

INDEX OF THE ADMINISTRATIVE RECORD FOR THE PROPOSED SLUDGE REGULATIONS

Prepared for :

Criteria and Standards Division  
Office of Water Regulations and Standards  
United States Environmental Protection Agency  
Washington, DC

Prepared by:

Dynamac Corporation  
The Dynamac Building  
Rockville, MD

EPA Contract No. 68-03-3533

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1. Regulatory Background (Vol. 1)  
A. Congressional Statutes

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-001	3/88	U.S. Senate Committee on Environment and Public Works	The Clean Water Act as Amended by the Water Quality Act of 1987, 33 U.S.C.A. 1251, Public Law 100-4 (100th Congress, 2nd Session)	
SP-002		Farrell, J.B.	RCRA Requirements for Control of Pathogens in Sludge Applied to Land	
SP-003	10/86	EPA	Subtitle D Study, Phase I Report (EPA/530-SW-86-054)	

B. EPA Concerns

1. Regulations

a. 40 CFR 257

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-004		EPA	40 CFR 257.3-5 - Criteria for Classification of Solid Waste Disposal Facilities and Practices: Application to Land Used for the Production of Food-Chain Crops (Interim Final); Interim Final Rule with Request for Comments.	
SP-005			Part 257 - Criteria for Classification of Solid Waste Disposal Facilities and Practices, 40 CFR Ch. 1, pp. 331-9.	

I. B. 1. a. 40 CFR 257 (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-006	9/13/79	EPA	"Criteria for Classification of Solid Waste Disposal Facilities and Practices; Final, Interim Final, and Proposed Regulations (as corrected in the 9/21/79 Federal Register)," <u>FR</u> 44(179):53437-68.	
SP-007	11/6/85	Whittington, William A., OMPC, & Edwin Johnson, OWRS	Application of 40 CFR, Part 257 Regulations to Pathogen Reduction Preceding Land Application of Sewage Sludge or Septic Tank Pumpings [Attachments (3): Questions and Answers on the Pathogen Reduction Requirements; Qualifying Other Processes as PSRP/PFRP; Example of a Data Collection Program Designed to Show that a Process is a PSRP.]	

b. Other Regulations

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-008	9/88	OWEP	Guidance for Writing Case-by-Case Permit Requirements for Municipal Sewage Sludge (Draft)	

I. B. 1. b. Other Regulations (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-009	7/14/88	Crowder, James U., ESD, OAQPS	Revised Promulgation Package for Sewage Treatment Plants New Source Performance Standards (NSPS) [Attachments (5): Promulgation of Revisions to Standards of Performance for Sewage Treatment Plants -- Action Memorandum (Assistant Administrator, OAR); 40 CFR Part 60 - Standards of Performance for New Stationary Sources, Sewage Treatment Plants, Final Rule (EPA); Sewage Treatment Plant NSPS: Responses to Comments on April 1986 Proposed Revisions (ESD, OAQPS - 5/88); Materials preparatory to OMB review and <u>FR</u> publication; Revised Promulgation Package to Sewage Treatment Plants New Source Performance Standards (NSPS) (Don R. Clay, OAR - 7/14/88)	

2. Other EPA Matters

a. Policies

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-010	6/12/84	EPA	"Municipal Sludge Management Policy; Notice," <u>FR</u> 49(114):24357-9.	
SP-011	8/84	OGWP	Ground-Water Protection Strategy	
SP-012	9/17/85	Thomas, Lee M., EPA	Preparation of Quantitative Analysis in Agency Decision-making	

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b. Committee Reports

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-013	8/15/83		EPA Sludge Task Force Report to the Administrator (Draft)	
SP-014			Record of Proceedings on the OWRS Sludge Committee (7/6/84)	

c. Other

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-015	1989	EPA	Information Collection Request Document (NTIS PB89-136642)	

C. State Policies

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-016	3/3/83	Booz, Allen & Hamilton, Inc. (for EPA Sludge Task Force	A Review of State Programs to Control the Disposal and Utilization of Municipal Sewage Sludge: Implications for the Federal Regulatory Program (Revised Draft)	
SP-017	9/16/88	Deiero, Donald	State of New Jersey requirements for new incinerators	

## II. General Sludge Information

### A. Statistical Sources (Vol. 1)

#### 1. 40 City and AMSA Studies

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-018	9/82	EGD	Fate of Priority Pollutants in Publicly Owned Treatment Works, 2 Vols. (EPA 440/1-82/303)	
SP-019	10/6/87	VanDe Hei, Diane, AMSA	Statistical summary of sludge quality data from AMSA members [Attachments (2): Member Agencies Who Participated in the AMSA Survey; Constituents in Sludge Based Upon the AMSA Survey - 1981.]	
SP-020	3/14/88	SAIC (for EPA, AED)	Comparison of Sludge Contaminant Data from the EPA 40-City POTW Study and the American Metropolitan Sewerage Agencies 1987 Sludge Survey (Draft Report) (EPA Contract No. 68-03-3453, Work Assignment 1-6)	
SP-021	5/13/87	SAIC (for AED)	Descriptive Statistics on Contaminants in Municipal Sludge Based on the EPA 40-POTW Study (Draft Final Report) (EPA Contract No. 68-01-6912, Work Assignment No. 40)	
SP-022	4/11/88	(OWRS)	98th & 99th percentile concentration estimates for various contaminants; Comparison of 40-city POTW Means and 98th & 99th Percentile and Risk Based Regression Estimates; Frequency of Individual Measurements Exceeding 98th & 99th Percentile and Risk Based Regression Estimates (tables)	
SP-022a			40-City sludge percentiles; Estimates of the Percentiles of the Distribution of Sludge Contaminants (11/28/88); Estimation of the 98th Percentile of POTW Mean Pollutant Concentrations in Sewage Sludge (9/9/88)	

