenever possible, such studies will be conducted in conjunction with substantive biological studies. To facilitate the establishment of the relevant contacts, seminar meetings with substantive speakers will be used, once a week during the academic year and more frequently during summer. Many problems contemplated for the immediate future are suggested by the current energy crisis. The broad, say, ultimate statistical problem connected with this crisis can be stated as follows: given that in a locality a new energy producing plant is to be constructed, with a specified additional environmental pollution, to estimate the consequent changes in the selected parameters of public health. It is proposed to study a number of subproblems of this "ultimate" problem. These include: (i) the use of Markov chains to study "competing risks", (ii) methodology of treating factorial experiments, (iii) construction of stochastic models of biological phenomena like carcinogenesis and mutagenesis. Some relevant mathematical problems will also be studied.

LEAVE BLANK

Task: ERR 6.12
Agency: NIEHS
Funding: $74,000
Project Officer: Dr. David G. Hoel

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

State University of New York at Buffalo

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

1. C. P. Yu, 540-46-8993, Professor, Department of Engineering Science, Aerospace Engineering and Nuclear Engineering.

2. D. B. Taulbee, 363-36-5370, Associate Professor, Department of Engineering Science, Aerospace Engineering and Nuclear Engineering.

3. Two Research Assistants (to be determined).

TITLE OF PROJECT

Respiratory Tract Deposition of Inhaled Aerosols

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Mathematical models are to be developed for theoretical prediction of particle deposition and distribution along the respiratory tract system. Specifically, the following tasks are to be undertaken during the period of requested support:

1. Develop a mathematical model for deposition in man at nose-breathing.

2. Recommend figures for the regional deposition in the human lung at nose and mouth-breathing under various working conditions. Emphasis will be given to fine particles which are difficult to be removed from power plant emissions.

3. Develop a mathematical model for deposition in smokers and patients with chronic obstructive pulmonary disease.

4. Develop a mathematical model for deposition in experimental animals.

The basic method to be used is the one previously developed by the principal investigator and his faculty associate.

LEAVE BLANK

Task: ERR 6.13
Agency: NIEHS
Funding: $47,000
Project Officer: Dr. David G. Hoel

SECTION I

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CT

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Maryland - Baltimore County, Division of Mathematics and Physics
5401 Wilkens Avenue, Catonsville, Maryland 21228

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Allan H. Marcus 278-36-6673, Associate Professor, Department of Mathematics (P.I.)

TITLE OF PROJECT

Compartmental Models For Body Burden Of Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

It is often possible to model the body burden of pollutants as a mixed exponential moving average of the external pollutant dosage. This model fails: (a) when the pollutant occupies a significant fraction of a system e.g. carbon monoxide. (b) when an appreciable fraction of pollutant is retained in long-lived components e.g. bone-seekers such as lead. A semi-Markov model for physiological kinetics generalizes this model. By representing body burden as a stochastic integral of external dosage, it is often possible to estimate the frequency, duration, and parameters of other integral exceedance measures for body burden, thus to estimate the effects of environmental quality standards on body burden variation. Physiological kinetic models for carbon monoxide, for the lead-calcium system, and for cadmium-zinc, will be estimated using non-linear regression techniques for experiments (as reported in the literature) on uptake and elimination in constant evironments. Stochastic models will be developed for external dosage of CO and lead, and the parameters of the exceedance measures of body burden estimated. In this way it may prove possible to establish a better rationale for environmental standards setting.

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Task: ERR 6.14
Agency: NIEHS
Funding: $19,000
Project Officer: Dr. David G. Hoel

NIH 398 (FORMERLY PHS 398)
Rev. 1/73

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Southwest Foundation for Research and Education
P.O. Box 28147 (8848 West Commerce Street)
San Antonio, Texas 78284

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

John R. Rowlands, Ph.D. SS 560-68-1216, Director, Environmental Sciences
Emily M. Gause, M.S. SS 264-42-1890, Sr. Res. Scientist, Environ. Sci.
Martin L. Meltz, Ph.D. SS 054-34-4576, Sr. Res. Scientist, Environ. Sci.
Bruce McCullough, Ph.D. SS 300-38-1048, Staff Pathologist, Environ. Sci.

TITLE OF PROJECT

Effects of Pollutants Upon Alveolar Macrophages

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORD (NOT TO EXCEED 10) IN YOUR ABSTRACT.

A research study has been designed to: 1) detect directly, by means of spin label measurements, membrane lesions produced from in vivo exposure of alveolar macrophages to pollutant atmospheres--both oxidant and reducing; 2) obtain experimental evidence that these lesions are, or are not, associated with activity of membrane-bound enzymes and with phagocytic and respiratory capacity of the alveolar macrophage; 3) relate dose-dependence of observed induced membrane lesions with response of intracellular systems--specifically lysosomal enzymes, a cytoplasmic enzyme, cAMP, and RNA/DNA synthesis; 4) assess the effects of the same in vivo exposures upon selected lung systems which will either exert a pharmacological effect upon the macrophage membrane (such as cAMP), or provide an altered substrate for phagocytosis by the alveolar macrophage (i.e., the lung surfactant); and 5) evaluate the effects of the metabolic and functional state of the alveolar macrophage itself (i.e., actively phagocytic or resting) upon production of lesions, impairment of function, and particularly upon surrounding lung tissue.

LEAVE BLANK

Task: ERR 7.6
Agency: NIEHS
Funding: $86,495
Project Officer: Dr. Larry G. Hart

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

EPA-IAG-D5-E772-CU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

Duke University Medical Center, Durham, N.C. 27709

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Daniel E. Menzel, 569-46-3298, Assoc. Prof. Pharmacology & Medicine, Head, Div. of Pharmacology, Dept. of Physiology & Pharmacology

Hugo O. Jauregui, 299-48-7680, Ast. Prof. of Pathology, Dept. of Pathology

TITLE OF PROJECT

Can Vit E or Lipid Alter NO_2 or O_3 Toxicity in Lung?

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Ozone and nitrogen dioxide may exert their toxic effects by peroxidation of the unsaturated fatty acids of the lung and other tissues. To test this hypothesis, mice will be fed chemically defined diets known to produce lung lipids having differing degrees of susceptibility to lipid peroxidation. Diets will be deficient or sufficient in vitamin E or contain -tocopheryl quinone or phenolic antioxidants. Animals will be exposed to ozone and nitrogen dioxide and the dose-response relationship between the toxicity of these air pollutants and the peroxidizability of the lung lipids will be determined. The protective effect of vitamin E and other phenolic antioxidants will be determined. The effects of air pollutant exposure will also be measured by changes in growth and in lung lipid composition and enzyme content. Potential defense mechanisms of peroxidases will be investigated in both lung and liver. The toxic effects of ozone and nitrogen dioxide will be compared with putative chemical intermediaries of toxicity. These studies are designed to test the free radical theory of action of these air pollutants, and to determine the dietary levels of antioxidants necessary to prevent lung damage at current concentrations of air pollution.

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Task ERR 7.7
Agency: NIEHS
Funding: $63,000
Project Officer: Dr. Larry G. Hart

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

EPA-IAG-D5-E772-CU/77BCU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

College of Veterinary Medicine
Michigan State University, East Lansing, MI 48824

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Kim, J.C.S.
547-62-7042
Associate Professor of Pathology

TITLE OF PROJECT

Vitamin A Effect on Lung Cell Cycle Kinetics After NO_2

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Epidemiological as well as experimental evidence suggests that the development of lung cancer is a result of complex interaction of a number of exo-and endogenous factors. Besides the carcinogenic insult, environmental factors modifying the target organs, the host factors such as genetic susceptibility, aging, nutrition and other host factors may be of paramount importance.

Vitamin A is known to be essential on epithelial cellular differentiation and a deficiency of it causes squamous metaplasia. Nitrogen dioxide not only produces basal cell hyperplasia in the respiratory tract but also promotes infection and the tumorigenesis of chemical carcinogens. The presence of this component not only as an air pollutant but also in cigarette smoke emphasizes its importance.

The objective of this proposal is to investigate the influence of Vitamin A on the cell cycle kinetics of the hamster respiratory tract resulting from exposure to 10ppm of NO_2 for 5 hours. The role of Vitamin A in the respiratory tract will be studied by both light and electron autoradiography with particular emphasis on epithelial cell differentiation and metaplasic changes.

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Task: ERR 7,8
Agency: NIEHS
Funding: $19,000
Project Officer: Dr. Larry G. Hart

SECTION 1

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK

PROJECT NUMBER

'77 BCU/EPA-IAG-D5-E772-CU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of Vermont
Burlington, Vermont 05401

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

Hart, Beth A. S.S. 150-32-4361
Assistant Professor
Department of Biochemistry

TITLE OF PROJECT

THE INTERACTION OF CADMIUM WITH THE PULMONARY ALVEOLAR MACROPHAGE.

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY W (NOT TO EXCEED 10) IN YOUR ABSTRACT.

The heavy metal cadmium, a known environmental pollutant, has been implicated a causative agent in the development of lung pathology. It has been suggested that of the sites of cadmium toxicity is the oxidative metabolism of the pulmonary alveol macrophage. At present, there is little known about the interaction of cadmium with the alveolar macrophage under physiological conditions. It is the purpose of the pr posed research, therefore, to study the transport, intracellular distribution, and accumulation of cadmium by the pulmonary alveolar macrophage and to relate the amoun of cadmium accumulated within the cells to alterations in physiological function. port by macrophage monolayers will be quantitated by the use of ^{109}cadmium. The cellular distribution of cadmium will be determined by measuring the radioactivity present in the sub-cellular fractions (i.e., soluble cytoplasmic fraction, mitochond microsomes, and membranes) obtained after cell homogenation and differential centri tion. Attempts to identify a specific cadmium-binding protein will be made by usi column chromatographic techniques. Direct measurements of the cadmium content of ma phages will be made with the use of an atomic absorption spectrophotometer equipped a micro-atomizer. Experiments will then be conducted to determine how the rate of cadmium transport is affected by pH, divalent ions, thiol-containing agents, protei and alveolar lining material, and to determine whether cadmium accumulation can occu during the phagocytosis of bacteria and/or kaolin. Macrophages that have accumulate known amounts of cadmium under different environmental conditions will also be monit for phagocytic activity, release of lysosomal enzymes, endogenous respiration, and ATPase activity. Comparative studies with macrophages from various animal sources a planned. It is hoped that the results of the proposed study will contribute to our understanding of the role cadmium plays in the development of lung pathology in man.

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Task ERR 7.9
Agency: NIEHS
FUNDING: $46,000
Project Officer: Larry G. Hart

SECTION I

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RESEARCH OBJECTIVES

LEAVE BLANK
PROJECT NUMBER
EPA-IAG-D5-E772-CU

NAME AND ADDRESS OF APPLICANT ORGANIZATION

University of California, Davis, California

NAME, SOCIAL SECURITY NUMBER, OFFICIAL TITLE, AND DEPARTMENT OF ALL PROFESSIONAL PERSONNEL ENGAGED ON PROJECT, BEGINNING WITH PRINCIPAL INVESTIGATOR

See attached list.

Donald L. Dungworth, et. al.

TITLE OF PROJECT

Pulmonary Effects of Environmental Oxidant Pollutants

USE THIS SPACE TO ABSTRACT YOUR PROPOSED RESEARCH. OUTLINE OBJECTIVES AND METHODS. UNDERSCORE THE KEY WORDS (NOT TO EXCEED 10) IN YOUR ABSTRACT.

Rats and monkeys will be chronically exposed to oxidant air pollutants, primarily ozone, at concentrations approximating high ambient levels (0.2 - 0.5 ppm). A multidisciplinary group will make integrated biochemical, microbiological, physiological and morphological evaluations of effects. The findings will have relevance to the specific problem of air pollution and to a general understanding of pulmonary pathobiology.

By plotting the relative levels of sensitivity of the various parameters studied and the effects observed, a basis will be provided for making predictions of possible long-term consequences of photochemical smog on man. Comparison of effects in rats and monkeys should provide for more confident extrapolation to man and hence enable the setting of rational air quality criteria.

A primary goal is to test critical hypotheses concerning biochemical, immunological and cellular mechanisms responsible for the deleterious effects of the pollutants. Major pathogenetic and modifying factors of interest are: the role of lipid peroxidation in initiating damage; the induction of antioxidant defense mechanisms by continued exposure and the general phenomenon of adaptation; the sites of impairment in pulmonary alveolar macrophages and components of the immune system in the lung; the sequence and nature of lesions resulting in the development of chronic obstructive lung disease (bronchitis/emphysema) and interstitial fibrosis.

An additional goal is to explore further the potential prophylactic value for human populations of dietary antioxidants such as vitamin E.

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Task: ERR 7.10
Agency: NIEHS
Funding: 4D1 $170,000
5A1 $115,000
Project Officer: Dr. Larry G. Hart

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-F773-CW

TITLE OF PROJECT
Relationship of Metabolism, Fate, and Toxicology of Particulates and Organic Compounds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Benjamin Bruckner
Phone: (301) 443-4493

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Office of Extramural Activities, Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Specific projects within this area will be funded through the grant mechanism. These projects will be designed to explain, interpret, and predict the occupational health effects of particulates and organic compounds associated with the various coal technologies as well as other primary energy search and utilization proposals being developed in response to the Nation's effort toward energy self-sufficiency.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Edward J. Baier
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
500,000	75	4	5/75	5/80

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CX

TITLE OF PROJECT
Enumeration of Energy Occupational Health Problems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - William L Wagner
Phone: (801) 524-5287

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Western Area Occupational Health Laboratory, Salt Lake City, Utah 84108

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The Western Area Occupational Health Laboratory is responsible for developing and maintaining a program designed to identify occupational health problems associated with the extraction, processing, utilization, and conservation of energy resources. This project is to provide technical support necessary to identify and define future NIOSH project areas related to energy. There will be interaction with other NIOSH scientists and scientists in other federal agencies and other institutions associated with energy production. Limited exploratory field investigations will be conducted to evaluate current and proposed processes, potential worker exposures, and availability of records and study populations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	John F. Finklea
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80,000	75	4	5/75	5/80

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CX

TITLE OF PROJECT
Mortality and Morbidity Among Oil Shale Workers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - J. Dean Gillam
Phone: (801) 524-5287

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Western Area Occupational Health Laboratory, Salt Lake City, Utah 84108

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This project is a study of approximately 230 persons who worked in a pilot oil shale operation in Rifle, Colorado, through a retrospective mortality study combined with cross-sectional morbidity examination to evaluate the several morbidity aspects that may be associated with oil shale occupations. Mortality due to 21 specific causes of death will be determined after an extensive follow-up effort and the obtaining of death certificates of those determined to be deceased. Observed deaths will be compared to expected to uncover excess deaths due to a particular cause. Numerous indices of health will be assessed through the physical examinations and health questionnaires administered to the living members of the cohort.

