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EPA Publications Bibliography

Quarterly Abstract Bulletin

Product Announcement



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EPA's Solid Waste Test Methods on CD-ROM

Official SW-846 Product Contains Latest Update

The National Technical Information Service has just made available the Environment Protection Agency's official CD-ROM version of SW-846 methods. This valuable information product provides test procedures and guidance, recommended by EPA's Office of Solid Waste, to conduct evaluations and measurements required by the Resource Conservation and Recovery Act.

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QUARTERLY ABSTRACT BULLETIN

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SAMPLE ENTRY

NTIS Order Number/Media Code	PB94-100443/REB	PC A10/MF A03
Price Codes		
Report Title	Engineering and Environmental Aspects of Recycled Materials for Highway Construction	
Corporate Author	University of Wyoming Research Corp., Laramie	
Personal Authors	D. Bloomquist, G. Diamond, M. Oden, B. Ruth, and M. Tia.	
Date	Jul 93	
Pages	222p	
Report Number	EPA/530/R-93/013A	
Contract Number	DTFH61-93-C-00060	
Abstract	The report represents an assessment of environmental aspects and engineering factors related to the utilization of recycled materials in highway construction. A basic overview and assessment of different technologies, processes, and methods of recycling various material into highway appurtenances and for highway construction are presented with consideration of environmental and health risks.	
Keywords (Descriptors & Identifiers)	*Recycled materials, *Road materials, *Environmental impact assessments, Waste recycling, Materials recovery, Highway construction, Environmental issues, Emission factors, Risk assessment, Asphalts, Plastics, Glass, Rubber, Public health, Engineering assessment.	

EPA PUBLICATIONS BIBLIOGRAPHY

Quarterly Abstract Bulletin

PB96-963131REB PC A03/MF A01
Superfund Explanation of Significant Difference for the Record of Decision (EPA Region 2): Love Canal, Niagara Falls, NY., September 5, 1996.
 Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
 Nov 97, 28p, EPA/ESD/R02-96/290.
 See also PB89-117428.
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The United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) announce this Explanation of Significant Differences (ESD) to explain modifications to the selected remedy for the final destruction and disposal of Love Canal dioxin-contaminated sewer and creek sediments. These modifications are embodied in proposed changes to a partial consent decree between the United States and the State of New York and the Occidental Chemical Corporation (OCC) in the United States District Court for the Western District of New York.

Keywords: "Superfund, "Hazardous materials, "Land pollution control, "Water pollution control, Dioxins, Debris, Leachate, Sewer systems, Bottom sediments, Creeks, Waste treatment, Incineration, Heat treatment, New York, "ESD(Explanation of Significant Difference), "Explanation of Significant Difference, "Second Remedial Action, Record of Decision, Love Canal, Niagara Falls(New York), Niagara County(New York), Cleanup.

PB96-963407REB PC A05/MF A01
Superfund Removal Procedures. Response Management: Removal Action Start-Up to Close-Out.
 Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response.
 Sep 96, 72p, EPA/540/R-96/039, OSWER-9360.3-04.
 See also PB96-963409.
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This document summarizes the relevant guidance and statutory authorities for providing response management during removal actions. Appendix A provides a comprehensive list of supporting guidance documents that may be consulted for additional information on relevant topics. In addition, appropriate sections of statutes and regulations are also cited throughout the text, with a full citation of each statute and regulation also appearing in Appendix A. Appendix B contains the Key Words Index.

Keywords: "Superfund, "Hazardous materials, "Removal, Waste disposal, Waste management, Remediation, Pollution control, Project management, Coordination, Procedures, Guidance, Guidelines.

PB97-176911REB PC A22/MF A04
Best Demonstrated Available Technology (BDAT) Background Document for Wood Preserving Wastes: F032, F034, and F035; Final. Technical rept.
 Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.
 15 Apr 96, 476p, EPA/530/R-97/026.
 See also PB97-176929.
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The report provides agency rationale and technical support for developing BDAT treatment standards for waste generated during application of wood preservatives, F032, F034, and F035 under the land disposal restrictions program. It presents characterization data that may serve as a basis for determining whether a variance from the applicable treatment standards is warranted. It describes the compliance treatment standard alternative of combustion for the regulation of dioxin and furan constituents in F032. It addresses universal treatment standards (UTS), and discusses debris and media contaminated with wood preserving wastes.

Keywords: "Wood preservatives, "Waste treatment, "Waste water treatment, "Land disposal, Hazardous materials, Creosote, Pentachlorophenol, Dioxins, Furans, Waste streams, Combustion, Waste disposal, Waste management, Regulations, Compliance, Restrictions, "BDAT(Best Demonstrated Available Technology), "Best Demonstrated Available Technology, Waste generation, Waste characterization.

PB97-176978REB PC A15/MF A03
Background Document for Capacity Analysis for Land Disposal Restrictions. Phase 4 (Second Supplement): Toxicity Characteristic Metal Wastes and Newly Identified Mineral Processing Wastes (Proposed Rule). Technical rept.
 Environmental Protection Agency, Washington, DC. Office of Solid Waste.
 Apr 97, 302p, EPA/530/R-97/032.
 See also PB97-177000 and PB97-176994.
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The report presents the capacity analysis EPA conducted to support the proposed land disposal restrictions (LDRS)-Phase IV provides estimates of the quantities of wastes that will require alternative commercial treatment and recovery prior to land disposal as a result of the LDRs and estimates alternative commercial treatment and recovery capacity available to manage wastes restricted from land disposal. It also describes the methodology and data used to determine available commercial capacity.

Keywords: "Metals, "Land disposal, "Restrictions, Hazardous materials, Toxic substances, Quantity, Capacity, Waste disposal, Waste treatment, Mine wastes, Debris, Waste storage, Waste water treatment, Stabilization, Vitrification, Waste management, Regulations, Alternatives, "Mineral processing, Contaminated soils, Waste characterization.

