United States
Environmental Protection
Agency

Industrial Environmental Research
Laboratory
Research Triangle Park NC 27711

APR 81

Research and Development

EPA

Report Abstracts

Industrial Environmental Research Laboratory RTP

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-80-077c	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Treatability Studies of Pesticide Manufacturing Wastewaters: Dinoseb and Atrazine		5. REPORT DATE December 1980
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Edward Monnig and Ruth A. Zweidinger		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Research Triangle Institute P.O. Box 12194 Research Triangle Park, North Carolina 27709		10. PROGRAM ELEMENT NO. C33B1B
		11. CONTRACT/GRANT NO. 68-02-2688, Task 109
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 5-8/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is David C. Sanchez, Mail Drop 62, 919/541-2547.

16. ABSTRACT

The report gives results of laboratory and pilot studies of the treatability of pesticide manufacturing wastewaters, in an investigation of the suitability of individual pesticide manufacturing wastewaters for discharge to biological treatment systems, whether on site or publicly owned. Aqueous effluents from the manufacture of dinoseb and atrazine were evaluated in a hierarchical approach: the least costly treatments were evaluated first. Preliminary activated carbon filtration (to remove pesticides) followed by biological treatment (to reduce oxygen demand due to other organics) was found effective. Other treatments found inadequate were dilution with municipal wastewater and biological treatment and chemical pretreatment to hydrolyze the pesticide followed by biological treatment. Activated carbon filtration alone greatly reduced the phytotoxicity of the pesticide wastewater even though substantial breakthrough of some organic compounds occurred.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Pesticides	Stationary Sources	06F
Waste Water	Dinoseb	
Water Treatment	Atrazine	
Industrial Processes		13H

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 50
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-81-022	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Guidelines for the Disposal of PCBs and PCB Items by Thermal Destruction		5. REPORT DATE February 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) D. G. Ackerman, L. L. Scinto, P. S. Bakshi, D. L. Anderson, R. G. Delumyea, R. J. Johnson, G. Richard, and A. M. Takata		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS TRW, Inc. One Space Park Redondo Beach, California 90278		10. PROGRAM ELEMENT NO. C1YL1B
		11. CONTRACT/GRANT NO. 68-02-3174, Task 1
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 10/79-4/80
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is David C. Sanchez, Mail Drop 62, 919/541-2547.

16. ABSTRACT The report is a resource and guidelines document to aid EPA Regional Offices in interpreting and applying polychlorinated biphenyl (PCB) regulations to the thermal destruction of PCBs. As background material, the report describes fundamental processes of combustion, thermal destruction systems, sampling and analysis methodology, and flame chemistry relative to PCB incineration. Administrative considerations, including public involvement, are discussed. Detailed guidelines on the evaluation of Annex I incinerators, high efficiency boilers, and the several stages of the approval process are presented and discussed.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Combustion	Pollution Control	13B	21B
Chlorine Aromatic Compounds	Pyrolysis	Stationary Sources		07D
Biphenyl	Sampling	Polychlorinated Biphenyls	07C	14B
Incinerators	Analyzing	Flame Chemistry		
Boilers			13A	

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 317
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-81-033a	2. NTIS No. PB81-173346	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Applying for a Permit to Destroy PCB Waste Oil; Vol. I. Summary		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) S. G. Zelenski, Joanna Hall, and S. E. Haupt		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS GCA/Technology Division Burlington Road Bedford, Massachusetts 01730		10. PROGRAM ELEMENT NO. 1LB764
		11. CONTRACT/GRANT NO. 68-02-3168, Task 9
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 5-12/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is David C. Sanchez, Mail Drop 62, 919/541-2547.