Further activities tentatively include environmental exposure and medical assessments of workers entering the industry.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
x	AGENCY STAFF *(Intramural)*	2	John F. Finklea
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
160,000	75	2	5/75	6/77

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
FPA-IAG-D5-E773-CX

TITLE OF PROJECT
Mineral Wool and Clay Fibers - Occupational Health Epidemiological Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors - John Dement, David Bayliss, Alan Palmer, Ph.D.
Phones: (513) 684-3255

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Field Studies and Clinical Investigations, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

In view of the vast quantity of health data demonstrating the carcinogenicity of asbestos fibers, insulation manufacturers and other industries have begun searching for substitute materials to replace asbestos. However, the fibers constituting these substitute materials may be similar in shape and size to that of asbestos. It is felt by many researchers that the morphology of the fibers is the most important factor in the development of malignant and nonmalignant respiratory disease. Little is known of the health effects to man of respirable fibers other than asbestos. It is incumbent upon the National Institute for Occupational Safety and Health to investigate epidemiologically the health consequences to man of respirable fiber exposures and other insulation materials.

The study will be approached through environmental surveys and mortality and morbidity studies designed to quantify the risk of exposure to each of the materials used as well as determine the presence of other substances that may promote the development of adverse health effects or act in a synergistic manner.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	3	John F Finklea
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
205,000	75	3	1/74	9/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CX

TITLE OF PROJECT
Coal Liquefaction and Gasification - Occupational Health Epidemiological Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors - Sherry Selevan and Ronald Young
Phone: (513) 684-3514

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Field Studies and Clinical Investigations, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Coal liquefaction and gasification is an alternate energy technology which is currently being explored and discussed for possible future use. The technology has been developed and tested in several pilot plant operations within the last twenty years. The health effect on workers from exposures found in this technology have not been well defined, although coal gasification processes involve many of the polycyclic hydrocarbons known to be carcinogenic. These environmental contaminants are closely related to those from coke oven emissions where exposed workers have been shown to have significantly increased risk of lung cancer. Coal liquefaction processes involve pulverization of coal into fine dust; worker exposure to which may result in coal worker's pneumoconiosis or related chest diseases.

The purpose of this project is to conduct an epidemiological study of coal liquefaction and gasification workers to identify health risks associated with the multitude of exposures found in the industry.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	4	John F. Finklea
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
200,000	75	2	5/75	6/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-F773-CX

TITLE OF PROJECT
Mortality Study of TVA High Risk Workers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Carl Ortmeyer
Phone: (304) 296-3576

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Appalachian Laboratory for Occupational Respiratory Disease, Morgantown, West Virginia 26505

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Pulmonary disease problems, particularly pneumoconioses and airway obstructive diseases, could arise from exposure to pollutant gas emissions such as SO_2 and NO_2 from coal burned as fuel for steam-powered electricity generating plants. Pneumoconioses could develop from years of exposures to coal dusts in coal-loading areas or to asbestos fibers in linings of steam pipes.

The primary purpose of this study is to measure specified effects (decreased longevity, "premature" deaths from pulmonary diseases, and early retirement due to disability attributed to such diseases) on high risk workers in coal-fired steam electricity generating plants who have had exposures to these pollutants that varied in duration and intensity.

In the process of collecting information on early disability and on mortality of employees exposed to these air pollutants, data will also be obtained on neoplasms of the respiratory system and on diseases of the heart. This evidence can be analyzed in relation to some hypotheses about carcinogenic effects of pollutants and effects on the heart of lung impairments.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	6	John F. Finklea
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
185,000	75	3	5/75	7/78

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PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CX

TITLE OF PROJECT
Sulfuric Acid and Sulfates - Occupational Health Epidemiological Study

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors - Melvin Cassady and Sherry Selevan
Phone: (513) 684-3255

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Field Studies and Clinical Investigations, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

EPA in its CHESS report (1970-71) studied seven cities for community exposure to different air contaminants. One community had a primary exposure to sulfur oxides and particulates. EPA's epidemiological study has indicated that soluable and insoluable sulfates have a more adverse effect on human health than particulates or SO_2. The National Air Quality Advisory Committee has suggested that particulates be studied not as total suspended particulate but according to particle size distribution.

The findings of the CHESS study strongly suggest that occupational exposures to sulfates and sulfuric acid need further study in terms of exposure levels and mortality experience.

The study proposed by FY 76 will determine exposures to a variety of soluable and insoluable sulfates and sulfuric acid in a number of industries. These data will be used to choose populations for mortality studies beginning in FY 77.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *Intramural*	7	John F. Finklea
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50,000	75	3	5/75	6/78

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
EPA-IAG-D5-E773-CZ

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Development of Criteria for Recirculation of Exhaust Air

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Robert Hughes
Phone: (513) 684-2591

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Division of Laboratories and Criteria Development, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Since the advent of the energy crisis, recirculation of industrial process exhaust air has been receiving widespread attention as an energy conservation method. Recirculation of process exhaust air to the workplace rather than to the outside will reduce the amount of heating or cooling of make up air with a significant reduction in energy usage. Recirculation of exhaust air has, in the past, been used infrequently and has essentially been limited to processes which generate nontoxic nuisance type dusts. The major limiting factor in the widespread use of recirculation for toxic materials is the lack of criteria relating to both system performance and work protection. Without such criteria, the use of recirculation systems could result in serious worker exposure to toxic substances.

This project will be a follow-on to a study initiated in FY 74 to develop criteria for the recirculation of exhaust air. The results of that initial contract effort will be evaluated and a symposium then held on recirculation of exhaust air. After this, a one-year contract will be awarded to develop the exhaust system performance and reliability criteria required to permit safe recirculation of exhaust air from processes which generate toxic gases, vapors, fumes, and particulates. Studies will also be made to determine the effect of process variables such as temperature and contaminant generation rate on system effectiveness. Another follow-on contract will be awarded to investigate the air cleaning devices necessary to permit recirculation of exhaust air.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	Edward J. Baier
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
125,000	75	3	7/73	3/78

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CZ

TITLE OF PROJECT
Cold Stress Associated with the Alaskan Pipeline

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Directors - William Wagner and Roger Jensen
Phone: (801) 524-5287
(513) 684-2707

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute for Occupational Safety and Health, Western Area Occupational Health Laboratory, Salt Lake City Utah and Division of Laboratories and Criteria Development, Cincinnati, Ohio

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary purpose of this project is to study the "work practices" which are and should be used to protect the workers constructing the Alaska pipeline from cold stress. Work practices include such procedures as selection of workers, work-rest regimen, training, acclimation procedures, first aid and medical coverage, monitoring of exposures, fluid and food intake, clothing, and availability and type of heating devices. The approach is to:

1. Identify the work practices which are presently being followed by the workers constructing the pipeline;

2. Evaluate the effectiveness of these work practices; and

3. Recommend methods for increasing protection from cold stress by improving the present work practices or introducing additional or alternative work practices.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2	Edward J. Baier
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
140,000	75	2	5/75	2/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E773-CZ

TITLE OF PROJECT
Development of Countermeasures to Protect Divers

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director - Dr. Edward Fairchild
Phone: (513) 684-3541

NAME AND ADDRESS OF APPLICANT INSTITUTION
National Institute for Occupational Safety and Health, Office of the Associate Director for Cincinnati Operations, Cincinnati, Ohio 45202

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

While hyperbaric medical research has a history of over 100 years, the recent global energy crisis had added a note of urgency to the need for further research. Since 1954, ten million acres of sea floor have been leased for fossil fuel exploration. Plans are now underway to lease an equivalent amount of acreage in the next 1-3 years. Not only will such plans require a very large increase in the number of divers but the depths of planned leased areas are approaching 2000 feet. The capability to operate safely at such depths exceeds our medical knowledge and at the same time requires the presence of divers to execute tasks which are essential to the recovery of fossil fuels and minerals located on and beneath the sea floor. Energy-related development of deep-water (super tanker) ports and offshore power plants will also require the extensive use of divers. Other nations have already recognized the need for identifying national priorities, and regulations are currently in effect in the United Kingdom, Australia, and Japan.

It is clear that the expanding Federal sea floor leasing program obligates the Government to protect the health and safety of divers to the same extent as workers in other occupations. Extensive discussions and communication with representatives of the major diving companies have revealed their interest in cooperating with NIOSH in solving the problems facing the offshore diving industry.

In cooperation with ERDA, NOAA, and the National Heart and Lung Institute, one project has been initiated in this area which will provide a National plan for diving related health research. This plan will be available in December 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Edward J. Baier
X	NEGOTIATED CONTRACT	3	RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NIOSH

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
389,000	75	4	5/75	5/80

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ECOLOGICAL EFFECTS

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77ACU-02

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

A Standard Program for Environmental Impact Assessment: Phase I, Ichthyoplankton

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Saul B. Saila

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Rhode Island
Graduate School of Oceanography
Kingston, Rhode Island 02881

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

To develop methods of population assessment which have a proven relationship to populations actually present. Evaluate these methods against those used to develop historical data. The overall objective of the first phase of the project is to estimate the catch efficiency of a net based primarily on field sampling. It is intended to consider the avoidance of gear by ichthyoplankton by analyzing results of planned field experiments and some laboratory type studies. Laboratory studies will increase net calibration and avoidance analysis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
University of Rhode Island		

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Not yet decided / (Eric D. Schneider)
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION National Marine Water
X	RESEARCH GRANT	02	Quality Lab, Narragansett, R. I. / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
65 K	75	0	Est 9/75	9/77

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INTERIM

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77ACU-03

TITLE OF PROJECT A Facility for the Experimental Analysis of Coastal Marine Ecosystems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. John A. Knauss

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Rhode Island
Graduate School of Oceanography
Kingston, Rhode Island 02882

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A major facility for large-scale ecosystem simulation as well as laboratory scale bioassay will be established under the guidance of an independent advisory panel drawn from experts among the scientific community of the Nation. Proposals will be sought, evaluated and implemented which will provide meaningful useful answers regarding the relatiohsnips between ecosystem response and more traditional bioassays to support regulatory and planning actions.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
University of Rhode Island		

FOR OFFICE USE ONLY

	SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	03	Dr. Eric D. Schneider 401/789-1071
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
X	RESEARCH GRANT		National Marine Water Quality Lab. Narra. RI

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 616 K Energy 985 K	75	3	Est. 7/75	7/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ACU-04

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Alaskan Oil Seeps: Their Chemical and Biological Effects on the Intertidal Environment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. David Shaw
Institute of Marine Sciences 907-479-7723
University of Alaska
Fairbanks, Alaska 99701

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Alaska
Fairbanks, Alaska 99701

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objective of this project is to relate a defined chronic input of petroleum in an intertidal environment to biological changes on the organism and community levels. The project will investigate oil seeps along the Gulf of Alaska that provide long-term, low-level input of petroleum into the intertidal environment and compare biological organisms of that environment with those of an area that is not influenced by oil. The chemistry of both the water and sediments will be investigated.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	4	Dr. Frederick Lotspeich 907-479-7230
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
X	RESEARCH GRANT		Arctic Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
130 K	1975	3 Yrs.	June, 1975	June, 1978

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACV

TITLE OF PROJECT
Ecological Effects of Fossil Fuel Power Plants on a Grassland Ecosystem in Colstrip, MT

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Norman Glass, Director NERL
Dr. Allen S. Lefohn, Physical Science Adm.
Dr. Robert A. Lewis, Vertebrate Physiologist

United States E. P. A.
Corvallis Environmental Research Lab.
200 SW 35th St.
Corvallis, OR 97330

NAME AND ADDRESS OF APPLICANT INSTITUTION

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The broad objective of this program is to measure and predict change in a grassland ecosystem as a function of meaningful environmental parameters. Insight into the mechanisms of dynamic structural responses to pollution challenge is also sought. This investigation represents an attempt to characterize the impact of pollutants originating from a coal fired power plant on a total ecosystem. The approach envisioned requires (1) the use of reasonably comprehensive models of component populations of the ecosystems; (2) the use of appropriately structured field and laboratory experiments; and (3) an evaluation of physiological and biochemical functions that may serve as specific indicators or predictors of pollution stress.

Broad categories of important functions that will be investigated include (1) changes in productivity or biomass of ecosystem compartments; (2) changes in life-cycle and population dynamic functions of "key" taxa; (3) changes in community structure or diversity; (4) changes in nutrient cycling; (5) sublethal biochemical or physiological changes in individuals or compartments; (6) behavioral changes in mobile organisms; (7) changes in reproductive patterns.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
		8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	1	A. S. Lefohn, Chief, Animal Ecology Branch
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA
	RESEARCH GRANT		Corvallis Environmental Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
520 K	75	4	March 1974	June 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SI [illegible]H MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACV

TITLE OF PROJECT
Use of Lichens as Predictors and Indicators of the Pollution from a Coal-Fired Power

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Sharon Eversman, Instructor
Biology Department
Montana State University
Bozeman, Montana 59715

NAME AND ADDRESS OF APPLICANT INSTITUTION

Montana State University
Bozeman, Montana 59715

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

During 1975, EPA operated a SO_2 fumigation system on a natural grassland site in southeast Montana, in order to simulate the SO_2 emissions from the Colstrip Coal-fired Power Plant. Observations of the anatomical and physiological effects of the fumigation system on two native lichen species, Parmelia chlorochrea and Usnea hirta, made during the summers of 1975, now give an indication of the field characteristics to anticipate when using these two lichen species as biological monitors of the power plant plume in the Colstrip area during 1976.