PB97-177554REB PC A13/MF A03
Remediation Case Studies: Bioremediation and Vitrification. Volume 5.
 Federal Remediation Technologies Roundtable.
 Jul 97, 266p, EPA/542/R-97/008.
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This report is a collection of six case studies of bioremediation and two case studies of vitrification projects prepared by federal agencies. The case studies, collected under the auspices of the Federal Remediation Technologies Roundtable, were undertaken to document the results and lessons learned from early technology applications.

Keywords: "Hazardous materials, "Land pollution control, "Waste treatment, "Case studies, Remediation, Biological treatment, Biodegradation, Hydrocarbons, Creosotes, Explosives, Soil contamination, Soil treatment, Composting, Slurries, Decontamination, Costs, Site characterization, Demonstration projects, United States, "Bioremediation, "Bioventing, Soil vapor extraction, Land treatment, Cleanup operations, Treatment technology.

PB97-177562REB PC A13/MF A03
Remediation Case Studies: Soil Vapor Extraction and Other in situ Technologies. Volume 6.
 Federal Remediation Technologies Roundtable.
 Jul 97, 274p, EPA/542/R-97/009.
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This report is a collection of six case studies of soil vapor extraction or associated technologies and three case studies of other in situ technologies (frozen barrier containment, sonic drilling, and fracturing) prepared by federal agencies. The case studies, collected under the auspices of the Federal Remediation Technologies Roundtable, were undertaken to document the results and lessons learned from early technology applications.

Keywords: "Hazardous materials, "Land pollution control, "Remediation, "Case studies, Soil contamination, Soil treatment, Heat treatment, Physical treatment, Decontamination, Hydraulic fracturing, Barriers, Costs, Site characterization, Superfund, Demonstration projects, United States, "Soil vapor extraction, Bioventing, Cleanup operations, Treatment technology.

PB97-177570REB PC A05/MF A01
Corps of Engineers, Washington, DC.
Abstracts of Remediation Case Studies. Volume 2.
 Federal Remediation Technologies Roundtable.
 Jul 97, 64p.
 Supersedes PB95-201711. Sponsored by Corps of Engineers, Washington, DC.
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This report is a collection of abstracts summarizing 17 case studies of site remediation projects prepared by federal agencies. The case studies, collected under the auspices of the Federal Remediation Technologies Roundtable, were undertaken to document the results and lessons learned from early technology applications.

Keywords: "Hazardous materials, "Remediation, "Land pollution control, "Water pollution control, "Case studies, Soil contamination, Soil treatment, Ground water, Water treatment, Waste treatment, Biodegradation, Biological treatment, Decontamination, Heat treatment, Vitrification, In situ processing, Superfund, Site characterization, Costs, Demonstration projects, United States, Chemical treatment, Physical treatment, "Treatment technology, Bioremediation, Thermal desorption, Soil washing, Soil vapor extraction, Bioventing, Land treatment, Cleanup operations.

PB97-186290REB PC A05/MF A01
Environmental Protection Agency, Las Vegas, NV. National Exposure Research Lab.

EPA PUBLICATIONS BIBLIOGRAPHY

Enhanced Bioremediation of BTEX Using Immobilized Nutrients: Field Demonstration and Monitoring.

North Carolina State Univ. at Raleigh. Dept. of Civil Engineering.

R. C. Borden, R. T. Goin, C. M. Kao, and C. G. Rosal. Dec 96, 68p, EPA/600/R-96/145.

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A permeable barrier system was developed for controlling the migration of dissolved contaminant plumes in ground water. The barrier system consisted of a line of closely spaced wells installed perpendicular to the contaminant plume. Each well contained concrete briquets that released oxygen and nitrate at a controlled rate, enhancing the aerobic biodegradation of dissolved hydrocarbons in the downgradient aquifer. A full scale permeable barrier system was constructed at a gasoline-spill site near Leland, NC. Initially, increased dissolved oxygen and decreased benzene, toluene, ethylbenzene, and xylene isomer (BTEX) concentrations in the downgradient aquifer indicated that oxygen released from the remediation wells was enhancing biodegradation. Field tracer tests and soil analyses performed at the conclusion of the project indicated that the aquifer in the vicinity of the remediation wells was being clogged by precipitation from iron minerals.

Keywords: *Water treatment, *Benzene, *Toluene, *Ethyl benzene, *Xylenes, *Nutrients, Water pollution control, Ground water, Plumes, Biodegradation, Aquifers, Biochemical reaction kinetics, Aerobic processes, Oxygen, Barriers, Environmental transport, *BTEX(Benzene Toluene Ethylbenzene Xylene), *Bioremediation, Calcium peroxide, Magnesium peroxide.

PB97-196109REB PC A06/MF A01

Air Concentrations and Inhalation Exposure to Pesticides in the Agricultural Health Pilot Study.

Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

J. J. Streicher. Jun 97, 92p, EPA/600/R-97/059.

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The Agricultural Health Study seeks to identify and quantify pesticide exposures to farmers, indirect exposures to their families, and to assess health risks. A 6-farm, exposure pilot study implemented a total exposure assessment methodology, i.e., multimedia transport and multi-pathway exposure. This report reports on the air transport and inhalation exposures monitored during the exposure pilot study.

Keywords: *Pesticides, *Inhalation, *Indoor air pollution, *Ambient air quality, Agricultural chemicals, Ecological concentration, Farmers, Occupational exposure, Environmental exposure pathway, Agricultural workers, Residential buildings, Health surveys, Air pollution sampling, Environmental transport, Mathematical models.

PB97-199707REB PC A06/MF A01

National Risk Management Research Lab., Cincinnati, OH.

Developing and Using Production-Adjusted Measurements of Pollution Prevention. Rept. for Feb 95-Dec 96.