16. ABSTRACT The two-volume report documents the permitting process followed by the State of Michigan before allowing a trial destruction burn of polychlorinated biphenals (PCBs) at the General Motors (GM) Chevrolet Bay City plant. Volume I includes a chronology of events and a matrix depicting the interaction of federal, state, and local government agencies and GM in the permitting process. The matrix presents a list of who requested and who responded to each need for additional information. An analysis of the significance of interactions, including interagency communications, private sector/public communication, and the flow and quality of information developed, is provided. Finally, recommendations that are based on this permit application process and that might facilitate subsequent applications for burns of hazardous materials are made. Volume II contains the relevant documents summarized in the Volume I lists. Recommendations include: (1) identification of all groups that may play an important role in future permitting processes; (2) contacting these groups by letter or in person; (3) developing a relationship of cooperation with these groups; (4) determining the level of support for proposed action; and (5) determining the necessary course of action based on the level of support.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Incinerators	Pollution Control	13B	
Chlorine Aromatic Compounds	Waste Disposal	Stationary Sources		
	Boilers	Polychlorinated Biphenyls (PCBs)	07C	13A
Biphenyl	Licenses			05D
Insulating Oil	Toxicity	Permitting Process	11H	06T
Combustion	Communicating	Waste Oil	21B	15E

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 86
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-81-033b	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Applying for a Permit to Destroy PCB Waste Oil; Vol. II. Documentation		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) S. G. Zelenski, Joanna Hall, and S. E. Haupt		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS GCA/Technology Division, Burlington Road, Bedford, Massachusetts 01730		10. PROGRAM ELEMENT NO. 1LB764
		11. CONTRACT/GRANT NO. 68-02-3168, Task 9
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development, Industrial Environmental Research Laboratory, Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 5-12/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is David C. Sanchez, Mail Drop 62, 919/541-2547.

16. ABSTRACT

The two-volume report documents the permitting process followed by the State of Michigan before allowing a trial destruction burn of polychlorinated biphenals (PCBs) at the General Motors (GM) Chevrolet Bay City plant. Volume I includes a chronology of events and a matrix depicting the interaction of federal, state, and local government agencies and GM in the permitting process. The matrix presents a list of who requested and who responded to each need for additional information. An analysis of the significance of interactions, including interagency communications, private sector/public communication, and the flow and quality of information developed, is provided. Finally, recommendations that are based on this permit application process and that might facilitate subsequent applications for burns of hazardous materials are made. Volume II contains the relevant documents summarized in the Volume I lists. Recommendations include: (1) identification of all groups that may play an important role in future permitting processes; (2) contacting these groups by letter or in person; (3) developing a relationship of cooperation with these groups; (4) determining the level of support for proposed action; and (5) determining the necessary course of action based on the level of support.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Incinerators	Pollution Control	13B	
Chlorine Aromatic Compounds	Waste Disposal	Stationary Sources		
	Boilers	Polychlorinated Biphenyls (PCBs)	07C	13A
Biphenyl	Licenses			05D
Insulating Oil	Toxicity	Permitting Process	11H	06T
Combustion	Communicating	Waste Oil	21B	15E

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 216
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-81-044a	2. NTIS No. PB81-178303	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Offshore Platform Hazardous Waste Incineration Facility: Feasibility Study Summary		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) R.J. Johnson, F.E. Flynn, and P.J. Weller		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS TRW, Inc. One Space Park Redondo Beach, California 90278		10. PROGRAM ELEMENT NO. C33B1B
		11. CONTRACT/GRANT NO. 68-02-3174, Task 19
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED IERB; 4-6/80
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is David C. Sanchez, MD-62, 919/541-2547. Provided as Problem-Oriented Report to EPA/OWWM. EPA-600/D-80-012 (formerly assigned to this report) has been cancelled.

16. ABSTRACT The report summarizes a feasibility study of using an existing offshore oil platform, being offered to the Government, as a site for incineration of hazardous wastes and related research. The platform, located in the Gulf of Mexico about 100 km south of Mobile, AL, has potential as an environmentally safe site for operational and research oriented incineration. The study indicates that an incinerator, capable of destroying a wide range of waste types at up to 3 metric tons/hour, can be installed on the platform along with the necessary support facilities. An environmental assessment of worst-case air and water quality impacts from waste incineration revealed insignificant air quality effects at the nearest land point and on the platform. Water quality effects will not be significant for most wastes. For highly toxic and persistent substances, an activated carbon scrubber water treatment system can be provided. Estimated capital costs were $6.6 million for offshore and shore base facilities, and waste transportation containers. Labor, offshore personnel subsistence, fuel, transportation, maintenance, depreciation, and land lease costs were estimated at $3.9 million/year, or approximately $298/metric ton of waste incinerated for 12 hour/day, 7 days/week operation. Continuous and intermittent operation of the incinerator were also considered.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Activated Carbon	Pollution Control	13B	
Offshore Structures	Scrubbers	Stationary Sources	13M	07A,13I
Incinerators		At-Sea Incineration		
Waste Disposal		Hazardous Wastes		
Toxicity			06T	
Hazardous Materials			11G	