The objectives of the 1976-77 work are to: 1) repeat and verify effects on respiration rates, nitrogen and sulfur contents, and anatomical damage caused by the SO_2 fumigation, and to extend the experimental period; 2) complete mapping of the lichen communities of the Colstrip area for tracing future emission effects; and 3) Examine Usnea from the Ponderosa pine sites and Parmelia chlorocheoa from grassland sites to detect any possible effects of emissions during the first year of operation of the power plant.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Letters & Science	Sharon Eversman	2 March 1976

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	1	A.D. Lefohn
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		RTP/ North Carolina

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
22, 915	75		7/22/74	3/29/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACW

TITLE OF PROJECT
Toxic Effects on the Aquatic Biota from Coal and Oil Shale Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

The Project Principal Investigator:
Robert Vance Thurston

N.R.E.L.
Colorado State Univ.
Fort Collins, Colorado 80523

Department of Chemistry
Montana State Univ.
Bozeman, Montana 59715

Phone:
406-994-4111

NAME AND ADDRESS OF APPLICANT INSTITUTION

Colorado State University
Fort Collins, Colorado 80523

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The overall objective of this investigation is to provide predictive information with regard to potential toxicants to the aquatic environment resulting from coal and oil shale extraction and conversion. The specific objectives are to identify and quantify those chemical products of coal and oil shale extraction and conversion which may reach surface waters, and to determine by both field studies and laboratory bioassays the degree to which those chemicals may be acutely or chronically toxic to fish and aquatic invertebrates, or may become involved as part of the food chain. Four categories of energy development will be considered: coal extraction, oil shale extraction and processing, coal gasification, and coal-to-energy conversion. Potential toxicants to the aquatic environment will be identified by a combination of field, laboratory, and literature studies, as well as by information gained from cooperative input from other energy-related research programs. Concurrent chemical and biological laboratory and field bioassays as well as aquatic distribution studies will dictate which toxicants are most deleterious to the aquatic biota. Feedback from these bioassays and distribution studies will dictate what additional or alternate emphasis is required in the laboratory and field chemical studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Natural Sciences	R. V. Thurston	4/24/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Donald I. Mount
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Environmental Research Lab, Duluth Min./ EPA
X	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	75		6/75	6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIF 76A WHICH MAY NOT BE USED.

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Form Approved
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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA 77 ACW

TITLE OF PROJECT Bioassays Using Natural Periphyton Communities with Emphasis on the Effects of Coal Leachate

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

David Z. Gerhart, Principal Investigator
Department of Biology
University of Minnesota, Duluth
Duluth, Minnesota 55812 (218) 726-8574

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Minnesota
303 Johnston Hall
Minneapolis, Minnesota 55455

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Objectives are to quantify the effects of coal leachate components on species composition and structure of natural periphyton communities, to determine the mechanisms of growth stimulation or inhibition by coal leachates relative to leachate composition, to elucidate possible synergistic or antagonistic effects among components of coal leachates, and to relate all findings to the functioning of natural aquatic ecosystems.

2) Bioassays will utilize periphyton communities growing on artificial substrata in laboratory streams. Nutrients and/or toxins are metered into inflow water at predetermined concentrations. Water chemistry analyses of inflow and outflow water, cell counts of periphyton algae, and chlorophyll and ash-free dry weight determinations are conducted to assess the effects of both whole coal leachates and leachate components.

3) Current work involves design, construction and testing of laboratory streams for use in the bioassays.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	David Z. Gerhart	30 July, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	2 a	Donald I. Mount
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Environmental Research Lab, Duluth, Min. / EPA
x RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		12/75	6/78

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

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77 ACW

TITLE OF PROJECT
The Impact of Coal-Fired Power Plants on the Environment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Professor James L. Clapp
Director, Environmental Monitoring and Data Acquisition Group
Institute for Environmental Studies - WARF
University of Wisconsin
Madison, Wisconsin 53706 Phone: 608-263-4786

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Wisconsin
Institute for Environmental Studies
Room 1345 Meteorology and Space Science Building, Madison, Wisconsin 53706

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objectives of this study are to include: a detailed modeling of the flow of chemicals through a coal-fired power plant located in a wetlands ecosystem; the impact of the power plant on the aquatic and terrestrial environment; and the development of a data base and siting criteria protocol for future plants already being planned. Specific subsections include: aquatic invertebrates, fish, microcontaminants, hydrogeology, plant damage from pollutants, air pollution modeling, visual impact, land use, wetlands ecology, meteorology and remote sensing, trace chemicals, water chemistry, hazardous organic chemicals in fish, and power plant siting criteria.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Institute for Environmental Studies	James L. Clapp	8/8/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	2b	Donald I. Mount
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Environmental Research Lab, EPA, Duluth, Min.
X RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75		12/75	6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-CIE 764 WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 ACW

TITLE OF PROJECT

Organic Leaching and Particulate Dispersion from Coal

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Ronald Caple, Professor of Chemistry, UMD
Robert M. Carlson, Professor of Chemistry, UMD
Michael Sydor, Professor of Physics, UMD

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Minnesota, Duluth
Duluth, Minnesota 55812

SUMMARY OF PROPOSED WORK - (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The anticipated increase in the number of large coal handling facilities suggests an investigation of some of the associated potential environmental hazards. The present proposal deals specifically with the properties of organic materials leached from the coal during storage and particulate matter which disperses from the storage site into the surrounding area. The investigation is based on the continuing development of such facilities near sites of inexpensive water transportation such as those represented by the Superior Bay and Lake Superior.

A goal of this project would be to gain the knowledge necessary to predict the potential problems from the accumulation of toxic or carcinogenic compounds in an aquatic environment, whether by leaching or airborne sources, from a "permanent" and large source of coal. It is hoped that any dangers associated with the possible formation of deleterious materials resulting from a subsequent chlorination or ozonation of the organic content of a coal leachate can be properly assessed. This latter consideration becomes important if the leachates become part of an aqueous environment that will be exposed to chlorination or ozonation facilities.

In general any potential hazards resulting from the exposure and prolonged contact of coal to the elements, i.e., like those conditions found in large coal dock facilities, including sunlight irradiation as well as wind (airborne particulates) and rain (leaching), will be appraised with meaningful suggestions as to possible methods of control (i.e., location and design of physical facilities).

SOCIETY PROFESSIONAL SCHOOL INVOLVED *(Medical, Dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Michael Sydor - R. M. Carlson	July 30, 1975

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REPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		Donald I. Mount
AFFILIATED CONTRACT		RESPONSIBLE ORGANIZATION Environmental Research
X RESEARCH GRANT	8a	Lab, EPA, Duluth, Min.

DUPLICATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
70 K	75		9/75	6/77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ACW

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Static Coal Storage Biologic and Chemical Effects on the Aquatic Environment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Nathan A. Coward, Professor, Department of Chemistry, Principle Investigator
Joseph W. Horton, Professor, Department of Chemistry } Other
Rudy G. Koch, Associate Professor, Department of Biology } Professional Staff
Robert D. Morden, Assistant Professor, Department of Biology } Personnel
All can be reached through (715) 392-8101

NAME AND ADDRESS OF APPLICANT INSTITUTION

Center for Lake Superior Environmental Studies (CLSES) of the
University of Wisconsin, Superior; Superior, Wisconsin 54880

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives
a. To determine the effects of various parameters on the aqueous leaching of trace metals from western sourced coal.
b. To develop methodology for aqueous leaching of same for both trace metals and trace organics.
c. To study the effects of potential leachates on resident benthos and vascular macrophytes in static storage adjacent waters.

Approach
a. Non-quantitative leaching columns will be developed which are extremely free of any contaminants, either organic or inorganic.
b. Quantitative columns will be developed based on results of (a) above and suitable statistical experiments performed.
c. Biota will be harvested and classified.
d. Biota will be grown in contaminated and uncontaminated aqueous environments and various assays performed on them in relation to coal leaching studies.

Current Plans and Progress
a. Benthos have been harvested and classified. Colonies are being grown.
b. Apparatus is being assembled for initial leaching studies.
c. Arrangements are in progress (through Montana State University) to obtain proper coal samples for initial studies.
d. Coordinative relationships have been fully established between UW-Superior, National Water Quality Laboratory (Duluth) and other research affiliated organizations.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Letters and Science University of Wisconsin-Superior	Nathan A. Coward	4 August, 1975

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	8b	Donald I. Mount
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Environmental Research Lab, Duluth, Min./ EPA
X RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
73 K	75		9/75	6/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA
77ADC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Mass Transport of Biological Materials

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Robert Ball, Director and Richard A. Cole
Institute of Water Research
334 Natural Resources Building
East Lansing, Michigan 48824

NAME AND ADDRESS OF APPLICANT INSTITUTION

Institute of Water Research
334 Natural Resources Building, Michigan State University
East Lansing, Michigan 48824

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Project Period: 9/6/72 - 7/1/76	Budget Period: 12/6/74 - 7/1/76
Total Project Cost: $145,033.00	Grant Program: Large Lakes Research
EPA Project Officer: Nelson A. Thomas	Address: EPA, Large Lakes Res. Station 9311 Groh Road Grosse Ile, Michigan 48138

The purpose of the project is to determine the mass transfer and transformation of biologically significant material in the once-through cooling systems of a steam-electric station that is operating on the western shore of Lake Erie.

Specific objectives include:

1. Measurements of mass transport of entrained phytoplankton, zooplankton and fish larvae through the cooling system, and
2. Determination of the effects on the periphyton and larger fish that inhabit the system.

Studies up to now have included measurements of effect on water chemistry, zooplankton, phytoplankton, and fish larvae as the result of once-through cooling. To date the changes in water chemistry are within the normal variance of the data, and there does not appear to have been any significant effect on the water quality of the area adjacent to the power plant. There have been occasional zooplankton mortalities and these appear to have been related to chlorination. Effects on phytoplankton appear to have been in the form of an increase in productivity. The investigators estimate that 300,000,000 fish larvae per year pass through the cooling system and are killed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Natural Resources	Prepared By Nelson A Thomas	5/20/75

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SUPPORT METHOD (Check one)	TASK NO.	PROJECT OFFICER
AGENCY STAFF (Intramural)	2	Nelson A. Thomas
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
XX RESEARCH GRANT		EPA, Grosse Ile Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
77 K	75	1	7/2/76	7/2/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77AEI-003

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Mesoscale Suffur Balance Studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. John W. Winchester, Department of Oceanography, Professor and Chairman
(914/644-6700)
Dr. J. William Nelson, Department of Physics, Assoc. Professor;
Dr. Garrett W. Brass, Dept. of Oceanography, Assistant Professor
Dr. Raymond C. Staley, Department of Oceanography, Associate Professor

NAME AND ADDRESS OF APPLICANT INSTITUTION

Florida State University
Tallahassee, FL 32306

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

A comprehensive study is proposed of the occurrence of sulfur in particulate and gaseous form in continental and marine areas of the eastern U.S.A. Emphasis will be placed on the concentrations of sulfur in relation to other elements involved in its atmospheric transformation and transport and on the isotopic composition of sulfur and oxygen in relation to isotopic characteristics of natural and pollution sources. Sampling will be carried out as a function of particle size and time, so that the elemental and isotopic character of up to six size fractions may be determined separately, and these relations may be determined sequentially over time intervals as short as several hours. Sampling locations will consist of eight permanent stations from east of the Continental livide to the Eastern Seaboard and of Four temporary stations, including ships in the Atlantic Ocean, Gulf of Mexico, and Great Lakes downwind of major sulfur emission sources. Elemental analysis is performed using proton induced x-ray emission with nanogram sensitivity for sulfur, permitting resolution of particles < 0.25 μm diameter and time resolution over two hour sampling intervals. Isotopic analysis is performed using the new Micromass mass spectrometer with very small sample handling attachment, permitting precise analysis on 100 μg samples collected over 24 hour sampling periods with suitable cascade impactors. By means of the combination of techniques, the impact of fossil fuel combustion and other anthropogenic sources of sulfur on the natural characteristics of the atmosphere may be precisely determined.

Grant No. 803887

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Arts and Sciences		3/19/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Ronald Patterson 919-549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT	003	ESRL, RTP/ EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 120 K Energy 225 K	75	2	8 /75	8 /78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77AEI-05

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Analytical Support for RAPS Aerosol Studies

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. Heffelfinger
Battelle Memorial Institute
505 King Avenue
Columbus, Ohio 43201 (614)295-8045

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle Memorial Institute
505 King Avenue
Columbus, Ohio 43201

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Contract 68-02-1409

(1) Objective: Determine aerosol composition in support of aerosol sources study.

(2) Approach: Analyze impactor and high volume samples for sulfate, ammonium, nitrate, and organic content.

(3) Progress: Samples from Miami and St. Louis are being processed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Ronald K. Patterson	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	05	Ronald K. Patterson, 919-549-8411, X2181
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
40 K	1975	1 (est.)	7/1/75	6/30/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77AEI-006

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
A Study of the Identity and Sources of Denver's Aerosols

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. G. Draftz, Research Scientist 312/225-9630
J.D. Stockham, Manager, Project Manager
J. Graf, Assistant Chemist

NAME AND ADDRESS OF APPLICANT INSTITUTION

IIT Research Institute
10 West 35th Street
Chicago, Illinois 60616

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 803078

The City of Denver experiences over 200 atmospheric inversions each year which produce haze and decreased visibility over significant portions of Denver. In 1973, the U.S. EPA began a research study to determine the cause and sources of this pollution problem. One important aspect of the study involves the identification of aerosols collected from the atmosphere. In a previous preliminary study (1972), polarized light microscopy was used successfully to identify many of the aerosol particles.

The goals of this current proposed study is to trace the sources of aerosol particles collected by the EPA and other agencies at a network of sampling stations, by identifying the types of particles and comparing them to reference samples. The particles will be characterized and identified by polarized light microscopy supplemented with scanning electron microscopy and mass spectrometry. The data from these analyses will be correlated with meteorological and aerosol data to discover the impact of individual sources in producing haze.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		12/14/73

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Jack Durham 919-549-8411 x2181
	NEGOTIATED CONTRACT	006	RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 30 K Energy 15 K	75	1	7/1/74	10/31/77

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77AEI-7

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Local Support for Aerosol Sources Program

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Al Jones
Rockwell International, RAPS Office
11640 Administration Drive
Creve Coeur, Missouri 63141 (314)425-7022

NAME AND ADDRESS OF APPLICANT INSTITUTION

Rockwell International Corporation Science Center
1049 Camino Dos Rios
Thousand Oaks, California 91360

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

(1) Objectives: Provide support to a study of aerosol sources in the St. Louis area with special emphasis on energy related pollutants.

(2) Approach: Support a study of sulfate formation in urban and power plant plumes by (1) providing pilot balloon measurements of wind speed and direction in support of an aircraft measurement program and (2) assisting in the release and collection of an SF_6 tracer release in power plant plumes. Support a study of aerosol elemental distribution in St. Louis by collection of aerosol material with Florida State "Streaker" samplers at 25 RAMS stations.