## 2. National Sludge Survey

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-023	3/88	Viar and Co. (for OWRS)	Analytical Methods for the National Sewage Sludge Survey (EPA Contract 68-01-6990)	
SP-024	3/18/88	WESTEC (for OWRS)	Sampling Procedures and Protocols for the National Sewage Sludge Survey	
SP-025	3/25/88	EPA	1987 Sewage Sludge Use and Disposal Survey Questionnaire (EPA Form 999-993 (9-88), OMB #9999-0999 - Draft)	

## 3. Other Sources and Information

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-026			Volume of sludge by disposal method and sludge quality (computer run)	
SP-027			Total sludge volume by disposal method and State (computer run)	

B. Treatment/Disposal Facilities and Costs (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-028			Number of POTWs by disposal method and sludge quality (computer run)	
SP-029			Residential population served by POTW size and disposal method (computer run)	
SP-030	4/80	EPA	Construction Costs for Municipal Wastewater Treatment Plants (EPA 430/9-80-003)	
SP-031	7/85	SCS Engineers	Handbook for Estimating Sludge Disposal Costs at Municipal Wastewater Treatment Facilities (EPA 430/9-81-004)	
SP-032	10/85	MERL	Estimating Sludge Management Costs (Technology Transfer Handbook) (EPA/625/6-85/010)	
SP-033	1/30/88	NSWMA	The 1987 Tip Fee Survey: Last Year's Rise was the Biggest Ever (NSWMA Technical Bulletin: 88-1)	

C. Treatment/Disposal Guidelines (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-034	1979	Metcalf & Eddy, Inc.	<u>Wastewater Engineering, Treatment/Disposal/Reuse</u> , 2nd ed., McGraw-Hill.	
SP-035	9/79	MERL (for CERL)	Process Design Manual for Sludge Treatment and Disposal (EPA 625/1-79-011)	



II. C. Treatment/Disposal Guidelines (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-036	9/80	OW	A Guide to Regulations and Guidance for the Utilization and Disposal of Municipal Wastewater Sludge (EPA 430/9-80-015)	
SP-037	9/84	EPA	Use and Disposal of Municipal Wastewater Sludge (Technology Transfer - Environmental Regulations and Technology) (EPA 625/10-84-003)	

D. Sludge Criteria Considerations (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-038	10/84	EPA	Development of Methodologies for Evaluating Permissible Contaminant Levels in Municipal Wastewater Sludges (Draft Report)	
SP-039	3/13/87		Cumulative Criteria Comparison; Limiting Application rates and concentrations and RP/RSC for Land Ap/D&M (tables)	

E. Other (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-040	8/83	METRO	Sludge Management Plan, Appendix A - Metro Sludge Quality: Monitoring Report and Literature Review	
SP-041	2/86	OWRS	Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works (EPA/530-SW-86-004)	

III. Disposal Options

A. Land Application and Distribution and Marketing

1. Technical Manuals/Materials (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-042		OSW	Background Document: (1) The Logistics of Sludge Use, and (2) the Consumption of Home-Grown Vegetables by the U.S. Gardener - "Distribution and Marketing of Sewage Sludge Products" 40 CFR 258, Subpart D (Proposed Rule)	
SP-043	1983	EPA, et al.	<u>Proceedings of the 1983 Workshop on Utilization of Municipal Wastewater and Sludge on Land</u> , Ed. Page, A.L., et al., U.C.-Riverside (Contract No. CR810529-01-2).	
SP-044	10/83	MERL	Land Application of Municipal Sludge (Technology Transfer - Process Design Manual) (EPA-625/1-83-016)	

### III. A. 1. Technical Manuals/Materials (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-045	1986		<u>The Forest Alternative for Treatment and Utilization of Municipal and Industrial Wastes</u> , Ed. Cole, Dale W., et al., Seattle: University of Washington Press.	
SP-046	1987	A.L. Page, et al.	<u>Land Application of Sludge: Food Chain Implications</u> , Chelsea, MI: Lewis Publishers, Inc.	
SP-047	1989	EPA	Technical Support Document for Land Application and Distribution and Marketing of Sewage Sludge (NTIS PB89-136576)	

### 2. Facilities/Programs (Vol. 2)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-048		EPA	40 CFR 257.3-5 - Criteria for Classification of Solid Waste Disposal Facilities and Practices: Application to Land Used for the Production of Food-Chain Crops (Interim Final); Interim Final Rule with Request for Comments.	(same as SP-004)
SP-049			Listing of POTWs practicing distribution and marketing (computer run)	
SP-050			What is This Thing Called Sludge?; Silvi-Grow Project at Pack Forest (video tapes)	

### 3. Regulatory Concerns (Vol. 3)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-051		EPA	40 CFR 257.3-5 - Criteria for Classification of Solid Waste Disposal Facilities and Practices: Application to Land Used for the Production of Food-Chain Crops (Interim Final); Interim Final Rule with Request for Comments.	(same as SP-004)
SP-052	12/86	Metcalf & Eddy (for EPA Region I)	Sludge Compost Marketing and Distribution: Regulatory Requirements in the United States (w/appendices)	

### 4. Pathogens (Vol. 3)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-053		EPA	Background Document: Annual Cadmium Application Limits - "Criteria for Classification of Solid Waste Disposal Facilities," 40 CFR 257	
SP-054		Farrell, J.B.	RCRA Requirements for Control of Pathogens in Sludge Applied to Land	(same as SP-002)
SP-055	11/6/85	Whittington, William A., OMPC & Edwin Johnson, OWRS	Application of 40 CFR, Part 257 Regulations to Pathogen Reduction Preceding Land Application of Sewage Sludge or Septic Tank Pumpings [Attachments (3): Questions and Answers on the Pathogen Reduction Requirements; Qualifying Other Processes as PSRP/PFRP; Example of a Data Collection Program Designed to Show that a Process is a PSRP.]	(same as SP-007)