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 34
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/2-81-047	2. NTIS No. PB81-172264	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE XAD-2 Thermal Blank Determination		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) C.H. Lochmüller and Eric C. Jensen		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Duke University P.M. Gross Chemical Laboratories Durham, North Carolina 27706		10. PROGRAM ELEMENT NO. INE624
		11. CONTRACT/GRANT NO. Grant R805494-01
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; 5/78-6/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Larry D. Johnson, MD-62, 919/541-2557. EPA-600/D-80-008 was formerly assigned to this report.

16. ABSTRACT The report gives results of a study to achieve qualitative and quantitative determinations of the thermal blank produced by XAD-2 resin as used in EPA's Level 1 environmental assessment procedure. Accurate determination of the nature of the species collected from the environment requires that the trapping material used produce only a relatively small, well-defined blank when carried through the collection procedure. Simulated-use conditions were utilized to evaluate the blank in these studies. In addition to the thermal study, the blank was examined to determine both the materials present in the resin before cleaning, and the materials produced by physical agitation of the resin.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Thermal Stability	Pollution Control	13B	20M
Sampling	Chloromethanes	Stationary Sources	14B	07C
Analyzing		Environmental Assessment		
Assessments				
Polymers		XAD-2 Resin	07D	
Adsorbents		Thermal Blanks	11G	

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 31
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-80-066	2. NTIS No. PB81-178535	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Effects of Coal-ash Leachate on Ground Water Quality		5. REPORT DATE March 1980
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Jack D. Milligan and Richard J. Ruane		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Tennessee Valley Authority 1120 Chestnut Street, Tower II Chattanooga, Tennessee 37401		10. PROGRAM ELEMENT NO. INE624A
		11. CONTRACT/GRANT NO. EPA Interagency Agreement D5-E721
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; 5/75-11/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Michael C. Osborne, Mail Drop 62, 919/541-2547. TVA project director is Hollis B. Flora II.

16. ABSTRACT The report gives results of research to: (1) develop methodology for the field-collection of coal-ash leachate; (2) chemically characterize ash leachates from power plants using different coal sources; (3) determine the characteristics of the hydrogeochemical environment in which the leachate occurs; and (4) determine the attenuation of coal-ash leachate by various soil types. Groundwater monitoring wells were installed around ash ponds at two TVA plants. Continuous soil-core samples were collected and analyzed periodically. Ash leachate was percolated through different clays and soils to study attenuation rates. Results include indications that: (1) coal-ash leachate is highly variable, but characteristically high in dissolved solids, B, Fe, Ca, Al, and SO4; ash leachate is acidic, with measured pH as low as 2; (2) the coal sources associated with the study produced ash leachate with similar characteristics; (3) an inert-gas lift pump was effective in collecting anoxic groundwater samples while minimizing oxidation; (4) differences were found in the characteristics of leachate samples obtained by extracting the interstitial soil water and samples collected from the monitoring wells; interstitial water samples contained higher concentrations of metals and were more acidic than well samples; and (5) the flux of metals in the ash pond leachate was negligible compared to ash pond surface overflow.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Leaching	Stationary Sources	07D,07A
Water Quality	Coal Ash	
Ground Water		08H
Coal		21D
Ashes		21B

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 125
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-009	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Environmental Assessment: Source Test and Evaluation Report, Koppers-Totzek Process		5. REPORT DATE January 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) C.A. Zee, J.F. Clausen, and K.W. Crawford		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS TRW, Inc. One Space Park Redondo Beach, California 90278		10. PROGRAM ELEMENT NO. INE825
		11. CONTRACT/GRANT NO. 68-02-2635
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; 8/79-12/80
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is William J. Rhodes, Mail Drop 61, 919/541-2853. EPA-650/2-74-009a is an earlier report relating to this process.