(3) Progress: Program is operational.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William E Wilson	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		William E. Wilson, 919-549-8411, X2181
X	NEGOTIATED CONTRACT	7	RESPONSIBLE ORGANIZATION EPA Environmental Sciences Research Laboratory
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	1976	1 (est.)	7/1/75	11/30/75

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 AEI-008

TITLE OF PROJECT
Influence of Aerosol Characteristics on Visibility

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Waggoner, A. P., Research Associate, Civil Engineering Department - 206/543-2044

Charlson, R. J., Associate Professor of Atmospheric Chemistry (Civil Engineering) and of Geophysics, Adjunct Associate Professor of Atmospheric Sciences and Astronomy

NAME AND ADDRESS OF APPLICANT INSTITUTION
University of Washington
Seattle, Washington 98195

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Grant No. 800665

This research will continue investigation of the effect of atmospheric aerosol properties on visibility through parallel studies in several directly related areas. Activities to date include development of the integrating nephelometer and studies with it relating visibility to mass concentration, wavelength dependence of light scattering, spatial distribution of aerosol, humidity, and aerosol chemical composition. Instrument development has recently been completed in the last two areas and field experimentation will continue relating chemical composition of aerosols to their in situ physical and optical response to increased humidity. We will continue with analysis of data collected during the fall, 1972, California experiment during which we measured the listed aerosol parameter and other groups measured aerosol size distribution, atmospheric trace gas content, meteorological parameters, etc.

We will participate in a similar joint experiment in St. Louis in August and September of this year. Our experimental goal is to gain further understanding of the interrelationship of 1) the amount, composition and size distribution, 2) the role of water, 3) optical properties of the atmospheric aerosol.

The past four years of research have practical significance based on both technical and scientific results. An integrating nephelometer based on our drawings and patents is being manufactured and is used widely both in scientific research and monitoring visibility degradation. An analog computer circuit that calculates relative humidity from temperature and dew point has been developed for use in our humidity research. New sample collecting and data processing techniques developed in this group allow identification of molecular components in urban smog. These techniques having been proven in the laboratory will now be applied to the urban environment. It is vital to have this broad spectrum approach to obtain a useful description of the causes of visibility degradation.

IDENTIFY PROFESSIONAL DISCIPLINES INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
College of Engineering		3/12/73

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	008	William Wilson 919-549-8411 x 2181
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ESRL, RTP / EPA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Base 15 K Energy 45 K	75	1	1/1/75	12/31/77

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77AEI-9

TITLE OF PROJECT
Aircraft Measurements in Support of Studies of Sulfur Transformation and Transport

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Jerry Anderson & Warren White
Meteorology Research, Inc.
464 W. Woodbury Road
Altadena, California 91001 (213)791-1901, X240

NAME AND ADDRESS OF APPLICANT INSTITUTION

Meteorology Research, Inc.
464 W. Woodbury Road
Altadena, California 91001

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This is a procurement to obtain the services of an instrumented aircraft to perform a variety of chemical and physical measurements in plumes from single power plants and extended urban sources. Measurements will include SO_2, O_3, NO, NO_x, temperature, relative humidity, light scattering, aerosol charge, and aerosol size distribution. Aerosol collections will be made for chemical and microscopic analyses. The measurements will be used to determine sulfur balance in the plumes and to obtain insight into the rates and mechanisms for the conversion of SO_2 to sulfate.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William E. Wilson Jr.	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	9	William E. Wilson, 919-549-8411, X2181
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Environmental Sciences Research Laboratory

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100,000 est.	1975	1 (est.)	9/1/75 est.	9/1/76 est.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77AE1-10

TITLE OF PROJECT
Development of Two Portable Flame Photometric Detectors Designed for Airborne Monitoring of Sulfur Dioxide

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Abraham W. Berger, President -- Research Chemist
Dr. Eugene Stubbs, Vice-President -- Research Engineer
403 Highland Avenue
Newton, Mass 02160

NAME AND ADDRESS OF APPLICANT INSTITUTION

Better Environmental Development Corporation
470 Totten Pond Road
Waltham, Maine 02154

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Design and fabricate ultrasensitive flame photometric detector utilizing rare earth optical fillers, to measure low ppb concentrations of sulfur gases.

System uses pair of homium and erbrium rare earth filters alternately viewing the flame for S_2 emissions and background signal. The ratio of the two signals is a direct function of sulfur concentration in the flame.

System will be optimized for airborne flight to eliminate altitude effects on detector response.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	R. K. Stevens	August 14, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	10	Robert K. Stevens, 919-549-8411, 2211
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		EPA/RTP/CPL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	1975	0	9/1/75	9/1/76

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E685-AV

TITLE OF PROJECT

Ecological and Physiological Effects of Oil on Birds

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Lucille F. Stickel
Director, Patuxent Wildlife Research Center
U. S. Fish and Wildlife Service
Patuxent, Maryland

NAME AND ADDRESS OF APPLICANT INSTITUTION

U. S. Fish and Wildlife Service
Office of Biological Services
Washington, D. C.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVES: To test and adapt analytical methods for identification of oil in tissues and eggs.

Evaluate the effects of oil on viability of eggs and on survival.

To assess the prevalence of oil ingestion by wild birds and relate tissue levels of oil to damage and to assess the joint effects of oil and chemicals on survival.

APPROACH: Realistic dietary dosage with measurements of egg production, fertility, hatchability, and survival of chicks using ducks.

Adult male and female ducks will be fed sublethal and lethal dosages of oil, with measurements of mortality, pathology, and blood enzymes.

Oil will be introduced artificially and also by light oiling of the incubating hen.

Kinetics of oil will be followed when oil is ingested directly and when it is obtained secondarily through food items.

Top priorities for assessment of joint oil and chemical action would be: polychlorinated biphenyls, DDE, nickel, and vanadium.

A three year study program is anticipated with funding beginning in Fiscal Year 75 and major implementation in Fiscal Years 76, 77, and 78.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
This is not applicable.	Dr. Stickel	

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1-9	Lucille F. Stickel
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		FWS/Office of Biological Services

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$500 K	75	2	1976	1978

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Interim - Additional info. when Contracts Let.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E685-AW

TITLE OF PROJECT

Ecological Characterization of the Chenier Plain of SW Louisiana and SE Texas

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Howard D. Tait, National Coastal Ecosystems Team
National Space Technology Laboratories
Bay St. Louis, Mississippi 39520
(Major contractor to be selected)

Robert H. Chabreck
National Space Technology
Laboratories
Bay St. Louis, Mississippi 39520

NAME AND ADDRESS OF APPLICANT INSTITUTION

U. S. Fish and Wildlife Service
Office of Biological Services
Washington, D. C.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVES: Development of an ecological characterization of Chenier Plain in the coastal regions of Southwestern Louisiana and Southeastern Texas with a predictive potential, evaluate methodology used for characterization, and synthesize and disseminate information obtained.

The preliminary work will involve a determination of information needs, preparation of tentative methodology, and segmentation of the characterization into workable study units. Study units will focus on geomorphology, economics and sociology, biology, and ecology of the coastal ecosystem. Once study units have been formulated and defined, a plan will be devised for accomplishing the objectives as detailed under each study unit.

A deterministic simulation model will be developed as a part of the characterization to provide predictive potential. Data assembled by the various study units will provide input for the model. The simulation model will provide to decision-makers and instrument with which impacts can be quickly tested and evaluated. The model will also provide a system for identifying areas with data deficiences.

A manual will be published in popular form from the characterization studies and serve as an atlas for users or decision-makers with interests in the particular coastal ecosystem studied. The model will be continuously updated as additional information is supplied by special studies or from other sources.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not known at this time	Howard D. Tait	August 6, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Howard Tait
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		FWS/Office of Biological Services

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$600 K	75	2	10/76	10/77

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E685-BN

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Ecological Methods for Assessing Impacts to Wildlife Habitat in Areas Affected by Coal Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Robert E. Stewart, Jr.
Project Leader - Coal

NAME AND ADDRESS OF APPLICANT INSTITUTION

Office of Biological Services
U.S. Fish and Wildlife Service
Washington, D.C. 20240

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These investigations will identify and demonstrate a rapid cost effective reliable method of inventorying characterizing wildlife habitat. Emphasis will be given to habitat requirements of wildlife species for food, cover, breeding, and other critical factors and the relationship for these factors, the surface resources and events. Emphasis is given to a determination of how various coal related activities, particularly processing and population growth will impact wildlife and the magnitude of that impact. Results will consist of interim and final reports of field laboratory work and an interagency workshop. Studies will be conducted on designated areas where coal development is or will be taking place.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1&2	Robert E. Stewart, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: Office of Biological Services, U.S. Fish and Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
Estimate $700,000 of FY 75 pass-through funds	75	5 years	October 1, 1975	July 1, 1980

EPA Form 5780-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E685-BO

TITLE OF PROJECT
An RFF Forum on the Impact on Western Waters, Fish, and Wildlife of Energy Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Allen V. Kneese -- Professor, Dept. of Economics, Univ. of New Mexico, Albuquerque
Tel.: (505) 277-6424

Dr. Walter O. Spofford, Jr. -- Director, Quality of the Environment Program, Resources for the Future, Inc. Tel.: (202) 462-4400

NAME AND ADDRESS OF APPLICANT INSTITUTION

Resources for the Future, Inc.
1755 Massachusetts Avenue, N.W.
Washington, D.C. 20036

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

An issue of particular importance regarding the development of western energy resources is its impact on the water resources of the region--water quality as well as water supply--and the subsequent impact on fish, wildlife, and vegetation. The Forum will concentrate on these impacts in the Upper Colorado Basin which is located in parts of Wyoming, Utah, Colorado, New Mexico, and Arizona. The intent of the Forum is to bring together the results of the most recent research on the energy-related impacts, and to identify specific potential fish and wildlife related problems and delineate research needs.

Relevant questions to be addressed by the Forum include: What impact will the inevitable changes in the hydrologic regime of this region--both surface waters and groundwaters--have on fish, wildlife, and vegetation? How is the existing riparian habitat of this basin likely to change with energy development, and what impact will these changes have on the fish and wildlife of the region? How can the region best be managed to provide a suitable environment for fish and wildlife, with particular consideration given to the need for, and establishment of, maintenance flows? More broadly, what are the future ecological implications of developing the energy resources of the Upper Colorado River Basin?

The Forum will be held in the summer of 1976 in the West, perhaps in Albuquerque or Santa Fe. It will consist of the presentation of between 10 and 15 invited papers and a formal discussion of each. Edited Proceedings of the Forum will be made available to the sponsor after the Forum. Work has already begun on the organizational aspects of the Forum.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N.A.	Walter O. Spofford Jr.	13 August 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Robert Hayden
X	NEGOTIATED CONTRACT	1	RESPONSIBLE ORGANIZATION Office of Biological Services, U.S. Fish & Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$75 K	75		January 1976	October 1976

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E685-BP

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Critical Appraisal of Research Needs with Respect to Fish and Wildlife Implications of Western Water Allocation for Energy Development.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William B. Lord, Research Associate, Institute of Behavioral Science, Co-Principal Investigator, IBS #1, Univ. of Colorado, Boulder, CO 80302 (303-492-8093)
Gilbert F. White, Professor, Dept. of Geography and Director Institute of Behavioral Science, Co-Principal Investigator, IBS #1, Univ. of Colorado, Boulder, CO 80302 (303-492-8147)

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Colorado
Boulder, CO 80302

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives - To identify critical research needs for improving decision making in the subject matter area for the Upper Missouri River Basin.
Approach - Definition of policy issues, establishment of information requirements, determination of information availability, evaluation of research needs, preparation of discussion documents, review of documents through conference of government and academic specialists, and preparation of final report. Project is conducted by a multi-disciplinary team from the disciplines of anthropology, biology, civil engineering, economics, geography, geology, law, and political science.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Institute of Behavioral Science	William B. Lord Gilbert F. White	8-7-75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(In-house)*	1 (1-5)	Robert Hayden
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Office of Biological Services, U.S. Fish & Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100 K	75		10/75	4/76

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E685-BQ

TITLE OF PROJECT Determine Water Quantity Needs of Fish and Wildlife in the Upper Colorado and Upper Missouri River Basins

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

None

NAME AND ADDRESS OF APPLICANT INSTITUTION

None

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: Establish the in-stream flow requirements at specific locations necessary to maintain the viability of all fish and wildlife species present in each basin.

Approach: Information on in-stream flow requirements from previous studies will be assembled and evaluated. The best currently available methodology will be selected for conducting field studies within the time and monetary limits of the project. The requirements established at specific locations by the field studies will remain the best estimate of the in-stream flow requirements necessary to maintain fish and wildlife viability until improved methodologies are developed and applied.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	none	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-3	Robert Hayden
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Office of Biological Services, U.S. Fish & Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$150 K	75	1	May 1976	June 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

INTERIM
NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E685-BR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Institutional Analysis and Historic Summary of the Trans-Alaska Pipeline

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Unknown at this time - (In-house at the Regional or Area level).

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Fish and Wildlife Service
Alaska Area Office
Anchorage, Alaska

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives:

(1) Summarize the "history" of the TAPS project;

(2) Analyze the institutions established throughout the project;

(3) Compare these institutions with either the Geothermal Environmental Advisory Panel or the Oil Shale Environmental Advisory Panel.

Approach:

Basically the data upon which analyzation and summarization will be gathered by literature review and interviews with appropriate participants in each project.

Final Product:

A report detailing the findings and outlining future actions that might be initiated to strengthen institutions that involve environmental aspects of major development projects.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1 (1-3)	Joseph R. Blum
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		U.S. Fish and Wildlife Service Office of Biological Services

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$85 K	75	2	December 1, 1975	November 30, 1977

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

INTERIM

NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE

EPA
EPA-IAG-D5-E685-BS

TITLE OF PROJECT The Fish and Wildlife Impacts of Energy Development in the Four Corners Region

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Allen V. Kneese - Professor of Economics, Univ. of New Mexico, Albuquerque, New Mexico 87131 (505-277-6425)
James R. Gosz - Associate Professor of Biology, Univ. of New Mexico, Albuquerque, New Mexico 87131 (505-277-3614)
Alfred L. Parker - Associate Professor of Economics, Univ. of New Mexico, Albuquerque, New Mexico 87131 (505-277-3141)

NAME AND ADDRESS OF APPLICANT INSTITUTION

The Department of Economics
University of New Mexico
Albuquerque, New Mexico 87131

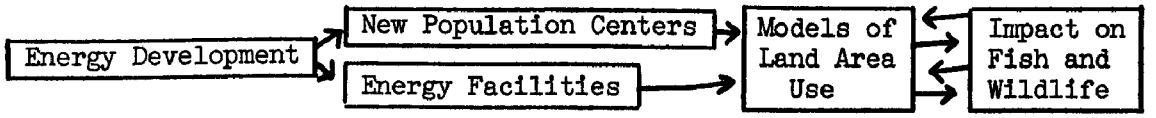
SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: 1. To assess the impact of continued energy development in the Four Corners Region on fish and wildlife resources by investigating the implications of increased population resulting from southwestern energy resource development.