### III. A. 4. Pathogens (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-056	5/87	Ottolenghi, Abruno C., & Vincent H. Hamporian	"Multiyear Study of Sludge Application to Farmland: Prevalence of Bacterial Enteric Pathogens and Antibody Status of Farm Families," <u>Applied and Environmental Microbiology</u> 53(5):1118-24.	
SP-057		Baird, Rodger, & Sylva M. Gabrielian, L.A. County Sanitation Districts (for HERL)	Trace Organics and Inorganics in Distribution and Marketing Sludges (CR-812589-010) (w/1/21/88 F. Bernard Daniel attachment)	
SP-058		Yanko, William A., L.A. County Sanitation Districts (for HERL)	Occurrence of Pathogens in Distribution and Marketing Municipal Sludges (Cooperative Agreement CR-812589) (w/2/5/88 Ken Saxton attachment)	

### 5. Health and Environmental Effects (Vol. 4)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-059	5/82	Kowal, Norman Edward, HERL	Health Effects of Land Treatment: Microbiological (EPA-600/1-82-007)	
SP-060	8/83	METRO	Sludge Management Plan, Appendix B - Health Effects of Sludge Land Application: A Risk Assessment	
SP-061	1/85	Kowal, Norman Edward, HERL	Health Effects of Land Treatment: Toxicological (EPA 600/1-84-030)	

III. A. 5. Health and Environmental Effects (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-062	9/85	HERL	Health Effects of Land Application of Municipal Sludge (EPA 600/1-85/015)	
SP-063	12/86	WERL	Proceedings: Workshop on Effects of Sewage Sludge Quality and Soil Properties on Plant Uptake of Sludge Applied Trace Constituents	

6. Other Issues (Vol. 4)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-064	3/13/87		Cumulative Criteria Comparison; Limiting Application rates and concentrations and RP/RSC for Land Ap/D&M (tables)	(same as SP-039)

B. Monofilling and Surface Disposal (Vol. 4)

1. Technical Manuals/Materials

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-065	10/78	OSW	Municipal Sludge Landfills (Process Design Manual) (EPA-625/1-78-010, SW-705)	

III. B. 1. Technical Manuals/Materials (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-066	1989	EPA	Technical Support Document for Landfilling of Sewage Sludge (NTIS PB89-136-584)	
SP-067	1989	EPA	Technical Support Document for Surface Disposal of Sewage Sludge (NTIS PB89-136600)	

2. Facility Considerations

a. Facilities

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-068			Listing of POTWs practicing monofilling (computer run)	
SP-069	1/27/87	Conti, Mike, et al., Abt Associates, Inc.	Sludge Monofill Characteristics (w/tables)	

b. Ground Water Classification

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-070	12/15/87	Karam, Joseph & Peter Linquitti, ICF, Inc.	Preliminary Classification of Fifty-Five Sludge Monofills	

111. B. 2. b. Ground Water Classification (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-071	1/4/88	Hamner, Rebecca, OW	Groundwater Classification Guidelines [Attachments (2): Talking Points for OW Implementation of Groundwater Classification; Potential Rule for Classification.]	
SP-072	4/15/88	Karam, Joseph, et al., ICF, Inc.	Groundwater Classification at Active Sludge Monofill Sites	
SP-073	6/88	OGWP	Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy	

c. Leachate Testing and Control

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-074			Model runs of liners and leachate control costs (computer run)	
SP-075	7/11/86	Walker, John, OW, Residuals Management Branch	Report on Six POTW Sludges Tested for Compositional and TCLP Analysis (w/tables)	
SP-076	1/30/87	Farrell, Joseph B.,	The Effects of Municipal Wastewater Sludge on Leachates and Gas Production from Sludge-Refuse Landfills and Sludge Monofills (w/2/3/87 Farrell attachment)	



III. B. 2. c. Leachate Testing and Control (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-077	5/88	Walker, John, OMPC	"Cooperative Testing of Municipal Sludges by the Toxicity Characteristic Leaching Procedure and Compositional Analysis," <u>Proceedings of the National Conference on Municipal Sludge Treatment Plant Sludge Management</u> , pp. 14-19 (w/tables).	

d. Other Concerns

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-078	5/9/88	Firstman, Richard	States phasing out landfills (telephone conversation)	

C. Incineration

1. Technical Reports and Studies (Vol. 4)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-079	8/72	EPA Task Force	Sewage Sludge Incineration (EPA-R2-72-040, NTIS PB 211-323)	
SP-080	9/85	EPA	Municipal Wastewater Sludge Combustion Technology (Technology Transfer Seminar Publication) (EPA/625/4-85-015)	

### III. C. 1. Technical Reports and Studies (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-081	2/19/88	Crumpler, Eugene, WCSB	Preliminary Results of the Recently Completed Sewage Sludge Incinerator Testing Program (w/tables)	
SP-082	1989	EPA	Technical Support Document for Incineration of Sewage Sludge (NTIS PB89-136592)	

## 2. Facility Considerations (Vol. 4)

### a. Facilities and Processes

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-083			Listing of POTWs practicing incineration (computer run)	
SP-084	6/85	OAQPS	Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (EPA-450/4-80-023R)	
SP-085	9/30/85	Adams, R.C., et al., Radian Corporation	Particulate Removal Capability of a Baghouse Filter on the Exhaust of a Multiple Hearth Furnace Burning Sewage Sludge (Draft)	
SP-086	9/30/85	Adams, R.C., et al.	Particulate Removal Evaluation of an Electrostatic Precipitator Dust Removal System Installed in a Multiple Hearth Incinerator Burning Sewage Sludge (Draft)	