16. ABSTRACT The report gives results of a source test program at a Koppers-Totzek (K-T) coal gasification plant operated by AECI, Ltd. at Modderfontein, Republic of South Africa. EPA is interested in the K-T process because process economics and demonstrated commercial reliability make it a viable prospect for U.S. applications. Responsibilities for sampling, analysis, and engineering descriptions of the plant were shared by TRW and Krupp-Koppers GmbH of Essen, Federal Republic of Germany. EPA's phased approach for environmental assessments was followed. Level 1 and Level 2 data were collected along with priority pollutant screening data. Much of the effort was focused on wastewater streams. Wastewater treatment, consisting of a clarifier and settling pond, was adequate to produce a final discharge that had lower pollutant levels than the fresh input waters supplied to the plant. The report contains complete data and describes the K-T process and the Modderfontein plant. The Source Test Evaluation (STE), intended as an initial effort, was somewhat limited in scope. Recommendations for future STE programs are provided.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Coal Gasification	Stationary Sources	13H
Assessments	Koppers-Totzek Process	14B
Waste Water	Source Testing	
Water Treatment		

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 89
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-012a	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE EPA Utility FGD Survey: October - December 1980 Volume I. Categorical Summaries of FGD Systems		5. REPORT DATE January 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) M. Smith, M. Melia, N. Gregory, K. Scalf		8. PERFORMING ORGANIZATION REPORT NO. PN 3560-2-6
9. PERFORMING ORGANIZATION NAME AND ADDRESS PEDCo Environmental, Inc. 11499 Chester Road Cincinnati, Ohio 45246		10. PROGRAM ELEMENT NO. 1NE828
		11. CONTRACT/GRANT NO. 68-02-3173, Task 17
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, N.C. 27711		13. TYPE OF REPORT AND PERIOD COVERED Quarterly; 10-12/80
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES
IERL-RTP Project Officer is Norman Kaplan, Mail Drop 61, 919/541-2556. Related reports are in the EPA-600/7-80-029 and EPA-600/7-79-022 series.

16. ABSTRACT
This report is the first full compilation (not a supplement) since the October-December 1979 report (EPA-600/7-80-029a). Because the next three reports are to be supplements, this issue should be retained for reference throughout the year. The report, which is generated by a computerized data base system, presents a survey of operational and planned domestic utility flue gas desulfurization (FGD) systems, terminated domestic utility FGD systems, operational domestic particle scrubbers, and Japanese coal-fired utility boiler FGD installations. It summarizes information contributed by the utility industry, process suppliers, regulatory agencies, and consulting engineering firms. Domestic FGD systems are tabulated alphabetically by development status (operational, under construction, or in planning stages), utility company, process supplier, process, and waste disposal practice. It presents data on boiler design, FGD system design, fuel characteristics, and actual performance. It includes unit by unit dependability parameters and discusses problems and solutions associated with the boilers and FGD systems. Process flow diagrams and FGD system economic data are appended. **Section 3 of this report, because of its length, appears in Volume II (EPA-600/7-81-012b).**

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Maintenance	Pollution Control	13B
Flue Gases		Stationary Sources	21B
Desulfurization		Utility Boilers	07A, 07D
Electric Utilities			
Waste Disposal			15E
Boilers			13A

18. DISTRIBUTION STATEMENT Release to public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 353
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-025	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Environmental Aspects of Synfuel Utilization		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) M. Ghassemi and R.S. Iyer		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS TRW, Inc. One Space Park Redondo Beach, California 90278		10. PROGRAM ELEMENT NO. CCZN1A
		11. CONTRACT/GRANT NO. 68-02-3174, W.A. 18
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 3/80-2/81
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Joseph A. McSorley, Mail Drop 61, 919/541-2827.