2. To examine the institutional and substantive problems associated with managing these impacts and provide management alternatives under various southwestern energy development scenarios.

Approach: The basic methodological problem in this research is the development of a plan integrating biology and economics. Economic analysis of energy development in the southwest will be translated into biological impacts on fish and wildlife. Research output will identify potential problem areas in overall management of energy development resulting from encroachment of human population in presently remote areas of the southwest.

The analytical framework looks like this:



Final Product: A report including: (a) methodology for the measurement of the environmental impact of energy development on fish and wildlife; (b) an evaluation of innovative policy and management options; and (c) specific management and policy recommendations.

Status: Details of proposal under discussion - contract by October 1, 1975.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
University of New Mexico Department of Economics		

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-3	Joseph R. Blum
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION U.S. Fish and Wildlife Service Office of Biological Services
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$200 K	75	2	October 1, 1975	September 30, 1978

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

INTERIM
NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E685-BT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Survey to Determine the Extent and Location of Unallocated Water in the 11 Western States

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

None

NAME AND ADDRESS OF APPLICANT INSTITUTION

None

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: Identify areas with unallocated water and methods of obtaining allocation for habitat preservation.

Approach: A preliminary survey of the 11 Western States will be conducted including review of reports and legal documents, and consultation with appropriate officials and other knowledgeable persons. Unallocated, unobligated, or otherwise available water will be listed by specific location within each drainage. Also to be outlined for each drainage will be all laws, records, and agreements applicable to water allocation and obligation, and the procedures and limitations on obtaining water for fish and wildlife or other purposes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	none	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		Robert Hayden
x	NEGOTIATED CONTRACT	1	RESPONSIBLE ORGANIZATION Office of Biological Services, U.S. Fish & Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$110 K	75	0	December 1975	September 1976

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

INTERIM
NOTICE OF RESEARCH PROJECT

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

Form Approved
OMB No. 158-R0081

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E685-BU

TITLE OF PROJECT Establish the Value for Fish and Wildlife of Existing Waters in Energy Development Areas

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

None

NAME AND ADDRESS OF APPLICANT INSTITUTION

None

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives: Establish the current status of fish and wildlife in relationship to existing water, the potential fish and wildlife value of these waters, and a ranking of waters according to value in fish and wildlife terms.

Approach: Conduct workshops in all potential energy development areas involving the Fish and Wildlife Service, State Fish and Game agencies, university professors, sportsmen, and conservation and environmental groups. A series of handbooks will be produced which outline the relative value of streams and rivers as fish and wildlife habitat.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	none	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1 & 2	Robert Hayden
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: Office of Biological Services, U.S. Fish & Wildlife Service
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$75 K	75	0	October 1975	June 1976

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U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-CB

TITLE OF PROJECT
LAND RECLAMATION LABORATORY

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Ralph P. Carter - Project Director, Land Reclamation Laboratory
Roy E. Cameron - Deputy Project Director, Land Reclamation Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION

Argonne National Laboratory, Energy and Environmental Systems Division
9700 South Cass Avenue
Argonne, Illinois 60439

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives - To address the need for coordinated basic and applied research into the physical and ecological problems of land reclamation, and to advance the development of cost-effective techniques for restoring mined coal land to productive end uses, a Land Reclamation Laboratory program has been established at Argonne National Laboratory. The purpose of this new facility is to conduct research and development programs focused on near- and long-term reclamation problems in the four major U.S. coal resource regions and to coordinate, evaluate, and disseminate the results of related studies conducted at other research institutions. The activities of the Land Reclamation Laboratory program will involve close cooperation with industry.

Approach - A. The development, evaluation, and field testing of instrumentation and monitoring systems for pre- and post-operational surveillance of reclamation activities associated with coal mining operations. The program will include studies of data acquisition systems, geophysical and ecological sample analysis techniques, and techniques for integrated and automated mine site monitoring systems. These systems will be field tested in conjunction with the field studies conducted as a part of the ecosystems studies program.

B. An analytical and experimental program of engineering technology studies aimed at: (1) Development of components and systems for implementing reclamation operations, either during or after mining; (2) Development of mine-related environmental control technology, with particular emphasis on mine refuse and waste disposal, and the control of acid mine drainage, siltation, and soil erosion; (3) Development of recycling technology for the utilization of gob, slurry, flyash, sanitary sludge, and other waste products to promote land reclamation; (4) Development of equipment and techniques for earthmoving, soil conditioning, tilling, and reseeding; and (5) Extention and consolidation of information storage, retrieval, analysis and brokerage systems related to surface mining effects and effects of energy related pollutants and technologies on plants, animals, and freshwater ecosystems.

Ralph P. Carter — September 9, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1, 3, 4	Warren R. Lineberry
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Argonne National Laboratory ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75K, 40K, 70 K	75		9/75	7/78

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 BCB (EPA-IAG-D5-E681-CB)

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Development of a Chemical, Stability, and Transport Model of Oil Shale Process Wastes in Soil

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. C. Routson, Ecosystems Department, Senior Research Scientist
R. M. Bean, Ecosystems Department, Senior Research Scientist
R. J. Serne, Water and Land Resources Department, Research Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratories
Ecosystems Department
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The purpose of this study is to investigate and model the source, transport, and physical and chemical reactions, stability, and fate of oil shale process wastes. This includes overburden leachates, retort waste water, mine dewatering salines, and prerefining wastes. Batch and column studies will be used to measure the equilibrium and kinetic parameters which control the fate and transport of the oil shale wastes and leachates through typical soil systems of the oil shale regions. A computer simulation program will be developed to predict pollutant transport through these soils. Additionally, the study will include identification and characterization of power site chemical wastes and measurement techniques for the soil reaction model input parameters. Both kinetic and equilibrium reaction data will be obtained and used to expand the equilibrium model to account for nonequilibrium reactions. The reaction model will be verified using wastes typical of those generated by actual power plants with soil column studies. Further, the model will be useful in evaluating various disposal alternatives for these wastes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William L. Templeton	W. L. TEMPLETON ASSOCIATE MANAGER ECOSYSTEMS DEPARTMENT

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	2	R.E. Franklin
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75		9/75	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-D5-E681-CB

TITLE OF PROJECT: Numeric Information Support for Assessment of Impacts of Surface Mine-Land Reclamation

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. J. Olson, Principal Investigator, Research Associate, 615/483-8611, Ext. 3-6422
R. H. Strand, Principal Investigator, Research Associate, 615/483-8611, Ext. 3-6268

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory, Environmental Sciences Division
P. O. Box X
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives - The overall objective is to provide numeric information processing and analysis support for the assessment and related regional studies being performed by the Oak Ridge National Laboratory for the Environmental Protection Agency to evaluate the effects of surface mine-land reclamation activities on freshwater resources.

Approach - Specific needs and approaches will be developed through continued interaction with investigators. Existing data will be acquired, edited, documented and stored in the Numeric and Textual Information System (NUTIS) developed by the Environmental Sciences Division. Analytical capabilities will be developed as required for display and analysis. Our efforts will be coordinated with Argonne National Laboratory to minimize duplication and maximize compatability of data bases.

Current Plans/Progress - We are currently processing the USGS water quality/quantity tapes and have plans for obtaining air quality tapes. We have concurrent projects that are developing compatible county level environmental data bases for use by the EPA studies. Computer capabilities are being expanded in the area of graphical display.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Richard J. Olson	9/26/75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
X AGENCY STAFF *(Intramural)*	4 (4&5)	R.E. Franklin
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50 K	75	ERDA	7/76	7/77

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EP:
EPA-IAG-D5-E681-CB

TITLE OF PROJECT
POTENTIAL OF ENERGY EXTRACTION AND CONVERSION PROCESSES IN THE NORTHERN GREAT PLAINS

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: James J. O'Toole, Ph.D., Ames Laboratory, Iowa State University Ames, Iowa 50011
Co-Principal Investigator: Clarence C. Gordon, Ph.D., Botany Department, University of Montana, Missoula, Montana 59801
Investigator: Frank Munshower, Ph.D., Dept. of Range & Animal Science, Montana State University, Bozeman, Montana 59715

NAME AND ADDRESS OF APPLICANT INSTITUTION

Ames Laboratory ERDA
Iowa State University
Ames, IA 50011

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The impact of the Colstrip fuel conversion operations on native range forage vegetation will be evaluated. Sample plots are located on the basis of probable impact from airborne pollutants predicted from air models. Plant community characteristics, e.g., canopy cover, species diversity, growth and productivity, phenology, vigor will be evaluated. Species specific productivity of the dominant vegetative communities will be determined by replicate clipping of quadrats along permanent transects throughout the growing season. Diversity will be based upon Simpson's index of diversity modified to use cover rather than stem density. These vegetation study sites are located in mixed prairie grassland communities and pine-woodland types, the dominant cover types in the area.

Remote sensing information, along with the necessary ground truth data, is expected to provide evidence of significant changes in these plant communities. Multielement analysis will be carried out on plant and soil samples collected from these plots, and chemical data on the pollutant content of plants and soils will be correlated with vegetative changes. Evidence of elemental enrichment processes in vegetation will be estimated from the significant changes observed in baseline data, as well as the data collected on the composition and deposition rate of the aerosol.

During the 1975 growing season all sample plots were established and field measurements completed as described above.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	James J. O'Toole	9-30-75

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SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	5	R.E. Franklin
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
105 K	75		12/75	6/80

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E681-CD

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Effects of Cooling Towers on Weather

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Principal Investigator: Steven R. Hanna Research Meteorologist

Rayford P. Hosker Physical Scientist

NAME AND ADDRESS OF APPLICANT INSTITUTION

Atmospheric Turbulence & Diffusion Lab.
P. O. Box E
Oak Ridge, TN 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. The objectives of this project are to study the influence of cooling tower geometry on a plume and to develop and test numerical cloud growth model for single cooling tower plumes.

2. A small meteorological wind tunnel with 1 m^2 cross section will be installed and tested, and multiple plume interaction studies will be designed. A numerical cloud growth model will be implemented, building on the basic model first developed in 1971 at ATDL.

3. The theory of wind tunnels has been reviewed and specifications for the tunnel were drawn up. The literature on modeling studies of cooling tower plumes is being studied. The numerical cloud growth model has been modified and is being run using several days of radiosonde observations from Nashville and using a typical large cooling tower plume as input.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Steven R. Hanna	Aug 28, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	D. Heyward Hamilton, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
80 K	75		6/76	6/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-D5-E681-CD

TITLE OF PROJECT
Effects of Condenser Passage on Marine Organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Dr. Charles C. Coutant, Project Supervisor, Environmental Sciences Division (615-483-8611, ext. 3-6617)
Dr. Samuel Suffern, Research Associate, Environmental Sciences Division (615-483-8611, ext. 3-1591)
Mr. Robert J. Kedl, Research Engineer, Reactor Division (615-483-8611, ext. 3-1196)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to determine the location in a simulated power plant condenser system where physical damage is done to small aquatic organisms, principally fish eggs and larvae, that are entrained in cooling water. The engineering objective is to provide design criteria for condenser piping and pumps that will minimize damages.

The approach is to pass test organisms through a simulated condenser cooling system and to observe immediate and latent mortality, or behavioral changes that could affect survival. Emphasis will be on the pump design in current experiments since previous work has concentrated on the condenser. Effects will be associated with specific features of pump design and operation where feasible, e.g. specific speed, and net positive suction head. A redesigned simulated condenser system is being constructed for experimentation in the spring of 1976.

Marine and freshwater organisms will be tested as available for collection or laboratory culture.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N.A.	Charles C. Coutant	26 Sept '75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	2 Milestones 8-13	D. Heyward Hamilton, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
200 K	75		7 /75	12/77 continuing

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCD (EPA-IAG-D5-E681-CD)

TITLE OF PROJECT Immediate effects of anti-fouling biocides from coastal and offshore power plants on selected ecosystems and associated organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

T. O. Thatcher, Ecosystems Department, Research Scientist, Marine Biology
C. I. Gibson, Ecosystems Department, Program Leader, Marine Biology
J. S. Young, Ecosystems Department, Research Scientist, Marine Biology

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory, Sequim, Washington)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The primary impact will be to the planktonic forms, i.e., phytoplankton, zooplankton, eggs, larvae, that are drawn into the water intakes and pass through the plant. Other segments of the biota that will be exposed to these biocides are the sessile benthic organisms and communities that are present in effluent canals or in areas affected by the effluent plume. The pattern by which plants inject the anti-foulant varies from plant to plant. Some plants use single high doses periodically, while others use low levels continuously. In addition, the movement of the effluent plume can cause intermittent exposure to certain communities. This variability requires data on both continuous and intermittent exposures.

The study planned has the major objective of filling the void of information in existence concerning the immediate effects of these anti-foulant biocides to selected ecosystems and associated organisms. The experiments will be designed to produce realistic criteria for the protection of marine and coastal aquatic life likely to be impacted by these biocides. Exposures will be related to the potential exposure times in existing power plants and effluent plumes, and will range from minutes to hours. Also, 24, 48, and 96-hr LC50 values will be determined. The biocides studied will include chemicals such as chlorine, ozone, bromine chloride and chromates, and selected by-products of these, such as chloramines and chlorinated organics.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William L. Templeton W. L. TEMPLETON ASSOCIATE MANAGER ECOSYSTEMS DEPARTMENT	

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	4	D. Heyward Hamilton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		8/75	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 168 AND SSIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BCD (EPA-IAG-D5-E681-CD)

TITLE OF PROJECT Combined effects of heat and chemicals from power plant effluents on selected marine and estuarine communities

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

C. I. Gibson, Ecosystems Department, Program Leader, Marine Biology
J. S. Young, Ecosystems Department, Research Scientist, Marine Biology
T. O. Thatcher, Ecosystems Department, Research Scientist, Marine Biology

NAME AND ADDRESS OF APPLICANT INSTITUTION

Battelle, Pacific Northwest Laboratory
Ecosystems Department (Marine Research Laboratory, Sequim, WA)
Richland, Washington 99352

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The principal objectives of this research program are to: (1) identify the chemical forms of power plant effluents that are biologically active and the effects of physical and chemical parameters on these forms, (2) determine combined effects of thermal alterations and chemical effluents from power plants upon important attached estuarine and marine communities likely to be impacted, and (3) help develop realistic water quality criteria for marine and estuarine discharges released by power plants.