Research Triangle Inst., Research Triangle Park, NC. M. Malkin, J. Baskin, and T. J. Greiner. Sep 97, 90p, EPA/600/R-97/048.

Contract EPA-R-823018

Prepared in cooperation with Greiner Environmental, Gloucester, MA. Sponsored by National Risk Management Research Lab., Cincinnati, OH.

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This report describes research examining production-adjusted measures of pollution prevention (P2). Under

this research, a methodology was developed for applying statistical and graphical tools to assess the accuracy of the factors (called units-of-product) used to adjust P2 measures. Graphical analysis is used to qualitatively assess a unit-of-product, while regression analysis is used to quantitatively evaluate a unit-of-product. These statistical and graphical tools were applied to data from five case study facilities in different industrial sectors. The units-of-product currently being used by the facilities were tested for correlation with key waste of chemical use streams. It was found that the methodology for applying statistical and graphical tools was usable with data routinely collected at the five case study facilities. It was further found that the factors being used by four of the facilities correlate with chemical usage for key input streams.

Keywords: *Production management, *Waste streams, *Statistical analysis, Industrial production, Waste management, Process control(Industry), Chemical compounds, Utilization, Time series analysis, Regression analysis, Factor analysis, Case studies, *Pollution prevention, *Life cycle assessment.

PB97-199731REB PC A04/MF A01

General Policy on Superfund Ability to Pay Determinations.

Environmental Protection Agency, Washington, DC. Office of Enforcement and Compliance Assurance.

30 Sep 97, 36p.

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This memorandum transmits a policy document developed by the Office of Site Remediation Enforcement (OSRE) that explains what is necessary for an acceptable ability to pay (ATP) settlement in Superfund cases. The main text of the policy document addresses general issues that apply to the ATP process and ATP settlements. The policy document also contains two appendices that address issues specific to making ATP determinations for individuals and businesses. The policy document is directed primarily toward Office of Regional Counsel (ORC) and Superfund enforcement program staff who handle cases involving ATP issues. It should also be useful for potentially responsible parties (PRPs) who believe that they are unable to pay their share of Superfund cleanup costs, as well as for other PRPs at sites where ATP claims are raised.

Keywords: *Superfund, *Government policies, *US EPA, Federal agencies, Penalties, Fines(Charges), Violations, Payments, Compliance, Pollution control, Waste management, Pollution regulations, Enforcements, *Ability to pay, Settlement(Law).

PB97-501928REB CD-ROM \$125.00

SW-846 Version 2.0 (Test Methods for Evaluating Solid Waste Physical/Chemical Methods Including Final Update III) (Single User) (on CD-ROM). Data file.

Environmental Protection Agency, Washington, DC. Office of Solid Waste.

Dec 97, 1 CD-ROM.

Contains search and retrieval software. Windows 3.1, Windows NT 3.5 or later or Windows 95; 8 MB RAM recommended, 4 MB required. Mac version requires 68020 processor or greater with 4 MB RAM recommended and System 7.0 or greater; CD-ROM drive, 4.7 MB disk space. UNIX also supported. Supersedes PB95-503249. See also PB98-111750, PB97-501936, PB97-501338, and PB97-502637.

Ordering information: (A) single user, order no. PB97-501928, \$125; outside the U.S., Canada, and Mexico, \$165; (B) 2-5 users, order no. PB97-502512, \$320; outside the U.S., Canada, and Mexico, \$145; (C) unlimited users, order no. PB97-502520, \$1250; and \$1625. More information is available by fax by calling (703) 487-4140 and asking for product code: 8698. The datafile is on one disc.

Version 2.0 of SW-846 on CD-ROM contains the Third Edition Base Manual with Final Updates I, II, IIA, IIB and III. The electronic version of this valuable manual from the Environmental Protection Agency (EPA), Office of Solid Waste, provides test procedures and guidance which are recommended for use in conducting the evaluations and measurements needed to comply with the Resource Conservation and Recovery Act

(RCRA), Public Law 94-580, as amended. These methods are approved by the U.S. EPA for obtaining data to satisfy the requirements of 40 CFR, Parts 122 through 270, promulgated under RCRA, as amended. The entire SW-846 manual with updates integrated, including images of illustrative diagrams, chromatograms and flow diagrams, is provided on the CD-ROM. This CD-ROM was developed by the Environmental Protection Agency (EPA), Office of Solid Waste, in cooperation with the National Technical Information Service (NTIS). With the SW-846 CD-ROM, you can: 1. Receive the complete, official, up-to-date, set of SW-846 methods with integrated diagrams and flowcharts on a single disc. 2. Search by chemical name, CAS number, method number, or keyword to find suitable methods. 3. View or print a page or the entire method with valuable embedded diagrams, figures, and flowcharts. 4. Cut and paste text, diagrams and flowcharts to update Standard Operating Procedures in your own word processor. 5. Use the new Analyte to Crossreference Table to select recommended methods by chemical name. The SW-846 manual presents the state of the art in routine analytical tests adapted for the RCRA program. It contains procedures for field and laboratory quality control, sampling, determining hazardous constituents in wastes, determining the hazardous characteristics of wastes (toxicity, ignitability, reactivity, and corrosivity), and for determining physical properties of wastes. It also contains guidance on how to select appropriate methods. Final Update III is the most recent promulgated update by EPA. Updated as EPA promulgates major updates, the SW-846 CD-ROM eliminates the need to manually update the paper copy manual and ensures you are always working with the most current version.

Keywords: *Hazardous materials, *Sampling, *Test methods, *Chemical analysis, *Data file, Solid wastes, Metals, Inorganic compounds, Organic compounds, Sample preparation, Laboratory procedures, Collecting methods, Procedures, Standards, Analytical methods, Quality control, CD-ROM, *Physical analysis, SW-846 manual, RCRA(Resource Conservation and Recovery Act).

PB97-503130REB CP D01

SAGE for Windows (WSAGE) Version 1.0 Solvent Alternative Guide (on Diskette). Software.

Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

Oct 97, 2 diskettes.

Software requirements: Windows: Windows 3.1 or higher, 8 MB of memory, program will also run under Windows 95 or Windows NT; 6 MB of disk space; Macintosh: 2 MB disk space, PowerBook monitor (640 x 400) or larger, 2 MB of memory. Supersedes PB95-503207 and PB94-501764.

Ordering information for each format: (A) Macintosh version, 1 diskette (order number PB97-503148) or (B) Windows version, 2 diskettes (order number PB97-503130). Both diskette versions are the same price; NTIS price code D01. The software is on two 3 1/2 inch Windows diskettes, 1.44M high density.

SAGE for Windows is designed to provide recommendations for solvent replacements in cleaning and degreasing operations. The system leads the user through a question-and-answer session. Based on the user's responses, a list of alternative chemistries and processes is derived. The user may then review brief descriptions of the alternatives on the computer screen. Any of the information may be printed. The information includes general information, safety/environmental concerns, economic information, and industrial case studies for the alternatives. The system also provides information on state technical assistance programs for the user's geographical location. There is also support for the U.S. EPA 33/50 program; i.e., the chlorinated solvents targeted for reduction under the 33/50 program are not included as viable cleaning alternatives. The program is designed to be used by state regulatory personnel, process engineers, shop supervisors, or anyone looking for alternative cleaning technologies. The goal of the program is to provide general information on viable cleaning alternatives. The intent is that the program should provide enough information to reduce the number of alternatives that must be considered. Specific trade names for chemicals or processes are not used in the recommendations. The following Chemistry Alternatives are considered: Acetone, Acidic Aqueous Solutions, Alcohol, Alkaline Aqueous Solutions, Aqueous Additives (including Builders, Chelating Agents, Emulsifiers, Inhibiting Agents, Sequestering Agents, Surfactants), Dibasic Esters (DBE), Ethyl Lactate, Glycol Ethers, Neutral

EPA PUBLICATIONS BIBLIOGRAPHY

Aqueous Solutions, N-Methyl-2-Pyrrolidone (NMP), Petroleum Distillates, Pure Water, and Terpenes. The following Process Alternatives are considered: Abrasives, Brushing, CO₂ Pellets, CO₂ Snow, Fiberglass Molds, High Pressure Spray, Immersion (Dip) Cleaning, Laser Ablation, Low Pressure Sprays, Megasonics, Paint Stripping, Plasma, Power Washers, Printed Circuit Boards, Semiaqueous Cleaning, Steam Cleaning, Supercritical Fluids, Especially CO₂, Ultrasonics, UV/Ozone Cleaning, Wiping, and Xenon Flash Lamp.

Keywords: *Software, *Solvents, *Alternatives, Material substitution, Environmental chemical substitutes, Pollution abatement, Surface cleaning, Degreasing, Strippers, Paint removers, Stripping(Paints), Chemical compounds, Process engineering, Diskettes, SAGE expert system.

PB97-963219REB PC A18/MF A04 **Superfund/Oil Program Implementation Manual Fiscal Year 1998.**

Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response. 21 Aug 97, 386p, EPA/540/R-97/010, OSWER-9200.3-14-1D.

See also PB96-963241.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Product reproduced from digital image.

The purpose of this document is to transmit the attached Changed Pages and Change Log for the Manual (SPIM). The Changed Pages include a revised Appendix B; *Early and Long Term Actions; Table of Contents, page A-13 and chart (page xxix).

Keywords: *Superfund, *Oil pollution, *Program administration, *Implementation, Hazardous materials, Waste management, Planning, Reporting, Scheduling, Requirements, Administrative procedures, Program management, Interagency coordination, Citizen participation, Goals, Priorities, US EPA, Manuals, Cleanup.

PB97-963255REB PC A03/MF A01 **FY 1998 Superfund Reforms Strategy.**

Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response. Nov 97, 18p, EPA/540/F-97/035, OSWER-9200.0-28.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This document explains the overall goals and strategies of the Superfund program it sets out priorities for reforms and areas for expansion.

Keywords: *Superfund, *Reforms, *Improvement, *Program administration, Waste management, Hazardous materials, Pollution control, Remediation, Enforcement, Pollution regulations, Program management, Administrative procedures, Organizational effectiveness, US EPA, Cost control, Community relations, Communications management, Cleanup operations.

PB97-963312REB PC A04/MF A01 **Draft Interim Final OSWER Monitored Natural Attenuation Policy.**

Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response. Nov 97, 38p, EPA/540/F-97/037, OSWER-9200.4-17.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Product reproduced from digital image.

This Directive clarifies the U.S. Environmental Protection Agency's (EPA) policy regarding the use of Monitored Natural Attenuation for the remediation of contaminated soil and groundwater at sites regulated under Office of Solid Waste and Emergency Response (OSWER) programs. The Directive is intended to promote consistency in how monitored natural attenuation remedies are proposed, evaluated, and approved. This Directive is being issued as Interim Final and may be used immediately. It provides guidance to EPA staff, to the public, and to the regulated community on how

EPA intends to exercise its discretion in implementing national policy on the use of Monitored Natural Attenuation.

Keywords: *US EPA, *Remediation, *Program management, Hazardous materials, Solvents, Petroleum products, Waste management, Soil contamination, Land pollution control, Underground storage, Storage tanks, Superfund, Ground water, Water pollution control, Site characterization, Environmental monitoring, Water pollution monitoring, Government policies, Federal Facilities Restoration and Reuse Office, RCRA(Resource Conservation and Recovery Act), Resource Conservation and Recovery Act, CERCLA(Comprehensive Environmental Response Compensation and Liability Act), Comprehensive Environmental Response Compensation and Liability Act, Natural attenuation.

PB97-963408REB PC A06/MF A01

Disaster and Emergency Response. Mission Assignment Guidance. Final rept.

Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response. Oct 97, 90p, EPA/540/R-97/034, OSWER-9224.0-01.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Product reproduced from digital image.

The purpose of this memorandum is to transmit the Agency's final guidance for the management of disaster and emergency response Mission Assignments (MAS).

Keywords: *US EPA, *Disasters, Emergency planning, Emergency preparedness, Procedures, Guidance, Financial management, Government policies, Regulations, *Emergency response, *Mission assignments, Emergency management.

PB97-963503REB PC A08/MF A02

Superfund Method for the Determination of Releaseable Asbestos in Soils and Bulk Materials.

Environmental Protection Agency, Washington, DC. Office of Emergency and Remedial Response. 1997, 148p, EPA/540/R-97/028, OSWER-9240.1-33.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This report provides a sampling and analysis method for the determination of releasable asbestos in soils and bulk materials. Samples are collected in a manner suitable for providing representative measurements of the releasable fraction of asbestos in the matrix sampled, prepared using a dust generator, and analyzed by transmission electron microscopy (TEM). Guidelines for constructing the required dust generator are also included.

Keywords: *Superfund, *Asbestos, *Analytical methods, *Soil contamination, *Bulk materials, Site characterization, Sampling, Measurement, Field tests, Transmission electron microscopy, Ecological concentration, Environmental transport, Particle size distribution, Risk assessment.

PB98-100415REB PC A04/MF A01

National Risk Management Research Lab., Cincinnati, OH.

Utilizing Low Volatile Organic Content Exterior Coatings for Wood Furniture. Project summary.

Erie County Dept. of Environment and Planning, Buffalo, NY. Div. of Environmental Compliance. P. B. Kranz, J. E. Stadelmaier, and T. F. Stanczyk. 1997, 50p, EPA/600/R-97/083.

Contract EPA-R-816762-02-0 Prepared in cooperation with RECRA Environmental, Inc., Amherst, NY. Sponsored by National Risk Management Research Lab., Cincinnati, OH.

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This report provides an evaluation of commercially viable source reduction techniques implemented by a manufacturer of wood chairs, bar stools and settees in various styles ranging from classic American to European contemporary. The Dinaire Corporation began testing alternative formulations employed as water-borne finishes, sealers and topcoats. In an effort to minimize costly investments in air emission control equipment, the company examined and implemented a number of source reduction techniques that dictated modifications to raw material formulations as well as equipment needed to apply and cure surface finishes. By phasing in low VOC, water-based formulations in conjunction with high volume low pressure spray systems, an ultraviolet curing system and procedural modifications, Dinaire was able to show reductions in the quantities of hazardous waste as well as the overall loadings of volatile organic compounds released as hazardous air pollutants.

Keywords: *Wood products, *Emissions, *Furniture, *Surface coating, *Coating processes, Wood finishing, Wood working, Ultraviolet radiation, Curing, Spraying, Air pollution abatement, Economic analysis, Technology assessment, *Volatile organic compounds, Water-based coatings, Pollution prevention, Waste minimization.

PB98-100472REB PC A04/MF A01

Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

Field Validation of a Penetrometer-Based Fiber-Optic Petroleum, Oil, and Lubricant (POL) Sensor.

Naval Command, Control and Ocean Surveillance Center, San Diego, CA. RDT and E Div. W. C. McGinnis, and S. H. Lieberman. Oct 97, 42p, EPA/600/R-97/055.

Contract EPA-DW-17936217

Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

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This report details comprehensive comparisons of in situ measurements from a cone penetrometer-deployed laser induced fluorescence (LIF) petroleum, oil, and lubricant (POL) sensor with traditional field screening methods. Operational procedures were developed to facilitate comparison between methods and across multiple sites. Using a field screening detect/non-detect criterion, agreement between sensor measurements corresponding to the sampled interval and the laboratory analytical measurements on those samples was better than 85 percent. Comparison between measurements from the two accepted analytical techniques, on splits of the same sample, was only slightly better. The authors conclude that the LIF-POL sensor, deployed from a cone penetrometer, provides significant advantages for subsurface field screening of POL-contaminated site.

Keywords: *Petroleum products, *Oils, *Lubricants, *Laser induced fluorescence, *Soil pollution, Oil pollution, Subsurface investigations, Soil sampling, Soil contamination, Screening, Analytical methods, Site characterization, Field tests, Fluorometers, Cone penetrometers, Sensors, Comparison.

PB98-100480REB PC A07/MF A02

Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.

Methane-Steam Reaction Over Nickel Catalysts in the Hynol Process. Final rept. Oct 95-Apr 97.

Acurex Environmental Corp., Research Triangle Park, NC.

Y. Dong, and J. Karwowski. Sep 97, 106p, EPA/600/R-97/093.

Contract EPA-68-D4-0005

Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.

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The report discusses the reaction of methane-steam over nickel catalysts in the Hynol process, a process

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that uses biomass and natural gas as feedstocks to maximize methanol yields and minimize greenhouse gas emissions. In the study, an integral fixed-bed reactor was used to perform kinetic measurements for methane-steam reforming at simulated Hynol operating conditions. The activity of a commercially available Ni-catalysts was evaluated. A kinetic model was developed for quantitatively interpreting the experimental data. The intrinsic reaction rates at different temperatures were measured using crushed catalyst pellets, resulting in an activation energy of 28 kcal/mol. The effectiveness factor for the commercial catalyst pellets (16 mm in diameter and 10 mm long) was determined and correlated as a function of reaction temperature. Experimental results indicate that a steam-to-carbon ratio of 2.5 is appropriate. The hydrogen in the feed gas helps catalysts remain in the reducing state and prevents carbon deposition.

Keywords: *Methane, *Steam, *Nickel, *Catalysts, *Chemical reaction kinetics, Natural gas, Methanol fuels, Automobile engines, Catalysis, Carbinols, Chemical reactors, Biomass conversion, Air pollution abatement, Greenhouse gases, *Hynol processes.