16. ABSTRACT The report gives results of a review of the environmental concerns relating to the distribution, handling, and end-use of synfuel products likely to enter the market place by the year 2000, and assigns priority rankings to products from the standpoint of environmental concerns. The report: reviews available data on the physical, chemical, and health effects characteristics of synfuel products and the environmental significance of such characteristics; analyzes the potential environmental impacts and regional implications associated with the production and end-use; and ranks the products from the standpoint of environmental concerns and mitigation requirements. Review results indicate that: (a) wide-scale transportation, distribution, and end-use of certain synfuel products can present significant threats to the environment and the public health; (b) based on gross characteristics, synfuel products appear to be similar to petroleum products, but detailed characterization data are not available to judge their relative safety; and (c) synfuel test and evaluation programs currently underway or planned provide excellent opportunities for the collection of some of the required environmental data.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Assessments	Stationary Sources	14B
Coal	Synfuels	08G
Liquefaction	Environmental Impacts	07D
Coal Gasification		13H
Shale Oil		

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 402
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-029	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Methods for Level 2 Analysis by Organic Compound Category		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) K. E. Thrun, J. C. Harris, C. E. Rechsteiner, and D. J. Sorlin		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Arthur D. Little, Inc. Acorn Park Cambridge, Massachusetts 02140		10. PROGRAM ELEMENT NO. C-06A1B
		11. CONTRACT/GRANT NO. 68-02-3111, Task 104
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Task Final; 11/78-1/81
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Larry D. Johnson, Mail Drop 62, 919/541-2557. The report supplements EPA-600/7-79-033; both it and -033 supersede interim report EPA-600/7-78-016.

16. ABSTRACT The report gives Level 2 procedures, including results of a laboratory evaluation of detailed methods for analyzing organic chemicals in particular compound categories. The report, supplementing an earlier Level 2 procedures manual, provides an initial experimental data base as a resource for laboratories undertaking Level 2 studies. The Level 2 methods were designed to provide more detailed and more accurate data concerning specific compounds whose presence in the sample could be inferred on the basis of the categorical analysis of Level 1. A systematic laboratory evaluation of the methods for Level 2 analysis of each major category of organic compounds was conducted. Methods were evaluated using sets of model compounds spanning a range of molecular weights and boiling points in each category. Evaluation criteria included: detection limit, retention time, chromatographic resolution, and precison and accuracy of the method. Specific detailed Level 2 methods have been recommended for 25 categories of organic compounds. Most of the primary recommendations are based on packed-column gas-chromatography/mass-spectrometry, with alternative procedures suggested where appropriate for particular sample matrices or compound types. Analytical data using the specified example conditions are usually illustrated for each recommended method.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Pollution Control	13B
Organic Compounds	Stationary Sources	07C
Analyzing	Level 2 Analysis	14B
Gas Chromatography		07D
Mass Spectrometry		

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 326
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-034	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Greenhouse Production of Bedding and Foliage Plants with Industrial Waste Heat		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Isaac J. Crumbly		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Fort Valley State College P.O. Box 5800 Fort Valley, Georgia 31030		10. PROGRAM ELEMENT NO. EHE624
		11. CONTRACT/GRANT NO. Grant R-804499
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; 8/76-8/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Theodore G. Brna, Mail Drop 61, 2683. EPA-600/7-80-108 and EPA-600/D-80-014 were both earlier assigned to this report (both are now cancelled).

16. ABSTRACT The report gives results of an evaluation of potentially beneficial uses of industrial waste heat for production of bedding and foliage plants, using conventionally and warm-water heated greenhouses in Fort Valley, GA. Each greenhouse was a plastic covered, 30 x 72-ft quonset. The research greenhouse was heated and cooled with simulated warm condenser cooling water; the control greenhouse was conventionally heated and cooled during the 9-month test. During 1979, cultivars of 10 leading ornamental plants, 8 species of foliage plants, and tomatoes used as bedding plants were studied for growth rate, survivability, and susceptibility to disease in the humid greenhouses. No statistically significant difference in growth rate for 7 of 10 ornamental and 4 of 8 foliage plants was observed in the two greenhouses. Tomatoes, coleus, geraniums, Ardisia humilis, and Hypoestes sanguinolenta grown in the conventional greenhouse and the remaining cultivars in the research greenhouse had statistically significant higher growths. No significant difference in survivability among the foliage plants and 8 of 10 ornamentals was seen in either greenhouse. Browallia and coleus survived better in the conventional greenhouse. No diseases were evident in either greenhouse. Research greenhouse heating and cooling were satisfactory despite the oversized heat exchanger that was used.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Diseases	Pollution Control	13B	06E
Greenhouses	Growth	Stationary Sources	02C	
Industrial Wastes		Bedding Plants		
Heat Recovery		Disease Resistance	20M,13A	
Plants (Botany)			06C	
Vegetation				