The research plan includes transferring communities of estuarine and marine organisms (colonized on portable artificial substrates) from sites being considered as possible electrical energy generating plant locations in Washington and Oregon to community study chambers located at the Sequim Marine Research Laboratory. At the laboratory, the communities will be held at their natural salinity levels, and determinations will be made of the synergistic, antagonistic or additive effects of power plant effluents including heated water, chlorine, ozone, copper, cadmium, chromium, and other pertinent chemicals. The effects will be evaluated by comparing community response in terms of wet and dry weight biomass, and species numerical and compositional variations as determined by indices of species evenness, richness, dominance, and affinity. Community respiration rates and pollutant accumulation rates, as influenced by the combined effects will also be examined. Following the laboratory studies, field validation at selected operating plants will be conducted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	William L. Templeton W. L. TEMPLETON ASSOCIATE MANAGER ECOSYSTEMS DEPARTMENT	

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	5	D. Heyward Hamilton
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/Div. of Biomed. & Environ. Research

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
115K	75		12/75	6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

EPA-IAG-D5-E772-CV

TITLE OF PROJECT

Physiological Mechanism of Transport, Accumulation and Excretion of Metals in Marine Organisms and Mammals

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

Bruce A. Fowler, Ph.D., Senior Staff Fellow, Environmental Toxicology Branch, NIEHS (Principal Investigator
David W. Engel, Ph.D., Fishery Biologist, NMFS, Beaufort, NC
Ford A. Cross, Ph.D., Oceanographer, NMFS, Beaufort, NC (Project Director)

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, NC 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The proposed study would have the following objectives:

1. Examine the potential of marine organisms as models or predictive early indicators of human toxicity to environmental agents through comparative marine-mammalian toxicity testing programs.
2. Evaluate the potential of marine organisms as major vectors of toxic environmental agents.
3. Evaluate comparative pharmacokinetic properties of marine species regarding their ability to store, metabolize, and excrete environmental pollutants such as heavy metals.

The basic experimental approach would involve exposing marine shellfish to low concentrations of arsenic, cadmium, or copper and then comparing the physiological, biochemical, and cellular responses of these organisms with those already defined in mammals. Tissues from treated marine animals would then be lyophilized and incorporated into purified diets of laboratory animals at NIEHS. The pharmacokinetics and toxicity of the metals to these animals would then be compared to equivalent concentrations administered in drinking water. Tissue concentrations of elements in both shellfish and treated laboratory animals will be determined by proton-induced x-ray emission analysis.

TASK: ERR 8.1

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NIEHS	Bruce A. Fowler	8/22/75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY: NIEHS//Project Officer: Dr. Larry G. Hart

METHOD OF SUPPORT *(Check one)*

☐ Agency Staff (Intramural) ☒ Negotiated Contract ☐ Special Project Grant ☐ Research Grant ☒ Other (Specify) 30 percent Direct

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
$90,000 75		7/75	7/76

NIH-1946 (FORMERLY FHS-166)

Prepared for the Science Information Exchange.

Not for publication or publication reference.

U. S. Department of
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

NOTICE OF RESEARCH PROJECT

PROJECT NO. (DO NOT USE THIS SPACE)

77 BCV/EPA-IAG-D5-E772-CV

TITLE OF PROJECT

Accumulation, Distribution, Metabolism, and Excretion of Individual Aliphatic and Aromatic Hydrocarbon Isomers Present in Crude Oil in Warm and Cold Marine Species

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED ON THE PROJECT.

John R. Bend, Ph.D., Head, Section on Marine Pharmacology and Biomedicine, Pharmacology Branch (Principal Investigator)

Margaret O. James, Ph.D., Section on Marine Pharmacology and Biomedicine, Pharmacology Branch

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Institute of Environmental Health Sciences
P.O. Box 12233, Research Triangle Park, N.C. 27709

SUMMARY OF PROPOSED WORK – *(200 words or less – Omit Confidential data.)*

In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research in the bio-sciences and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The in vitro metabolism of selected hydrocarbons, which are constituents of crude or refined petroleum products, will be studied in marine species indigenous to Florida for comparison to our earlier work with marine species. Special attention will focus on the polycyclic aromatic hydrocarbons, several of which are associated with chemical carcinogenesis and mutagenesis. The enzyme systems responsible for epoxide detoxication will also be studied (in vitro) in hepatic and extrahepatic tissues of marine species from Florida and Maine. The effects of preexposure of marine animals to chemical pollutants associated with petroleum on the subsequent uptake, distribution, metabolism (in vivo and in vitro) and excretion of selected hydrocarbons including octane, benzene and benzo(a)pyrene will also be monitored.

TASK: 2/ERR 8.2

PROFESSIONAL SCHOOL *(medical, dental, etc.)* WITH WHICH THIS PROJECT SHOULD BE IDENTIFIED	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John R. Bend	8.18.75

DO NOT WRITE BELOW THIS LINE – FOR OFFICE USE ONLY

SUPPORTING AGENCY
Dr. Larry G. Hart (Project Officer) // NIEHS

METHOD OF SUPPORT *(Check one)*

[X] Agency Staff (Intramural) [ ] Negotiated Contract [ ] Special Project Grant [ ] Research Grant [ ] Other (Specify)

FUNDS OBLIGATED CURRENT F.Y.	NUMBER OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT FISCAL YEAR	BEGINNING DATE	ESTIMATED COMPLETION DATE
70 K energy 75 8 K Base	345	7/75	7/76

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E721-DO

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Dose-Response Relationships for Effects of Fossil-Fueled Power Plant Pollutants in Plant Species, Communities, and Ecosystem

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones, Supv., Terrestrial Ecology Section (Principal Investigator)
Frances P. Weatherford, Biologist

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Terrestrial Ecology Section, Division of Environmental Planning
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this research is to develop baseline information for use in evaluating the potential effects of energy technologies, including conservation, in terrestrial ecosystems. Existing dose-response data for SO_2, NO_2, and combinations of these and other pollutants will be analyzed and summarized. Plans for completing baseline information and for consolidation and coupling of information storage, retrieval, and analysis systems with those of other Federal agencies will be developed.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1	W. R. Nicholas
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
30 K	75	4	5/7/75	5/6/80

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
IAG-D5-E721-D0

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Field Plot & Filt/Unfilt Field Exposure Chamber Studies of the Effects of Coal-Fired Power Plant Emissions on Crop & Forest Species of Economic Impt. in SE US

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III, Supv., Terrestrial Ecology Section (Principal Investigator)
N. T. Lee, Biologist, Acting Proj. Leader
Charlie McDuffie, Jr., Biologist

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning, Terrestrial Ecology Section
Tennessee Valley Authority, E&D Building
Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

These studies are aimed at characterizing under field conditions the relationships of pollution dose and effects on foliar appearance, growth and yield of selected crop and forest species (including soybeans, wheat, cotton, and Virginia pine). Both field plots and field exposure chambers are being utilized in the studies.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones III	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		W. R. Nicholas
X NEGOTIATED CONTRACT	2	RESPONSIBLE ORGANIZATION: Division of Environmental Planning - TVA
RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
170	75	4	5/7/75	5/6/80

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E721-DO

TITLE OF PROJECT: Dose-Response Kinetics for Effects of Atm. Emissions from Coal-Fired Pr. Plants on Soybeans & Other Crop & Forest Sp. of Ec. Impt. in the SE US.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones, III (Principal Investigator)
N. T. Lee (Acting Project Leader), Biologist
Charlie McDuffie, Jr., Biologist
Frances P. Weatherford, Biologist

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, Alabama 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Terrestrial Ecology Section, Division of Environmental Planning
Tennessee Valley Authority
E&D Building, Muscle Shoals, Alabama 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The studies involve acute and chronic controlled exposure studies of the effects of SO_2, NO_2, O_3, and combinations of these pollutants on the growth and/or yield of soybeans, cotton, wheat, and Virginia pine grown and exposed under several environmental regimes. Responses measured include visible injury, growth, yield, respiration, and photosynthesis.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	W. R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
45	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E721-DO

TITLE OF PROJECT Transfer, Fate, and Effects of SO_x, NO_x, and Acid Precipitation on a Terrestrial Ecosystem Representative of the Tennessee Valley Region

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III, Supv., Terrestrial Ecology Section (Principal Investigator)
J. C. Noggle, Biologist (Acting Project Leader)
J. R. Cunningham, Biologist

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning, Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building, Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of these studies is the characterization and quantification of the transfer, fate, and effects of SO_x, NO_x, and acid precipitation on a terrestrial ecosystem. Field studies include investigations of wet and dry deposition of pollutants cycling and effects; laboratory studies of SO_x and NO_x movement in soils and controlled exposure studies of fate and effects of acid rain on vegetation and soil microbes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones III	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		W. R. Nicholas
X NEGOTIATED CONTRACT	4	RESPONSIBLE ORGANIZATION
RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
195	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E721-DO

TITLE OF PROJECT Beneficial Effects of SO_2 Emissions from Coal-Fired Power Plants on Crop and Forest Species

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III, Supv., Terrestrial Ecology Section (Principal Investigator)

J. C. Noggle, Biologist (Project Leader)

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Terrestrial Ecology Section, Division of Environmental Planning
Tennessee Valley Authority
Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study follows up on a report that indicated the wood density of SO_2-resistant white pine growing in the vicinity of two coal-fired power plants increased after the plants began operations, while growth rates remained the same or increased. Density of wood and growth of white, loblolly, Virginia, and short-leaf pines growing in the vicinities of two large coal-fired power plants will be investigated. A second part of the total study will involve the evaluation of economic benefits of sulfur deposition from the atmosphere on crop and forest species.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones III	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*		W. K. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT	5	Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
50	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DP

TITLE OF PROJECT: Fate & Effects of Atmospheric Emissions from Cooling Systems on Terrestrial Habitats

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Herbert C. Jones III, Supv., Terrestrial Ecology Section (Principal Investigator)

Charlie McDuffie, Jr., Biologist

Division of Environmental Planning
Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Division of Environmental Planning, Terrestrial Ecology Section
Tennessee Valley Authority, E&D Building
Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This investigation is aimed at identifying and characterizing the effects of atmospheric releases from mechanical and natural draft cooling towers. Measurements include (1) wet and dry deposition of toxic chemicals, their accumulation in and effects on soil and vegetation, (2) impacts of moisture on growth and/or yield of selected crop and timber species and incidence of disease, and (3) climatological changes.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Herbert C. Jones III	8/22/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
( ) AGENCY STAFF *(Intramural)*	1 & 2	W. R. Nicholas
(X) NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
( ) RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
75 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E721-DQ

TITLE OF PROJECT

Ecological Recovery after Reclamation of Toxic Spoils Left By Coal Surface Mining

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Thomas G. Zarger, Staff Forester, Joe B. Maddox, Botanist, and William H. Nussbaumer, Staff Forester, Forest and Wildlife Resources Branch; Donley M. Hill, Limnologist, Fisheries and Waterfowl Resources Branch; all of the TVA Division of Forestry, Fisheries, and Wildlife Development, Norris, TN 37828, phone (615) 494-7173

NAME AND ADDRESS OF APPLICANT INSTITUTION

TVA Division of Environmental Planning, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this study is to determine the rate of recovery of a damaged ecosystem on response to intensive remedial land treatment of a problem surface mine. The study involves a watershed in which surface mining and unsuccessful reclamation efforts in the early 1970's resulted in adverse environmental impacts.

Repeated attempts by the mine operator to revegetate the spoils by standard treatments proved unsatisfactory.

Project objectives will be accomplished by measuring the degree of recovery of affected terrestrial and aquatic ecosystems following application of the indicated intensive remedial land treatment. Existing conditions will be measured and evaluated prior to restorative treatment (data collected during the period of mining and early reclamation efforts will help characterize previous conditions). Monitoring will continue through treatment and thereafter on a more limited basis as long as significant recovery is noted.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Thomas G. Zarger	Aug. 26, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Thomas G. Zarger
x	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: TVA Division of Forestry, Fisheries, and Wildlife Development
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$80k obl. $80k est. exp.	1975	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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PROJECT NO. *(Do not use this space)*
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DR

TITLE OF PROJECT
Information Systems Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William R. Nicholas, project officer
Ralph H. Brooks, projects manager and principal investigator
Billy G. Isom, projects coordinator and liaison

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
401 Chestnut Street, Room 248
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to provide basic data on representative important benthic faunal and other species for ecosystem modeling and other recurring uses.

Data gathered on the major aquatic communities in the vicinity of eight coal-fired steam plants from June 1973 through June 1975 will be reviewed for information on abundance, growth rates, and duration of instars. Representative taxa will be selected for further study in the laboratory and field.

The Water Quality and Ecology Branch has purchased some ecomodels used in application to reservoirs. We have held discussions with anticipation of refining these models and using them for predicting effects of energy technologies on semiriverine ecosystems such as the Tennessee River.

Considerable background literature and references have been collected to date.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Ralph H. Brooks	8/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$65 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
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PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DR

TITLE OF PROJECT
Acute Thermal Effects, Aquatic Insects

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William R. Nicholas, project officer
Ralph H. Brooks, projects manager
Billy G. Isom, projects coordinator and liaison
Richard D. Urban, principal investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION
Tennessee Valley Authority
401 Chestnut Street, Room 248
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to provide data on the acute effects of thermal plume entrainment on aquatic insects.

Some concern has been expressed that if drifting insects cannot successfully negotiate passage through thermal plumes, the aquatic insect populations upstream of a plant will be depleted as well as those downstream. Acute thermal effects studies on freshwater insects will be conducted at representative TVA steam electric stations and supplemented by "plop tests" in the laboratory. Other environmentally related data have been and are being collected such as temperature, light transmission, flow velocities, and numerous water quality parameters.

This study will add a new dimension to the existing aquatic ecological program. Data from ongoing 316(a) monitoring will be beneficial in determining both the areas to be studied and the representative important species present.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Richard D. Urban	8/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	2	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$90 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
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EPA
EPA-IAG-D5-E721-DR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Biochemical Methodology, Aquatic Thermal Impacts

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William R. Nicholas, project officer
Ralph H. Brooks, project manager, principal investigator
Billy G. Isom, projects coordinator and liaison

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut Street, Room 248
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to develop and/or describe chemical diagnostic techniques for assessing environmental stress on selected aquatic organisms.