PB98-100508REB PC A04/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div. Experimental Evaluation of a Novel Full-Scale Evaporatively Cooled Condenser. Final rept. Jan-Dec 96.

Maryland Univ., College Park. Center for Environmental Energy Engineering.
Y. Hwang, and R. Radermacher. Aug 97, 40p, EPA/600/R-97/079.

Grant EPA-R-824187
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.

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The report compares the performance of a novel evaporatively cooled condenser with that of a conventional air-cooled condenser for a split-system heat pump. The system was tested in an environmentally controlled test chamber that is able to simulate test conditions as specified by ASHRAE Standard 116-1983. Soft optimizations were conducted to determine optimum charge and short tube restrictor size. Design parameters of the evaporatively cooled condenser were also optimized experimentally to maximize performance. Using these optimum parameters, steady state and cyclic performance tests were conducted. The experimental results show that the evaporatively cooled condenser has a higher capacity by 1.9 to 8.1%, a compatible coefficient of performance (COP) ranging from 98.0 to 105.6%, and a higher seasonal energy efficiency ratio (SEER) by 11.5% than those of the baseline. Subtracting out the estimated appropriate parasitic power necessitated by the test setup, savings were determined to be 1.8 to 8.1% in capacity, 13.5 to 21.6% in COP, and 14.5% in SEER over the baseline.

Keywords: *Heat pumps, *Condensers, Air pollution control equipment, Performance evaluation, Technology assessment, Tests.

PB98-102262REB PC A03/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab. Capsule Report: Wellman-Lord SO₂ Recovery Process. Flue Gas Desulfurization Plant. First progress rept. Jul-Nov 76.

Northern Indiana Public Service Co., Gary, IN. 1997, 22p, EPA/625/2-77/011.

Color illustrations reproduced in black and white. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

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This capsule report describes initial results from a joint program being conducted by Northern Indiana Public Service Company (NIPSCO) and the Environmental

Protection Agency (EPA) to demonstrate the sulfur dioxide (SO₂) removal capabilities of the Wellman-Lord/Allied Chemical flue gas desulfurization (FGD) facility. The FGD demonstration plant is retrofitted to the Unit No. 11 coal-fired boiler at NIPSCO's Dean H. Mitchell Station in Gary, Indiana.

Keywords: *Flue gases, *Desulfurization, *Coal fired power plants, Sulfur dioxide, Retrofitting, Demonstration projects, Gary (Indiana), FGD (Flue Gas Desulfurization).

PB98-102270REB PC A06/MF A01
Guide to Technical Resources for the Design of Land Disposal Facilities.

National Risk Management Research Lab., Cincinnati, OH.

R. E. Landreth. Dec 88, 78p, EPA/625/6-88/018.

Contract EPA-68-01-7374

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This document is to direct the regulated community and the regulators to the vast number of EPA technical resource documents, handbooks, and guidance manuals as they prepare or review permits for land disposal facilities. The topics included in this Guide are limited to key performance standards and minimum technology requirements specified in 40 CFR Part 264 and Part 270, for hazardous waste land disposal facilities. Detailed topics include foundations, dike integrity and slope stability, liner (both clay and geosynthetic) systems, cover systems and run-on/run-off controls. Each chapter briefly discusses the existing regulations, major technical parameters commonly considered, and references to assist in the selection of the methodology.

Keywords: *Land disposal, *Design criteria, *Guides, Hazardous materials, Ground disposal, Waste management, Dikes, Slope stability, Liners, Construction, Installation, Leachate, Covers, Runoff, Erosion control, Site investigations, Standards, Regulations, Requirements, Quality assurance.

PB98-102288REB PC A03/MF A01
EPA Technology Transfer Capsule Report: Fabric Filter Particulate Control on Coal-Fired Utility Boilers: Nucla, Co. and Sunbury, Pa.

Environmental Protection Agency, Research Triangle Park, NC. Utilities and Industrial Power Div.

1976, 20p, EPA/625/2-77/013.

Prepared in cooperation with Alliance Technologies Corp., Bedford, MA.

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The U.S. EPA Industrial Environmental Research Laboratory in Research Triangle Park, North Carolina sponsored field sampling programs at two coal-fired facilities. Emission testing and analysis was performed by GCA/Technology Division, Bedford, Massachusetts. A major objective of the project was to characterize the performance of fabric filter systems used to remove particulates from boiler flue gases. Total mass emission rates were measured using the standard EPA Method 5 techniques. Isokinetic sampling of both the inlet and outlet ducts, which provided accurate determination of particulate mass concentrations, allowed for precise measurement of bag filter efficiencies.

Keywords: *Air pollution control equipment, *Electric utilities, *Filters, Particulates, Coal fired power plants, Fabrics, Glass cloth, Cost analysis, Economic analysis, Operating costs.

PB98-102296REB PC A04/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab. Sulfur Oxides Control Technology Series: Flue Gas Desulfurization. Wellman-Lord Process. Summary rept.

Radian Corp., Austin, TX.

C. E. Hudak, and J. M. Burke. Feb 79, 40p, EPA/625/8-79/001.

Contract EPA-68-02-2608

See also PB92-150341, PB92-150358, PB92-150366, PB81-157919, PB81-206476, PB81-218976 and PB81-243164. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.