III. C. 2. a. Facilities and Processes (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-087	4/4/86	Carlson Associates	EPA Air Pollution Control Equipment Study (run)	
SP-088	8/16/88	Crumpler, Gene (telephone conversation)	Use of Afterburners to Control THC Emissions	
SP-089	8/29/88	Brunner, C., CH2M Hill Co.	Personal Communication to E. Crumpler, EPA CSD	
SP-090	9/17/88	Myers, Ron	Number of Facilities Currently Using Afterburners (telephone conversation)	

b. Efficiency Information

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-091	1987	[Adams, R.] Radian Corp. (for ORD)	Electrostatic Precipitator Efficiency on a Multiple-Hearth Incinerator Burning Sewage Sludge (EPA/600/2-87/084)	
SP-092	9/6/88	SAIC (for AED)	Data Base Documentation and Summary Statistics on Metals Destruction Efficiency Estimates from Incineration of Municipal Sludge (EPA Contract No. 68-03-3453, Work Assignment 1-6)	

c. Costs

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-093	2/87	[Aurora, M.] James M. Montgomery Consulting Engineers, Inc. (for ORD)	Costs of Air Pollution Abatement Systems for Sewage Sludge Incinerators (EPA/600/2-06/102)	
SP-094	6/16/87	Baturay, Al, Carlson	Costs of Dry Scrubbers for Sludge Incinerators	
SP-095	10/17/88	Crumpler, Gene	Cost Reductions Due to Energy Recovery with Afterburners (telephone conversation)	

3. Emissions Testing Information

a. Chromium Studies (Vol. 4)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-096	1975	Umashima, Tsuyoshi, et al., Nippon Glass Co., Ltd.	On Behavior of Chromium during Incineration of Sewage Sludge (paper presented at the 12th Annual Meeting of the Association of Japan Sewage Works), Tr. SCITRAN	
SP-097	6/85	PEI Associates (for OAQPS)	Chromium Screening Study Test Report: Sewage Sludge Incinerator #13 - Detroit Water and Sewer Department (EMB Report 85-CHM-5)	
SP-098	10/87		"Form of Chromium in Particulate Emissions from Sludge Incinerators" (for WERL Report)	

III. C. 3. a. Chromium Studies (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-099	1988	Drees, L.M.	Effect of Lime and Other Precipitants or Sludge Conditioners on Conversion of Chromium to the Hexavalent State When Sludge is Incinerated (Final Report) (Contract No. 68-03-3346)	

b. Organics Studies (Vol. 4)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-100		Mazer, Sueann, et al., WERL	Potential Emissions of Hazardous Organic Compounds from Sewage Sludge Incineration (Cooperative Agreement CR-811777)	
SP-101	9/30/85	Adams, R.C., et al., Radian Corporation	Organic Emissions from the Exhaust Stack of a Multiple Hearth Furnace Burning Sewage Sludge (Draft)	
SP-102	6/85	PEI Associates (for OAQPS)	Organics Screening Study Test Report: Sewage Sludge Incinerator #13 - Detroit Water and Sewer Department (EMB Report 85-CHM-5)	

c. Other Site-Specific Studies (Vol. 5)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-103	11/80	White, Michael & Gary Beluzo, GCA Corp.	Performance of Emissions Tests and Materials Balance for a Fluidized Bed Sludge Incinerator	
SP-104	2/5/81	Farrell, J.B. & H. Wall, MERL	Air Pollution Discharges From Ten Sewage Sludge Incinerators (Revision No. 1: Draft Review)	
SP-105	5/23/85	Farrell, J.B., WERL	Percentage Loss in Metals from MHF Incinerators Equipped with Wet Scrubbers (revision of 3/7/85 memo)	
SP-106	8/20/85	Farrell, J.B., WERL	Particle Loss Data for MHF Incinerators from the 10-City Study	
SP-107	7/11/86	Keller, Laurence E., et al., Radian Corporation	Site 01 Sewage Sludge Incinerator SSI-A - National Dioxin Study Tier 4: Combustion Sources (Draft Final Test Report)	
SP-108	7/17/87	Knisley, D.R., et al., Radian Corporation	Site One Draft Emission Test Report: Sewage Sludge Test Program (w/appendices) (EPA Contract No. 68-02-6999, Work Assignment No. 57)	
SP-109	7/28/87	Holder, Donna J. & Michael A. Palazzolo, Radian Corporation	Site-Specific Test Plan - Multiple Hearth Sewage Sludge Incinerator - Test Number 4 - Cranston Facility - Sewage Sludge Incineration Study (Contract No. 68-02-6999, Work Assignment No. 60)	
SP-110	10/1/87	Knisley, D.R., et al., Radian Corporation	Site Three Draft Emission Test Report: Sewage Sludge Test Program (EPA Contract No. 68-02-6999, Work Assignment No. 60)	

### III. C. 3. c. Other Site-Specific Studies (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-111	10/19/87	Knisley, D.R., et al., Radian Corporation	Site Two Draft Emission Test Report: Sewage Sludge Test Program, 2 vols. (EPA Contract No. 68-02-6999, Work Assignment No. 71)	
SP-112	5/9/88	Knisley, D.R., et al., Radian Corporation	Site Four Draft Emission Test Report: Sewage Sludge Test Program, V. 1: Emission Test Results (EPA Contract No. 68-02-6999, Work Assignment No. 71)	

#### d. General Tests (Vol. 6)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-113	4/27/79	Wall, Howard O. & Joseph B. Farrell, MERL	Particulate Emissions from Wastewater Sludge Incinerators	
SP-114	3/84	Bennett, Ray L., et al., ESRL	Chemical and Physical Characterization of Municipal Sludge Incinerator Emissions (EPA 600/3-84-047, NTIS PB84-168325)	
SP-115	9/86	Environment Canada	National Incinerator Testing and Evaluation Program of Canada (Air Pollution Control Technology Report EPS 3/UP/2).	