This project adds a new dimension to the TVA aquatic ecological program. Existing data from both the 316 and nuclear monitoring programs will be used to select the experimental taxa.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Ralph H. Brooks	8/19/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E721-DR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Biomonitoring, Mullusks and Others

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William R. Nicholas, project officer
Ralph H. Brooks, projects manager
Billy G. Isom, projects coordinator and liaison
Billy G. Isom, principal investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut Street, Room 248
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to quantify the role of bioaccumulation in cycling of trace elements (selected metals and radionuclides) released to aquatic ecosystems by the thermal component of coal combustion and nuclear steam electric stations.

Studies have been conducted over the past several years on mollusk population species distribution in Tennessee Valley Reservoirs in proximity to coal combustion and operational nuclear facilities. We have a limited knowledge of the use of mussels and macroinvertebrates as biological monitors of metals and organochemical species.

We have considerable background literature on toxicity of power plant chemicals to aquatic life. This research will further evaluate the use of mollusks and other invertebrates for monitoring bioaccumulation in the aquatic environment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Billy G. Isom	8/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	8	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$72 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E721-DR

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Evaluate Water Intakes, Zooplankton Entrainment

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

William R. Nicholas, project officer
Ralph H. Brooks, projects manager
Billy G. Isom, projects coordinator and liaison
Richard D. Urban, principal investigator

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
401 Chestnut Street, Room 248
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of this task is to compare selected alternative intake designs for the purpose of determining the design(s) most effective in preventing the entrainment of zooplankton in the condenser cooling water of steam electric stations.

Entrainment effects (condenser passage) studies were initiated in 1974 at 11 TVA coal-fired steam plants. Data from these studies will be used to select alternative designs for further intensified study.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Richard D. Urban	8/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	9	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA, Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$77 K	75	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SSIE 78A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DS

TITLE OF PROJECT
Strip Mine Drainage Water Quality with Emphasis on Toxic Substances

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Richard J. Ruane, Supervisor, Special Projects Staff, 401 Chestnut St. Rm. 246, Chattanooga, TN 37401 (615) 755-3167; Roger P. Betson, Civil Engineer, Research Section, 336 Evans Building (615) 637-2270; Doye B. Cox, Environmental Engineer, Special Projects Staff, 401 Chestnut St. Rm. 246, Chattanooga, TN 37401 (615) 755-3167

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority, 401 Chestnut Street, Room 248, Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives of the study are to determine the occurrence of trace inorganic contaminants in acid mine drainage as a result of strip mine operations, determine the formation rates of these trace inorganic contaminants under conditions created by strip mines, determine the mechanisms by which these contaminants may enter surface water and groundwater supplies, determine various effective and economic treatment schemes to reduce these trace inorganics and other contaminants to acceptable levels, assess biological impacts and recovery rates for biological conditions, and develop a technique for predicting water quality in strip mine drainage in advance of stripping. The work will be field and laboratory studies conducted by the TVA Water Quality and Ecology Branch.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Richard J. Ruane	8/12/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-5	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		TVA Division of Environmental Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$200K est exp	1975	4	5/7/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
IAG-D5-E721-DT

TITLE OF PROJECT
Production of Arthropod Pests and Vectors in Strip Mine Pools

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Eugene Pickard, Entomologist
Dr. J. C. Cooney, Entomologist

Terrestrial Ecology Section
Tennessee Valley Authority
E&D Building
Muscle Shoals, AL 35660
Phone: FTS (205) 383-4342

NAME AND ADDRESS OF APPLICANT INSTITUTION

Terrestrial Ecology Section, Tennessee Valley Authority
E&D Building, Muscle Shoals, AL 35660

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective of the study is to determine what aquatic arthropod pests, mainly mosquitoes, are breeding in strip mine pools, to what extent, and whether these breeding sites will serve as a focus of annoyance to surrounding communities. Emphasis will be placed on age classification of pools, physical and chemical characteristics, and vegetation communities. The survey will employ the use of several sampling techniques for both adult and larval forms of aquatic arthropods. A preliminary reconnaissance is planned for September 1975 to determine the general ecology of the likely study areas along with prevailing and potential habitats favorable to the production of medically important arthropods.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Eugene Pickard	8/15/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1 & 2	William R. Nicholas
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Tennessee Valley Authority

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
31	75	4	9/75	F.Y. 1981

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-BED

TITLE OF PROJECT Assessment of impacts of mining and airborne pollutants on forest, range, and related freshwater ecosytems.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Coordinated studies by Forest Service research scientists underway at several locations in the Northern Great Plains and Southwest USA being conducted by: Director, Rocky Mountain Forest and Range Experiment Station 240 West Prospect Street, Fort Collins, Colorado 80521; Director, Intermountain Forest and Range Experiment Station, 507 25th St., Ogden, Utah 84401; Dir., Forest Environment Research Staff, 12th & Independence Ave. SE, Wash., D.C. 20250

NAME AND ADDRESS OF APPLICANT INSTITUTION
U.S. Department of Agriculture
12th & Independence Ave. S.W.
Washington, D. C. 20250

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Assess quality of water in water bodies in strip-mined areas as it relates to habitat for aquatic organisms and wildlife species associated with these water bodies.

2. Assess technologies for redepositing and stabilizing mine spoils to include identification of technologies that will keep water quality within acceptable limits for aquatic organisms and associated wildlife species.

3. Assess effects of mining-related transportation systems on water, air, soil, plant, animal, and esthetic resources.

4. Develop operational technical information system for reclamation of lands affected by mining.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA		

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1-4	R. Z. Callaham,
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Forest Environment Research, Forest Service, USDA
X	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
666 K	75		6/76	6/79

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
D5-E764-ED

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Technologies for controlling adverse effects of mining on forest, range, and related freshwater ecosystems.

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Coordinated studies by Forest Service research scientists underway at several locations in the Northern Great Plains and Southwest U.S.A. being conducted by: Director, Rocky Mountain Forest and Range Experiment Station, 240 West Prospect Street, Fort Collins, Colorado 80521; Director, Intermountain Forest and Range Experiment Station, 507 25th Street, Ogden, Utah 84401; Dir., Forest Environ. Research Staff, 12th & Independence Ave SE, Washington, D. C. 20250

NAME AND ADDRESS OF APPLICANT INSTITUTION

U.S. Department of Agriculture
12th and Independence Avenue, S.W.
Washington, D.C. 20250

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Develop guidelines and criteria for overburden drilling, analysis, and placement as related to growth supporting media.

2. Prepare technical handbook on revegetation methods for mined lands in Eastern U.S., including recommendations for new research.

3. Develop guidelines and criteria for the use of non-mine wastes as soil amendments on coal and oil shale spoils.

4. Develop recommendations, guidelines, and criteria, based on new research, for revegetation following coal and oil shale mining.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A		

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	2	R. Z. Callaham
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Forest Environment Research, Forest Service, USDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
236 K	75			6/79

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E763-EI

TITLE OF PROJECT
Revegetation and reclamation of land areas disturbed by mining

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

List attached.

NAME AND ADDRESS OF APPLICANT INSTITUTION
Agricultural Research Service
U.S. Department of Agriculture
Washington, D.C.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. To develop technology required for preparing reclamation plans before mining operation begins. Approach - To characterize overburden material at several major mine sites; initiate research on weathering, leaching and other changes in mine spoils; and to screen, develop, select, and assemble laboratory procedures best adapted to characterize the chemical properties of mine spoil.

2. To study the effect of strip mining and reclamation processes on the quality and quantity of water leaving the area. Approach - Predictive mathematical equations will be developed and then verified with data obtained from reclamation research plots. Management practices will be developed for restoring the hydrology of the mined area.

3. To evaluate the effect of utilizing reclaimed strip mined land for the production of specialty crops or other crops of economic importance. Approach - Soil fertility management methods will be developed that will permit the production of specialty crops including buckwheat, alfalfa, clovers, grasses, and vegetables.

4. To evaluate the effect of strip mine reclamation practices on the nutritional quality of forages or other crops grown on the reclaimed area. Approach - Forages and other crops will be grown on spoil material that has undergone various management methods in the reclamation process. Evaluation will be made through chemical analysis of plant material and through animal feeding trials.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	H. L. Barrows	Aug 6, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF (Intramural)	1, 2, 3, 4	H. L. Barrows
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Agricultural Research Service, USDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$377 K	1975	4	June 1975	December 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

Dr. O. L. Bennett
Agronomy Department
West Virginia University
Morgantown, West Virginia 26506
Phone: 304-293-2793

Dr. J. F. Power
Northern Great Plains Research Center, ARS, USDA
P. O. Box 459
Mandan, North Dakota 58554
Phone: 701-663-6448

Dr. H. B. Pionke
Northeast Watershed Research Center
Pennsylvania State University
University Park, Pa. 16802
Phone: 814-238-4976

Mr. J. N. Jones
Agronomy Department
Virginia Polytechnic Institute
Blacksburg, Virginia 24061
Phone: 703-951-6812

Mr. W. H. Armiger
Biological Waste Management Laboratory, ARS, USDA
Agricultural Research Center
Beltsville, Maryland 20705
Phone: 301-344-3184

Dr. C. W. Blessin
Northern Regional Research Center, ARS, USDA
1815 N. University Street
Peoria, Illinois 61604
Phone: 309-685-4011

Dr. W. H. Allaway
U.S. Plant, Soil & Nutrition Laboratory
Tower Road
Ithaca, New York 14850
Phone: 607-256-5480

(Attachment 1.)

Names, Departments, and Official Titles of Principal Investigators or Project Directors and All Other Professional Personnel Engaged in The Project

Studies will be coordinated regionally by Project Directors:

North Central Region (Ia., N. D.)	S. R. Aldrich, Assistant Director Illinois Agricultural Expt. Station
Western Region (Mont., Mont., Wyo.)	M. L. Wilson, Associate Director New Mexico Agricultural Expt. Station

Identify Professional School Involved (Medical, Dental, etc.)

Pennsylvania State University
University of West Virginia
Ohio State University
Va. Polytechnic Institute
University of Kentucky
University of Arizona
New Mexico University
Utah State University

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E693-EM

TITLE OF PROJECT

Fate & Effects of Toxic Metals & Petroleum Hydrocarbons on Selected Ecosystems & Organisms

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Douglas A. Wolfe, Project Manager
Environmental Research Laboratories/NOAA
Research Building #3
Boulder, CO 80302
Phone: (303) 499-6562

NAME AND ADDRESS OF APPLICANT INSTITUTION

NOAA
Rockville, MD 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Heavy metals and petroleum hydrocarbons are known to adversely affect marine organisms, either on an acute (short-term) or chronic (long-term) level. Both are released and/or concentrated by energy development activities. This project will provide for laboratory and field investigations of the effects of these pollutants on marine organisms and the ecosystem. A knowledge of the differential effects of various heavy metals and petroleum hydrocarbon fractions on marine organisms and ecosystem is essential for determination of the impact of energy development activities on the marine environment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Douglas A. Wolfe	11 August 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	3.1 - 3.4 (4)	John W. Townsend, Jr.
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/ERL

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$520K	1975	4	1 September 1975	1 September 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
77 BEV

TITLE OF PROJECT
Environmental and Resource Impacts of Energy Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

See Attached Sheet

NAME AND ADDRESS OF APPLICANT INSTITUTION
Cooperative State Research Service
US Department of Agriculture
Washington, D. C.

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. To assess the hydrologic effects and water pollution resulting from coal development.

2. To develop a system for providing information to public agencies and citizens concerning energy development impacts through inventory of resources and automatic data retrieval and monitoring of environmental status.

3. To determine effects of air pollutants from coal gasification on biota and to measure the effects of different spoil compositions on plant growth, survival and seed production.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
See Attached Sheet	E. V. Miller	August 15, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*	1, 2	S. Aldrich, M. L. Wilson
NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
X RESEARCH GRANT		CSRS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$572 K	1975	4	June 1975	December 1979

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA EPA-IAG-D5-E693-FA

TITLE OF PROJECT Data Management and Archival Services for Interagency Energy Related Marine and Meteorological Programs

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Mr. Edgar F. Law, Director
NODC Special Projects Division
NOAA Environmental Data Service
Washington, D.C. 20235
telephone: 202-634-7223

NAME AND ADDRESS OF APPLICANT INSTITUTION

National Oceanic and Atmospheric Administration
Rockville, Maryland 20852

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

The objective is to design, establish, operate, evaluate and refine a data management system for interagency energy related marine and meteorological programs.

This will be accomplished by:

o Assessing data services of relevant agencies

o Publishing a data management plan based on existing and proposed system and programs, including procedures for data acquisition, storage, retrieval, analysis, presentation and quality control.

o Operating, monitoring and defining a data management system (accomplished with cooperation from EPA and affected agencies).

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Edgar F. Law	8/8/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1	John W. Townsend, Jr.
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NOAA/EDS

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$100K	1975	4	1 Sept. 1975	1 Sept. 1980

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INTEGRATED ASSESSMENT

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OMB No. 158 R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE
EPA 77 ADK

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Technology Assessment of Western Energy Resource Development

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

University of Oklahoma: Irvin L. (Jack) White,* Ass't Director, Science and Public Policy Program; Michael A. Chartock**; R. Leon Leonard** and others. Radian Corporation: F. Scott LaGrone,*** Vice President and others.
* Project Director and O.U. team director. ** O.U. team co-director. *** Project co-director and Radian team director.

NAME AND ADDRESS OF APPLICANT INSTITUTION

University of Oklahoma
Norman, Oklahoma 73069

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. Objective-
   a. To assist the Environmental Protection Agency in developing environmental control policies and implementation strategies for mitigating the adverse impacts of Western energy resource development.
   b. To assist EPA's Office of Research and Development in evaluating that portion of its environmental research program dealing with the problems of Western energy development.
   c. To provide a balanced assessment of the full range of costs and benefits stemming from alternative energy resource developments in the Western U.S. in order to assist Federal and State planning for such development.
2. Approach-The project will produce three technology assessments-the latter two will essentially update and expand on the first, preliminary assessment. Work will concentrate on six resources-coal, oil shale, uranium, geothermal, oil and natural gas-in thirteen Western states. Each assessment will consist of three phases-a descriptive phase, designed to describe the region and the energy technologies under investigation and begin to focus on the major issues and problems; an interactive phase, which will determine the charges in the directly affected physical conditions-such as emissions, population, etc.-caused by energy development; and an integrative phase, which will determine the impacts that result from the changes in conditions, and will examine alternatives to mitigating the adverse impacts. Impact analysis will be conducted both at a number of specific sites, and also on a regional level. Policy analysis work will especially focus on environmental control strategies.
3. Progress-Work on the descriptive phase is almost complete.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Science and Public Policy Program		

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	Stephen Plotkin
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Office of Energy, Minerals and Industry, ORD, EPA, Wash. D.C.
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$1,297,504	75		6/30/75	6/30/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
77 ADL

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Integrated Technical Assessment of Electric Utility Energy Systems

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Glenn Kendall

NAME AND ADDRESS OF APPLICANT INSTITUTION

Teknekron, Inc.
2118 Milvia Street
Berkeley, California 94704

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Objectives:

(1) To assist the Environmental Protection Agency in developing environmental control policies and implementation strategies for mitigating the adverse impacts of various electrical generating technologies.