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 48
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-81-037	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Fabric Filter Systems Study: Second Annual Report		5. REPORT DATE March 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) K. L. Ladd, R. L. Chambers, O. C. Plunk, and S. L. Kunka		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Southwestern Public Service Company P.O. Box 1261 Amarillo, Texas 79170		10. PROGRAM ELEMENT NO. EHE624A
		11. CONTRACT/GRANT NO. 68-02-2659
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Annual; 10/78-10/79
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Dale L. Harmon, Mail Drop 61, 919/541-2925. EPA-600/7-79-183 was the first year's report.

16. ABSTRACT The report describes the second year's activities of a comprehensive EPA-funded study of a commercial fabric filter on a 350-MW low sulfur coal-fired unit at Southwestern Public Service Company's Harrington Station, near Amarillo, Texas. Special tests were performed to characterize gaseous and particulate emissions, to evaluate fabric performance, and to optimize the fabric filter system's performance. Tests will continue. Test results confirmed that the unit can operate in compliance with the existing New Source Performance Standard (NSPS) of 0.1 lb/million Btu. Because NOx concentrations were consistent at all five sampling locations, NOx will be excluded from future testing. Test results from the stack indicated that the unit can meet existing NSPS for SO2; results correlated well with stoichiometric calculations. During other tests: mass emissions of particulate measured at the stack ranged from 0.007 to 0.034 lb/million Btu; average particulate collection efficiency was about 99.3%; the mean particle diameter was 5.4 micrometers at the stack exit; SO2 emissions were within NSPS of 1.2 lb/million Btu; NOx emissions were consistent across the entire baghouse; and SO3 emissions ranged from 0.3 to 3 ppm.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Nitrogen Oxides	Pollution Control	13B	
Filtration	Fly Ash	Stationary Sources	07D	21B
Fabrics	Electrostatics	Fabric Filters	11E	20C
Dust		Particulate	11G	
Aerosols				
Sulfur Oxides			07B	

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS *(This Report)* Unclassified	21. NO. OF PAGES 202
	20. SECURITY CLASS *(This page)* Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/9-81-018	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Second Symposium on Process Measurements for Environmental Assessment (February 1980, Atlanta)		5. REPORT DATE April 1981
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Judith C. Harris, Compiler		8. PERFORMING ORGANIZATION REPORT NO. 82480-02
9. PERFORMING ORGANIZATION NAME AND ADDRESS Arthur D. Little, Inc. Acorn Park Cambridge, Massachusetts 02140		10. PROGRAM ELEMENT NO. C06A1B
		11. CONTRACT/GRANT NO. 68-02-3111, Task 108
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Proceedings; 2/80
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES IERL-RTP project officer is Larry D. Johnson, Mail Drop 62, 919/541-2557. The first symposium is described in EPA-600/7-78-168.

16. ABSTRACT

The report documents 22 presentations comprising 12 poster sessions at the symposium. The symposium focused on the state-of-the-art of sampling and analysis techniques that are appropriate for process measurements in the context of an environmental assessment program. Methods are included for qualitative and quantitative chemical characterization of organic and inorganic species in process and discharge streams and biological assays of environmental samples. The symposium was part of EPA's continuing effort to share recently developed methodology and encourage the interchange of ideas between researchers in government, industry, and academia. Topics included: use of sorbents for sampling, sampling of reactive species, sampling and analysis methodology for coal conversion processes, advanced inorganic analysis techniques, advanced organic analysis techniques, and application of bioassay methods to complex samples.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Pollution	Sorbents	Pollution Control	13B	11G
Industrial Processes	Coal Preparation	Stationary Sources	13H	08I
Assessments	Bioassay	Environmental Assessment	14B	06A
Measurement			14G	
Sampling				
Analyzing				

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 353
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)