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The Wellman-Lord flue gas desulfurization (FGD) process, is being studied by the Environmental Protection Agency (EPA) as part of an extensive program of technology development in the area of flue gas desulfurization. In this regenerable process, sulfur dioxide (SO₂) is removed from flue gases with a sodium sulfite scrubbing solution. The concentrated SO₂ stream that is produced can be processed into elemental sulfur or sulfuric acid. The Industrial Environmental Research Laboratory (IERL), in Research Triangle Park, North Carolina, is responsible for evaluating the reliability and cost effectiveness of FGD processes. The Wellman-Lord process is a proven, viable regenerable FGD system producing elemental sulfur. This report serves as a technical briefing of FGD control technologies for engineers, managers, and decision makers who require information about sulfur dioxide control alternatives. This report summarizes the Wellman-Lord FGD operation, and provides a basic understanding of the significant processes for a reader who is unfamiliar with FGD technology. All equations are in the un-ionized form to simplify the presentation.

Keywords: *Desulfurization, *Flue gases, *Scrubbing, Sulfur oxides, Demonstration projects, Chemical engineering, Sulfur dioxides, Sulfur, Sulfur acid, FGD (Flue Gas Desulfurization), Wellman Lord Process.

PB98-102304REB PC A06/MF A01
Environmental Protection Agency, Cincinnati, OH. Office of Technology Transfer.

Seminar Publication: Pollution Control in the Forest Products Industry.

Jordan (Edward C.) Co., Inc., Portland, ME.

J. L. Veatch, D. C. Bray, J. H. Himel, J. W. Robinson, D. C. Junge, M. W. Guidon, A. H. Mick, G. Grimes, R. H. Moyer, and J. D. Cook. Aug 79, 92p, EPA/625/3-79/010.

Prepared in cooperation with Oregon State Univ., Corvallis. Sponsored by Environmental Protection Agency, Cincinnati, OH. Office of Technology Transfer.

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Contents:

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- Introduction;
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- Wood Preserving;
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- Wet Decking with Water Recycle;
- Case Study:
- Wastewater Handling at Boise Cascade's Elgin, Oregon Site;
- Case Study:
- Waste Management at Masonite Hardboard Mills;
- and Case Study:
- Wastewater Purification at Pacific Wood Treating Corporation.

Keywords: *Wood products industry, *Forest management, *Air pollution control, *Water pollution control, Wood wastes, Emissions, Burning, Particulates, Sediments, Wood preservatives, Waste water, Waste management, Clean Water Act, Case studies, Meetings.

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PB98-102312REB PC A03/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
Capsule Report: Double Alkali Flue Gas Desulfurization System Applied at the General Motors Parma, Ohio Facility. Rept. for Aug 74-May 76. Little (Arthur D.), Inc., Cambridge, MA.
Feb 79, 24p, EPA/625/2-78/016.
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab.
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In 1969 General Motors began pilot operations of its Double Alkali SO₂ Control System to determine the applicability of stack gas scrubbing to its industrial powerhouses. Using data from its two-year pilot plant development program, General Motors designed and constructed a complete industrial-scale demonstration plant capable of handling the emissions from all four coal fired boilers at the Chevrolet-Parma plant near Cleveland, Ohio. This report describes the results of the test program at Parma.

Keywords: *Desulfurization, *Air pollution control equipment, *Scrubbing, Coal, Sulfur dioxide, Industrial wastes, Flue gases, Calcium oxides, Sodium carbonates, Automobile industry, Industrial plants, Dual alkali scrubbing.

PB98-102338REB PC A05/MF A01
Office of Pesticide Programs Annual Report for 1996.
Environmental Protection Agency, Washington, DC. Office of Prevention, Pesticides and Toxic Substances. Nov 96, 54p, EPA/735/R-96/001.
See also report for 1994, PB95-201521.
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The mission of EPA's Office of Pesticide Programs (OPP) is to protect public health and the environment from the risks posed by pesticides and to promote safer means of pest control. Part I of the report is organized according to three key themes underlying OPP's work: (1) adapting to key changes in our statutory framework, new scientific developments, new technologies, and increasing global interdependence; (2) making significant strides in reducing pesticide risks to health and the environment; and (3) continuing progress in increasing OPP productivity.

Keywords: *US EPA, *Government programs, *Program management, *Government agencies, *Pesticides, *Pesticide residues, *Agricultural chemicals, *Productivity, *Registration, *Risk management, *Human health, *Environmental protection, *Farm workers, *Information dissemination, *Office of Pesticide Programs, *Reregistration.

PB98-102692REB PC A08/MF A02
Catalog of Publications: Office of Science and Technology, 1997 Edition.
Environmental Protection Agency, Washington, DC. Office of Science and Technology.
Sep 97, 136p, EPA/820/B-97/001.
See also PB93-152577.
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The catalog lists documents produced by the Office of Science and Technology that are available from the Water Resource Center and the National Technical Information Service.

Keywords: *Water pollution, *Water resources, *Catalogs(Publications), *Bibliographies, *Potable water, *Water quality standards, *Sewage sludge, *Waste water, *Municipal wastes, *Industrial wastes, *Clean Water Act, *Safe Drinking Water Act, *Sediments, *Fish, *US EPA, *Analytical methods, *Economic analysis,

*Office of Water, *Office of Science and Technology, *Water quality criteria.

PB98-102734REB PC A21/MF A04
Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 2. Risk Assessment and Fish Consumption Limits. Second Edition.
Environmental Protection Agency, Washington, DC. Office of Water.
Jul 97, 454p, EPA/823/B-97/009.
See also PB94-204062.
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The objective of Volume 2 is to provide guidance on the development of risk-based meal consumption limits for 25 high-priority chemical contaminants (target analytes). This second edition provides risk assessors and managers with the most current toxicological information for the target analytes and deletes carbophenothion as a target analyte.

Keywords: *Fish, *Shellfish, *Food consumption, *Risk assessment, *Animal tissues, *Bioaccumulation, *Chemical compounds, *Biological effects, *Food chains, *Public health, *Health hazards, *Maximum permissible intake, *Environmental exposure, *Children, *Women, *Toxicity, *Dose-response relationships, *Health advisories, *Consumption limits.