#### 4. Air Quality Modeling (Vol. 6)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-116	7/86	OAQPS	Guideline on Air Quality Models (Revised) (EPA-450/2-78-027R)	
SP-117	7/29/86	MacArthur, R.S., Systems Application, Inc. (for OAQPS)	Sludge Incinerator Air Quality Modeling (Final Report) (Contract No. 68-02-3870)	
SP-118	4/7/88 OWEP	Morrison, Cristina, Preferred Air Quality Models Potentially Applicable to Incinerators.]	Air Modeling for Incinerators [Attachment: Preferred Air Quality Models Potentially Applicable to Incinerators.]	

#### 5. Other Incineration Concerns (Vol. 6)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-119	12/13/87	Firstman, Richard C.	"High Stake Risk on Incinerators," <u>Newsday</u> , pp. 4-9.	
SP-120	7/14/88	Crowder, James, U., ESD, OAQPS	Revised Promulgation Package for Sewage Treatment Plants New Source Performance Standards (NSPS) [Attachments (5): Promulgation of Revisions to Standards of Performance for Sewage Treatment Plants -- Action Memorandum (Assistant Administrator, OAR); 40 CFR Part 60 - Standards of Performance for New Stationary Sources, Sewage Treatment Plants, Final Rule (EPA); Sewage Treatment Plant NSPS: Responses to Comments on April 1986 Proposed Revisions (ESD, OAQPS - 5/88); Materials preparatory to OMB review and <u>FR</u> publication;	(same as SP-009)



### III. C. 5. Other Incineration Concerns (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-120 (cont'd)	7/14/88	Crowder, James U., ESD, OAQPS	Revised Promulgation Package to Sewage Treatment Plants New Source Performance Standards (NSPS) (Don R. Clay, OAR - 7/14/88).]	(same as SP-009)
SP-121	9/16/88	Deiero, Donald	State of New Jersey requirements for new incinerators	(same as SP-017)

### D. Option Comparison Feasibility (Vol. 6)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-122	2/6/81	Booz-Allen & Hamilton, Inc. (for OSW)	Report on the Feasibility of a Generic Comparison of the Impacts of Major POTW Sludge Disposal Options	

#### IV. Aggregate Risk Factors

##### A. Contaminants

##### 1. Environmental Profiles

##### a. Pesticides (Vol. 6)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-123	6/85	OWRS	Environmental Profiles and Hazard Indices for Constituents of Municipal Sludge: Chlorinated Dioxins	
SP-124	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Aldrin/Dieldrin	
SP-125	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Heptachlor	
SP-126	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: 2,4,6-Trichlorophenol	
SP-127	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Pentachlorophenol	
SP-128	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Hexachlorobenzene	
SP-129	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Endrin	
SP-130	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Chlordane	
SP-131	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Malathion	

IV. A. 1. a. Pesticides (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-132	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: 2,4-Dichlorophenoxyacetic Acid	
SP-133	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Toxaphene	
SP-134	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Lindane	
SP-135	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: DDT/DDE/DDD	

b. Organics (Vol. 7)

SP-136	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Chloroform	
SP-137	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Carbon Tetrachloride	
SP-138	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Tetrachloroethylene	
SP-139	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Vinyl Chloride	
SP-140	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Benzidine	

IV. A. 1. b. Organics (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-141	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: 3,3'-Dichlorobenzidine	
SP-142	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Hexachlorobutadiene	
SP-143	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Benzo(a)anthracene	
SP-144	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Methylene bis (2-Chloroaniline)	
SP-145	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Tricresyl Phosphate	
SP-146	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Polychlorinated Biphenyls	
SP-147	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Methylene Chloride	
SP-148	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Trichloroethylene	
SP-149	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Benzene	
SP-150	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Methyl Ethyl Ketone	
SP-151	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Dimethyl Nitrosamine	

IV. A. 1. b. Organics (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-152	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Phenol	
SP-153	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Bis(2-ethylhexyl)phthalate	
SP-154	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Benzo(a)pyrene	
SP-155	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Phenanthrene	
SP-156	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Chlorinated Dibenzofurans	

c. Metals (Vol. 8)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-157	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Fluoride	
SP-158	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Iron	
SP-159	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Molybdenum	

IV. A. 1. c. Metals (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-160	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Selenium	
SP-161	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Arsenic	
SP-162	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Copper	
SP-163	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Lead	
SP-164	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Cadmium	
SP-165	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Beryllium	
SP-166	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Nickel	
SP-167	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Zinc	
SP-168	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Cobalt	
SP-169	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Mercury	
SP-170	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Cyanide	

IV. A. 1. c. Metals (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-171	6/85	OWRS	Environmental Profiles and Hazard Indices of Municipal Sludge: Chromium	

d. Summary (Vol. 8)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-172	7/85	OWRS	Summary of Environmental Profiles and Hazard Indices for Constituents of Municipal Sludge: Methods and Results	

2. Other Contaminant Information (Vol. 9)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-173	4/86	OWRS	Radioactivity of Municipal Sludge	
SP-174	4/22/87	Jakubowski, Walter, MHAB, TMD	Occurrence and Survival of AIDS Virus in Sewage	
SP-175	4/28/87	Dretman, D. Peter, Public Health Service, U.S. DHHS	AIDS and Sewage Treatment or Sludge [Attachment: Recommendations for Preventing Transmission of Infection with HTLV-III/Lymphadenopathy- Associated Virus in the Workplace.]	