(2) To assist EPA's Office of Research and Development in evaluating the portion of its environmental research program dealing with the problems of electrical generating technologies.

Approach:

Annual technology assessments will be made of the electrical utility sector (conventional coal combustion, flue gas cleaning, fluid bed combustion, low-Btu gasification, sulfates, thermal control, waste as fuel, nuclear and geothermal), paying particular attention to the residuals resulting from alternative facility siting options and emission control levels, and to the effects of these residuals upon the human and natural environment.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Lowell Smith
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION Office of Energy, Minerals and Industry, ORD, EPA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
1,088,391	75		6/30/75	6/30/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-DB

TITLE OF PROJECT

Coordinate R & D Information and National Design and Develop and Maintain R & D Energy Files

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Abbott, R.P., Principal Investigator, Computations Department

NAME AND ADDRESS OF APPLICANT INSTITUTION

Lawrence Livermore Laboratory
P. O. Box 808
Livermore, California 94550

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data).
In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

OBJECTIVES

Task 1 Establish cost effective technique for future data exchange and network capability.

Task 2 Evaluate optimum system design for management of R&D data.

APPROACH

To survey the current computer science technology to accommodate the above-mentioned task. This includes:

Large storage technologies for storage of large data bases.

The use of networks for access and storage of the data.

The computer processing requirements for processing this data.

Survey of data base technology.

CURRENT PLANS

To develop major milestones for the gathering of data necessary to support the survey.

Develop guidelines for organization, storage, location, and access of data.

Develop a guideline to help program the ability to determine potential valuable data.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
NA	Robert P. Abbott	9/19/75

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1, 2	Jerry Olson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION: ERDA
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
25 K	75		9/75	11/75

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Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
D5-681-DC

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT
Integrated Assessment of Nuclear and Nonnuclear Fuel Cycles

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Edw. G. Struxness, Assistant Director Environmental Sciences Division,
Oak Ridge National Laboratory

NAME AND ADDRESS OF APPLICANT INSTITUTION

Oak Ridge National Laboratory, P. O. Box X,
Oak Ridge, Tennessee 37830

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This program will develop a methodology that can be utilized to perform cost/risk/benefit assessments of alternative energy sources and to compare alternative energy sources on a common scale It will permit an assessment of the impacts of each stage of the entire fuel cycle, from extraction through waste management, so that alternative energy sources may be compared more effectively. Additionally, the methodology will allow incorporation of regional restrictions or varying scenarios. The methodology will place heavy emphasis on social impacts, environmental impacts and risks to public health, and will be responsive to the assessment of all alternative energy sources, both nuclear and non-nuclear.

The need for the development of such a methodology is based on the following:

1. Very few attempts have been made to quantify risks associated with the production of energy or to factor these risks into a cost/risk/benefit analysis.

2. Very little published work is available on the quantification of environmental impacts and social impacts into common units that would allow the balancing of these impacts against other impacts.

3. A comprehensive survey of the state of cost/risk/benefit methodology needs to be made to identify areas of deficiency.

4. The specific methods used to analyze each particular stage of the fuel cycle for each of the types of impact need to be combined into a general methodology which can, to the extent possible, express all impacts in terms of a common scale index.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
Not applicable	Edw. G. Struxness	9/29/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1-5	Raymond Cooper
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
150 K	75		9/75	4/78

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. (Do not use this space)
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E681-DD

TITLE OF PROJECT Develop a Methodology for Cost/Risk/Benefit Tradeoff Analysis of Nuclear, Oil, Shale, Geothermal and Coal Use for Power Production in the Western States

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Ronald K. Lohrding
Project Manager
Group Leader
Statistical Services Group

Katherine Campbell
Staff Member
Statistical Services Group

F. Andrew Ford
Staff Member
Statistical Services Grp.

NAME AND ADDRESS OF APPLICANT INSTITUTION

Los Alamos Scientific Laboratory
P. O. Box 1663
Los Alamos, New Mexico 87545

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This will be a first generation method for balancing benefits to the Western States and to the nation with the estimated costs (economic, other social, health and other environmental) of fuel extraction, processing, transportation, conversion, utilization and transmission. The method will provide for inputs of primary, secondary, and derivative impacts as well as flexibility of inputting social perceptions and value scales for weighing these impacts. There will be specific coordination with proposed EPA integrated technology assessment of Western energy development and its methodologies.

77 BDD

IDENTIFY PROFESSIONAL SCHOOL INVOLVED (Medical, dental, etc.)	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	Ronald K Lohrding	9/16/75

FOR OFFICE USE ONLY

SUPPORT METHOD (Check one)		TASK NO.	PROJECT OFFICER
	AGENCY STAFF (Intramural)	1	Jerry Olson
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		ERDA/BER/Germantown, Md.

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
100 K	75		10/75	4/76

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U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DU

TITLE OF PROJECT Develop Economic Projection Modeling Capability Necessary to Drive Modular Energy and Environmental Planning Models at a Multicounty Level

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director: Hubert Hinote, Economist
Division of Navigation Development and Regional Studies
Tennessee Valley Authority
Knoxville, Tennessee 37902
Telephone: 615-637-0101, Ext. 3376

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Knoxville, Tennessee 37902

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

As a part of its ongoing economic research program, TVA is in the process of developing a Regional Economic Simulation Model of the TVA region and its principal subregions. The objectives of the present work are to expand the existing model for use in: (1) assessing an area's sensitivity to various national parameters; (2) evaluating the impact in small areas (economic area or multicounty planning area) on population, labor force, employment, etc. of a major construction activity; e.g., construction of a large nuclear energy plant; and (3) providing the macroeconomic data base at a multicounty level that is necessary for rigorous site specific analyses. Much of the conceptual work has been done, but a significant effort is required to make the model an operational tool for driving energy and environmental planning models. A demonstration of the two sector model (population-labor force and employment sectors) for a multicounty area will be completed by 12/76.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
None	Hubert Hinote	Aug. 8, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	Hubert Hinote
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION TVA, Division of Navigation Development and Regional Studies
	RESEARCH GRANT		

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$62 K Est. Exp.	1975	4	5/7/75	Phase I Report 3/77- Final 1980

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OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

EPA
EPA-IAG-D5-E721-DV

TITLE OF PROJECT
Electric Power System Operation and Expansion Environmental Residual Model

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

R. E. Hoskins
216 Power Building
Chattanooga, TN 37401 PH: (615) 755-2381

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
216 Power Building
Chattanooga, TN 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1) Objectives - Output will consist of reports, computer programs with documentation, a demonstration of the program, and consultation as required. The model will be developed in conjunction with and in parallel to the development of the TVA Power System Integrated Planning Model. The model will include the capability to predict the residual output of a power system on a plant-by-plant basis. It will provide inputs for detailed dispersion models for evaluating expansion policies of a power system. The model may also be used independently of the TVA Power System Integrated Planning Model.

2) Approach - The model will be based on a power system simulation model developed by TVA.

3) Plans and Progress - A preliminary conceptual design of the model has been completed and interfaced with the overall conceptual design report of the TVA Power Program Integrated Planning Model. Immediate plans are to modify an existing power system operation model to output environmental residuals.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	R. E. Hoskins R. E. Hoskins	August 11, 1975

FOR OFFICE USE ONLY

SUPPORT METHOD *(Check one)*	TASK NO.	PROJECT OFFICER
AGENCY STAFF *(Intramural)*		R. E. Hoskins
X NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION TVA Division of
RESEARCH GRANT	1-4	Power Resource Planning

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$60,000 obl., $60,000 Est. Exp.	1975	4	May 7, 1975	May 6, 1980

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT

PROJECT NO. *(Do not use this space)*
SSIE
EPA
EPA-IAG-D5-E721-DW

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT Develop and Demonstrate Applications of Computer Graphics to Site-Specific and Regional Integrated Environmental Assessment of Mixed Nuclear, Coal-Based, and * *Hydroelectric Energy System

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT.

Project Director, H. R. Hickey, Chief, Applied Research and Education Staff, Division of Environmental Planning, TVA.

Principal Investigator Malcolm Babb, Environmental Engineer, Division of Environmental Planning, TVA

NAME AND ADDRESS OF APPLICANT INSTITUTION

Tennessee Valley Authority
Division of Environmental Planning
267 401 Building
Chattanooga, Tennessee 37401

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

Output Summary:

The outputs are demonstration of and reports on the application of computer graphics to environmental analysis of single and combined nuclear, fossil, and hydroelectric energy systems. This will include but not be limited to operation with large data bases covering a broad range of planning variables: Limited-area spatial data bases with topography, land cover, ownership, constrained areas (endangered species, karst geology, etc.), biological data, and air and water quality data. Multi-media residual impact models and control technology cost models will be "driven by" a multiplant electric power system simulation model, which is in turn driven by a socioeconomic (including demand forecasting) model, to provide rapid intelligence for planning, siting, and operating a regional energy system.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
N/A	Malcolm C. Babb	August 28, 1975

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
	AGENCY STAFF *(Intramural)*	1	H. R. Hickey
X	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		Division of Environmental Planning - TVA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$150 K	75	4	6/75	5/6/80

EPA Form 5760-1 (7-72) REPLACES PHS FORM 166 AND SI-SIE 76A WHICH MAY NOT BE USED.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Form Approved
OMB No. 158-R0081

NOTICE OF RESEARCH PROJECT (Interim)

PROJECT NO. *(Do not use this space)*

SSIE

EPA

EPA-IAG-D5-E766-EG

PREPARED FOR THE SMITHSONIAN SCIENCE INFORMATION EXCHANGE

TITLE OF PROJECT

Socio-Economic Analysis of Coal and Oil Shale Development in Rural Areas

GIVE NAMES, DEPARTMENTS, AND OFFICIAL TITLES OF PRINCIPAL INVESTIGATORS OR PROJECT DIRECTORS AND ALL OTHER PROFESSIONAL PERSONNEL ENGAGED IN THE PROJECT. Coordinated studies will be carried out in 5 locations. All research is to be coordinated through the Washington location. The professional personnel and locations are: J. Barse, T. Hady, F. Hines, O. Krause and G. Stam, 500 12th St., S.W., ERS, USDA, Washington, D.C. 20250; J. Green, L. Juers, M. Skold, and V. Whetzel, ERS, USDA, Economics Dept., Colorado State University, (See attached sheet)

NAME AND ADDRESS OF APPLICANT INSTITUTION

Economic Research Service
U.S. Department of Agriculture
500 12th Street., S.W.
Washington, D.C. 20250

SUMMARY OF PROPOSED WORK – (1) Objectives, (2) Approach, (3) Current Plans and/or Progress (200 words or less. Omit confidential data). In the Smithsonian Science Information Exchange, summaries of work in progress are exchanged with government and private agencies supporting research and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

1. The study focuses on analyzing the primary and secondary socio-economic impacts of expanded surface mining of coal and the development of oil shale on agriculture, non-metro areas, rural people, rural communities, rural industries, and environmental quality. Significant aspects of the overall study include: assessing current resource use; estimating direct and secondary employment changes induced by energy development; analyzing population changes; estimating changes in community infra-structures, changes in demand for community services, and revenue needs and revenue potentials for impacted communities; evaluating reclamation costs and social and economic feasibility of alternative uses of reclaimed areas; appraising the effect of alternative development and processing activities on water demands and transfers; and the effect of institutions on coal and oil shale development. A major effort is to develop an analytical system to evaluate interregional economic and environmental implications and trade-offs for agricultural and rural areas.

2. Data will be collected primarily from secondary sources and analyzed using accepted procedures including partial budget analysis and linear programming. Some methodology development is required.

3. Research will be coordinated with other USDA agencies and with universities and other institutions. Cooperative relationships are to be established and cooperative agreements or contracts are to be developed, though a major portion of the effort will be in-house.

IDENTIFY PROFESSIONAL SCHOOL INVOLVED *(Medical, dental, etc.)*	SIGNATURE OF PRINCIPAL INVESTIGATOR	DATE
	John R. Schaub	8/13/75

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SUPPORT METHOD *(Check one)*		TASK NO.	PROJECT OFFICER
X	AGENCY STAFF *(Intramural)*	1-7	John R. Schaub
	NEGOTIATED CONTRACT		RESPONSIBLE ORGANIZATION
	RESEARCH GRANT		NRED, ERS, USDA

FUNDS OBLIGATED	F.Y.	NO. OF FUTURE YEARS TENTATIVELY ASSURED BEYOND CURRENT F.Y.	STARTING DATE	ESTIMATED COMPLETION DATE
$460 K	75	6	June 10, 1975	June 1981

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(Please read Instructions on the reverse before completing)

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4. TITLE AND SUBTITLE
Fiscal Year 1975/Health and Environmental Effects Research Program Abstracts

5. REPORT DATE
October 1976

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)
K. Dixon and H. Holte

8. PERFORMING ORGANIZATION REPORT NO.

9. PERFORMING ORGANIZATION NAME AND ADDRESS
VITRO Laboratories
1400 Georgia Avenue
Silver Spring, MD 20910

10. PROGRAM ELEMENT NO.
626

11. CONTRACT/GRANT NO.
68-01-0612

12. SPONSORING AGENCY NAME AND ADDRESS
Nina Rowe and Richard Laska
Office of Energy, Minerals, & Industry
Office of Research & Development Washington, DC 20460

13. TYPE OF REPORT AND PERIOD COVERED

14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This report includes SSIE(Smithsonian Science Information) Abstracts pertaining to the FY 1975 Interagency Energy/Environment Research, Development and Demonstration Program being coordinated and managed by EPA's Office of Energy, Minerals, and Industry. The Abstracts are organized by major health and ecological research categories. This volume includes research being accomplished by EPA and its laboratories as well as a number of other participating agencies of the Federal Government.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
ABSTRACTS	ENERGY/ENVIRONMENT	06F
ENERGY	ENVIRONMENTAL Research	08H
ENVIRONMENTS		10A
ENVIRONMENTAL ENGINEERING	EPA PROGRAMS	13B

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