IV. A. 2. Other Contaminant Information (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-176	4/29/87	Jensen, Lawrence J., OW	Discharge of AIDS' Contaminated Wastes to POTWs (w/attachment)	
SP-177	5/13/87	SAIC (for AED	Descriptive Statistics on Contaminants in Municipal (same as Sludge Based on the EPA 40-POTW Study (Draft Final SP-022) Report) (EPA Contract No. 68-01-6912, Work Assignment No. 40)	
SP-178	7/87	Ryan, James A.	"Cyanide Levels in Sewage Sludge," <u>WERL Monthly Report</u> , pp. 17, 20 & 21.	
SP-179	8/20/87	Ryan, James A., WERL	Cyanide Content of Municipal Sewage Sludge (w/tables)	
SP-180	9/87		"Cyanide Levels in Municipal Sewage Sludge," <u>WERL Monthly Report</u> .	
SP-181	9/21/87	Southerland, Betsy, WSCB	Status of Cn for Sewage Sludge Regulations	
SP-182	10/1/87	Southerland, Betsy, WSCB	Status of Pb for Sewage Sludge Regulations	
SP-183			This number not used	



### 3. Pathogen Reduction Requirements (Vol. 9)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-184		Farrell, J.B.	RCRA Requirements for Control of Pathogens in Sludge Applied to Land	(same as SP-002)
SP-185	11/6/85	Whittington, William A., OMPC & Edwin Johnson, OWRS	Application of 40 CFR, Part 257 Regulations to Pathogen Reduction Preceding Land Application of Sewage Sludge or Septic Tank Pumpings [Attachments (3): Questions and Answers on the Pathogen Reduction Requirements; Qualifying Other Processes as PSRP/PFRP; Example of a Data Collection Program Designed to Show that a Process is a PSRP.]	(same as SP-007)
SP-186	12/86	Levin, Ronnie, OPPE	Reducing Lead in Drinking Water: A Benefit Analysis (Draft final report, EPA 230-09-86-019)	
SP-187	1989	EPA	Technical Support Document for Pathogen/Vector Attraction Reduction in Sewage Sludge (NTIS PB89-136618)	

### B. Risk Assessments

#### 1. Guidelines (Vol. 9)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-188	9/24/86	EPA	"Guidelines for Carcinogen Risk Assessment," <u>FR</u> 51(185):33991-34003.	

IV. B. 1. Guidelines (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-189	9/24/86	EPA	"Guidelines for Mutagenicity Risk Assessment," <u>FR</u> 51(185):34006-11.	
SP-190	9/24/86	EPA	"Guidelines for the Health Risk Assessment of Chemical Mixtures," <u>FR</u> 51(185):34013-25.	
SP-191	9/24/86	EPA	"Guidelines for the Health Assessment of Subject Developmental Toxicants," <u>FR</u> 51(185):34028-40.	
SP-192	12/1/86	Hill, Dick & Judy Nelson, OPTS	OPTS Sludge Issues [Attachment: Sewage Sludge Risk/Exposure Assessment - Comparison with OPP's Approach (11/18/86 - Michael P. Firestone, OPTS).]	
SP-193	7/31/87	Moore, John A., OPTS	Recommended Agency Policy on the Carcinogenic Risks Posed by Ingestion of Inorganic Arsenic	
SP-194	8/87	OHEA	The Risk Assessment Guidelines of 1986 (EPA/600/8-87/045)	
SP-195	7/25/88	Delos, Charles	Total Risk of Chemical Mixture Compared to Risk of Worst Pollutant	

2. Criteria (Vol. 9)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-196	1/85	ERL (for CSD)	Ambient Water Quality Criteria for Cyanide - 1984 (EPA 440/5-84-028)	

IV. B. 2. Criteria (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-197	6/86	ECAO	Air Quality Criteria for Lead, V. 1 (Draft final, EPA-600/8-83/028-aF)	
SP-198	2/20/87	Bruins, Randall J.F., ECAO	Potential Forum Issue: Should Daily Exposure During Childhood Exceed RfD?	
SP-199	5/14/87	Cornaby, Barney & Andrea C. Hall, Battelle	Arsenic Background Concentrations in Soil	
SP-200	8/88	OAQPS	Review of the National Ambient Air Quality Standards for Lead: Exposure Analysis and Validation (Draft Report)	

3. Human Health Effects (Vol. 9)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-201		Munger, Sydney, METRO (Seattle)	Health Effects of Organic Priority Pollutants in Wastewater Sludge - A Risk Assessment	
SP-202	5/82	Kowal, Norman Edward, HERL	Health Effects of Land Treatment: Microbiological (EPA-600/1-82-007)	(same as SP-059)
SP-203	8/83	METRO	Sludge Management Plan, Appendix B - Health Effects of Sludge Land Application: A Risk Assessment	(same as SP-060)

IV. B. 3. Human Health Effects (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-204	1985	Jakubowski, W.	"U.S. EPA-Sponsored Epidemiological Studies of Health Effects Associated with the Treatment and Disposal of Wastewater and Sewage Sludge," <u>Epidemiological Studies of Risks Associated with the Agricultural Use of Sewage Sludge: Knowledge and Needs</u> , Ed. Block, J.C., et al., London: Elsevier Applied Science Publishers. Pp. 140-53.	
SP-205	1/85	Kowal, Norman Edward, HERL	Health Effects of Land Treatment: Toxicological (EPA 600/1-84-030)	(same as SP-061)
SP-206	9/85	HERL	Health Effects of Land Application of Municipal Sludge (EPA 600/1-85/015)	(same as SP-062)
SP-207	8/27/87	Ames, B.N.	Caveat (chemicals "known" to cause cancer or reproductive toxicity)	
SP-208	1989	EPA	Human Health Risk Assessment for Municipal Sludge Disposal; Benefit of Alternative Regulatory Options (NTIS PB89-136626)	

4. Environmental Impact (Vol. 9)

a. Environmental Fates

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-209			I. Progress on UTAB	

IV. B. 4. a. Environmental Fates (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-210	1985	van Genuchten, N. Th.	"Convective-Dispersive Transport of Solutes Involved in Sequential First-Order Decay Reactions," <u>Computers and Geosciences</u> 11(2):129-47.	
SP-211	12/12/86	Wolfe, Lee & Eric Weber	Fate Constants (w/Heinz P. Kollig attachment)	
SP-212	7/22/87	Overcash, Michael R., NCSU	Cyanide decomposition rates (w/attachment)	
SP-213	1/5/88	Betsy Southerland	Decay Rates	

b. Environmental Effects

(i) Soil, Plants and, Wildlife

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-214	1982	Gerritse, R.G., et al.	"Effect of Sewage Sludge on Trace Element Mobility in Soils," <u>Journal of Environmental Quality</u> 11(3):359-63.	
SP-215	1985	Meyers, S. Mark & Susan M. Schiller, Northrop Services	Terra: Tox: a Data Base for Effects of Anthropogenic Substances on Terrestrial Animals	

IV. B. 4. b. (i) Soil, Plants and, Wildlife (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-216	1/22/85	Holmgren, George, et al.	Cadmium, Lead, Zinc, Copper and Nickel in Agricultural Soils of the United States (personal communication)	
SP-217	10/29/85	Battelle	Instructions for "Uptox" Data Base	
SP-218	10/21/86	Battelle	Uptake and Bioaccumulation of Contaminants by Plants, Animals and Soil Biota	
SP-219	12/86	WERL	Proceedings: Workshop on Effects of Sewage Sludge Quality and Soil Properties on Plant Uptake of Sludge Applied Trace Constituents (Section 6)	
SP-220	6/10/88	Naylor, Lewis M. & Edward H. Buckley, International Process Systems, Inc.	Uptake of PCB by potatoes, field corn, and tomatoes -- data from sludge/field studies	

(ii) Other Media

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-221	3/28/86	Klinger, Walter A., TRC Environmental Consultants, Inc.	Biological Sludge Incinerators Air Impacts Study (Final Report)	
SP-222	5/86	OPA	Crossmedia Impacts of Utilization and Disposal of Municipal Sludges (w/appendices)	

5. Methodologies (Vol. 10)

a. Land Application and Distribution and Marketing

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-223	4/86	ECAO (for OWRS)	Development of Risk Assessment Methodology for Land Application and Distribution and Marketing of Municipal Sewage Sludge (Final) (ECAO-CIN-489)	
SP-224	3/27/87	Hall, Andrea C., Battelle	EPA Contract 68-01-6986 - Work Assignment 2-74, task 4, "Sewage Sludge Application Sensitivity Analysis (tables)	
SP-225	5/12/87	Abt Associates, Inc.	Sensitivity Analysis of Risk Estimates for Land Application and Distribution and Marketing	
SP-226	8/6/87	SAIC	Risk Assessment Models for Land Applications of Municipal Sludge (RAMMS) (w/sample computer screens)	
SP-227	2/6/88	SAIC (for AED)	Complete Documentation of the System/User Manual for the Risk Assessment Models for Land Application of Municipal Sludges (RAMMS Version 3.0), 2 vols. (Draft) (EPA Contract No. 68-03-3453, Work Assignment 2-15)	
SP-228	1989	EPA	RAMS Model for Terrestrial Pathways (NTIS PB89-138739)	

**b. Monofilling and Surface Disposal**

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-229	8/87	ECAO (for OWRS)	Development of Risk Assessment Methodology for Municipal Sludge Landfilling (Research and Development - Revised Final Draft) (ECAO-CIN-485)	
SP-230	12/87	Dawson, G.W. & C.A. Newbill, ICF (for WCSB)	Results of Sensitivity Analyses for Sewage Sludge Landfilling	

**c. Incineration**

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-231	3/86	ECAO (for OWRS)	Development of Risk Assessment Methodology for Municipal Sludge Incineration (Research and Development - Final) (ECAO-CIN-486)	

**d. SAB Review**

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-232	8/87	Sludge Wastewater Attack Team	Disposition of Comments: Response to Science Advisory Board Review (Review Draft) (ECAO-CIN-561) (w/8/31/87 Steven D. Lutkenhoff attachment)	



IV. B. 5. d. SAB Review (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-233	1989	EPA, SAB	EPA's Science Advisory Board Review of Risk Assessment Methodologies (NTIS PB89-136659)	

6. Other Assessment Documents

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-234	1981	OWRS	An Exposure and Risk Assessment for Cyanide - Final Draft Report (Sections 3.3 - 3.5, pp. 3-6 - 3-15)	
SP-235	11/85	ECAO & OWRS	Pathogen Risk Assessment Feasibility Study	

C. Exposure Assessment Models

1. Guidelines (Vol. 10)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-236	9/24/86	EPA	"Guidelines for Exposure Assessment," <u>FR</u> 51(185):34041-54.	

## 2. Land Application and Distribution and Marketing

### a. Models (Vol. 10)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-237	8/84	OPP	Tolerance Assessment System - Crop to Food Map: An Index of the Relations Between CROPS-RACS-FOOD	
SP-238	10/84	OPP	Tolerance Assessment System: Food-Form Codes	
SP-239	8/23/85	Dean, J. David, Woodward-Clyde Consultants	Surface Runoff Methodology for Sludge Disposal Assessment [Attachment: Runoff and Contaminant Transport from Sludge Land Application Areas.]	
SP-240	9/10/85	Dean, J. David, Woodward-Clyde Consultants	Summary of Approach for Evaluating Risk from Surface Runoff from Land Applied Sludge	
SP-241	11/13/85	Mangarella, Peter, Woodward-Clyde Consultants	WCC draft on methodologies to estimate runoff, erosion, and associated receiving water impact from sludge land application areas (w/attachment)	
SP-242	5/8/86	Saunders, Stephen, OPP & Barbara Petersen, Petersen & Associates	Introduction to the Tolerance Assessment System	
SP-243		ICF, Technology (for (CSD)	Sludgeman User's Manual (EPA Contract No. 68-03-3534, Work Assignment H01-22, Task 2)	
SP-244	1989	EPA	SLAPMAN Model for Ground Water Pathway (computer disk) (NTIS PB89-138747)	
SP-245	1989	EPA	SLUDGEMAN Model (computer disk) (NTIS PB89-138754)	

b. Inputs (Vol. 11)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-246			Henry's Law Data Base	
SP-247	1/28/87	Frick, Charles & D. Stephen Saunders, OPTS	Comparison of Food Consumption Data [Attachment: Table 4-2 - Average Daily Dry-Weight Consumption of Food Groups, Based on a Reanalysis of the FDA Revised Total Diet Food List.]	
SP-248	2/2/87	Bruins, Randall J.F., ECAO	Review of SAIC Equations for Land Application Methodology [Attachment: Land Application of Sludge - Summary Regulations for Terrestrial Food Chain Exposure Models (1/16/87 - SAIC, Contract No. 68-01-6912, WA #40).]	
SP-249	2/12/87	Bruins, Randall J.F., ECAO	Review of SAIC Equations for Land Application Methodology [Attachments (6): Review of SAIC Equations for Land Application Methodology (2/2/87 - Randall J.F. Bruins, ECAO); Pp. 2-1, 2-3, 4-1, 6-1, & A-4 of document.]	
SP-250	5/13/87	SAIC (for AED)	Land Application of Sludge: Equations for Terrestrial Food Chain, Particulate Resuspension, and Surface Runoff Pathway Models (Draft Final Report) (EPA Contract No. 68-01-6912, Work Assignment 40)	
SP-251	6/87	OHEA	Mathematical Model Selection Criteria for Performing Exposure Assessments - Surface Water Models (Review Draft, OHEA-E-245) (w/6/22/87 John J. Segna attachment)	

### 3. Monofilling and Surface Disposal (Vol. 11)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-252			Exposure to Airborne Contaminants Released from Land Disposal Facilities -- a Proposed Methodology	
SP-253		Battelle (for OSW, LDB)	Technical Guidance Manual for Calculating Time of Travel (TOT) in the Unsaturated Zone	
SP-254	3/81	Yeh, G.T., ORNL/Union Carbide	AT123D: Analytical Transient One-, Two-, and Three-Dimensional Simulation of Waste Transport in the Aquifer System (Environmental Sciences Division Publication No. 1439) (ORNL-5602; Contract No. W-7405-eng-26) (w/10/30/86 Andrea C. Hall, Battelle, attachment)	
SP-255	8/23/85	Dawson, Gaynor W., Battelle	Excerpt of Ham, et al., work on municipal leachate (w/attachment)	
SP-256	9/25/85	Brown, David S., ERL	Chemical Specifications for Modeling Metal Speciation in Sludge Leachates [Attachment: Chemical Specifications for Sludge Disposal Metal Speciation Study.]	
SP-257	11/86	Brown, David S., et al., ERL	Development of Land Disposal Decisions for Metals Using MINTEQ Sensitivity Analyses (Project Summary) (EPA/600/S3-86/030)	

#### 4. Incineration Models (Vol. 11)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-258	3/82	Bjorklund, Jay R. & James F. Bowers, H.E. Cramer (for Region III)	User's Instructions for the SHORTZ and LONGZ Computer Programs, 2 vols. (EPA-903/9-82-004)	
SP-259	1986	Chico, T. & J. Catalano, ASRL	Addendum to the User's Guide for MPTER (EPA 600/8-86-021)	
SP-260	6/86	Bowers, J.F., et al., H.E. Cramer (for OAQPS)	Industrial Source Complex (ISC) Dispersion Model User's Guide, 2nd ed., 2 vols. (EPA-450/4-86-005)	
SP-261	8/87	PEI Associates (for OW)	Sewer Sludge Incineration: ISCLT Model Sensitivity Analysis (Contract No. 68-02-4351, Work Assignment No. 6) (w/Appendix C & 8/6/87 George J. Schewe attachment)	
SP-262	1989	EPA	Sludge Incineration Model (computer disk) (NTIS PB89-138762)	

#### V. Regulatory Impact Analysis (Vol. 12)

##### A. Cost Input Information

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-263			Baseline Sludge Disposal Costs (computer run)	

V. A. Cost Input Information (cont'd)

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-264	4/29/86	ERG, Inc.	Costs and Impacts of Technology Based Regulations Concerning Sewage Sludge Incinerators	
SP-265	3/17/88	Jones, Anne & Lynn Knight, ERG	Emission Test Costs for Sewage Sludge Incinerators	
SP-266	3/28/88	Bostian, Harry E., WERL	Comments on Compliance Testing Cost Estimates Submitted by Eastern Research Corp. (ERG) [Attachment: Emissions Test Costs for Sewage Sludge Incinerators (3/17/88 - Ann Jones & Lynn Knight).]	
SP-267	7/13/88	Muleukas, Edward, Rosemont-Beckman	Costs of In-stack Hydrocarbon Analyzers (telephone conversation)	
SP-268	8/5/88	Temple, Barker & Sloane, Inc., et al. (for OSW)	Draft Regulatory Impact Analysis of Proposed Revisions to Subtitle D Criteria for Municipal Solid Waste Landfills	
SP-269	1/15/89	Jones, Anne	10 <sup>-4</sup> Analysis for Incineration	

B. RIA

<u>Document Number</u>	<u>Date</u>	<u>Author/Organization</u>	<u>Title</u>	<u>Pagination</u>
SP-270	1989	EPA	Regulatory Impact Analysis (NTIS PB89-136634)	

Final Report (May 15, 1989) "Monetized Health Benefits of Regulating Sewage Sludge Use & Disposal"