PB98-102924REB PC A03/MF A01
RED Facts: Methylene bis(thiocyanate). Fact sheet.
Environmental Protection Agency, Washington, DC. Office of Prevention, Pesticides and Toxic Substances. Aug 97, 12p, EPA/738/F-97/005.
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This fact sheet summarizes the information in the RED document for reregistration case 2415, methylene bis(thiocyanate). Methylene bis(thiocyanate) is employed in water cooling systems, paint manufacturing, metalworking cutting fluids, pulp and paper mills, oil drilling/mud packing fluids, leather processing, wood pressure treatments (forest products), wood protection treatments to buildings/products, and latex paints (in-can).

Keywords: *Thiocyanates, *Pesticides, *Fungicides, *Silicides, *Algicides, *Biocides, *Bactericides, *Disinfectants, *Esters, *Toxicity, *Risk assessment, *Humans, *Animals, *Exposure, *Environmental transport, *Chemical properties, *Environmental impacts, *Pollution regulations, *Administrative procedures, *Requirements, *Methylene bis(thiocyanate), *Reregistration, *Methylene dithiocyanate, *Thiocyanic acid, *Microbiocides, *Microbiostats, *Use patterns, CAS 6217-18-6.

PB98-102932REB PC A02/MF A01
Fact Sheet Update: Listing of Fish and Wildlife Advisories.
Environmental Protection Agency, Washington, DC. Office of Water.
Jun 97, 7p, EPA/823/F-97/007.
See also PB95-207965.
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The 1996 update for the database is now available. This database includes all available information describing state-, tribal-, and federally issued fish consumption advisories in the United States for the 50 States, the District of Columbia, and four U.S. Territories, and has been expanded to include the 12 Canadian provinces and territories. The database contains information provided to EPA by the states, tribes, and Canada as of December 1996. This includes advisories issued by several Native American tribes.

Keywords: *Fish, *Wildlife, *Food consumption, *Data bases, *Bioaccumulation, *Trends, *Terrestrial eco-

systems, *Water pollution effects, *Aquatic ecosystems, *Food chains, *Public health, *Health hazards, *Mercury(Metal), *Polychlorinated biphenyls, *Canada, *United States, *Health advisories.

PB98-103005REB PC A05/MF A01
Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
Havre de Grace Heritage Corridor Plan, September 1997.
Heritage Corridor Steering Committee, Havre de Grace, MD.
Sep 97, 66p, CBP/TRS-185/97, EPA/903/R-97/025.
Sponsored by Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
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Partnership of local officials, community leaders and private organizations has been involved in an effort to improve the quality of life in the Havre de Grace region through heritage tourism. The Plan will: Guide the historic preservation, promotion, interpretation, protection, enjoyment and economic revitalization of the Havre de Grace Heritage Corridor; Coordinate and support existing efforts in the proposed State and National Heritage Area efforts in the Lower Susquehanna region; Facilitate collaboration with other regional efforts; Help the community to leverage funding from the Federal, State and private sectors. The Plan is not intended to duplicate or supplant ongoing public or private efforts.

Keywords: *Conservation, *History, *Tourism, *Community development, *Economics, *Culture, *Recreation, *Natural resources management, *Heritage Corridor, *Havre de Grace(Maryland).

PB98-103120REB PC A06/MF A01
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
Simulation of Track-In of Lawn-Applied Pesticides from Turf to Home: Comparison of Dislodgeable Turf Residues with Carpet Dust and Carpet Surface Residues. Project rept.
Battelle, Columbus, OH.
M. G. Nishioka, H. M. Burkholder, M. C. Brinkman, and S. M. Gordon. 19 Mar 97, 96p, EPA/600/R-97/108.
Contract EPA-68-D0-0007
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
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The purpose of the research reported was to develop methods to study the track-in of lawn-care chemicals and to carry out controlled simulations of the process. The movement of lawn-applied pesticides into the home by walking over treated turf grass (track-in) was measured over a one-week period after application. Pesticides and application methods evaluated included spray application of the herbicide acids dicamba and 2,4-D; granular application of the insecticide chlorpyrifos; and spray application of the insecticide chlorpyrifos and the fungicide chlorothalonil. A new sampling tool, the PUF Roller, was used to collect dislodgeable residues from both turf and carpeting. Replicate measurements of turf dislodgeable residues showed deviations of 2-70 percent from the mean, which is considered very good given the non-uniformity of a turf surface. The transfer from turf to dust and from turf to carpet surface dislodgeable residues was proportional to the transfer from turf to PUF: relative transfer from turf to dust was 0.8-1.6 percent of the transfer from turf to PUF; relative transfer from turf to carpet surface was 0.1-0.2 percent of the transfer from turf to PUF. For non-volatile pesticides, the herbicides in particular, both carpet dust levels and carpet surface dislodgeable residue levels were highly correlated with turf dislodgeable residue levels. For more volatile pesticides, such as chlorpyrifos, the sum of the level in the dust and in the carpet surface dislodgeable sample was correlated well with the turf dislodgeable residue level.

EPA PUBLICATIONS BIBLIOGRAPHY

Keywords: *Pesticides, *Dust, *Soils, *Carpets, Pesticide residues, Herbicides, Fungicides, Insecticides, Turf, Shoes, Surfaces, Environmental transport, Houses, Comparisons.

PB98-103138REB PC A02/MF A01
Addendum to the 'Interim CERCLA Settlement Policy' Issued on December 5, 1984. Final rept.
Environmental Protection Agency, Washington, DC. Office of Site Remediation Enforcement.
30 Sep 97, 8p.
Document is paginated as submitted by the inputting source.
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This memorandum transmits an addendum to the 'Interim CERCLA Settlement Policy' which was issued by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Justice (DOJ) on December 5, 1984. Because that guidance document does not apply to CERCLA cost recovery settlements in which the parties are not agreeing to perform remedial design/remedial action work or a non-time critical removal, EPA and DOJ are issuing this addendum to provide the Regions with direction for addressing potential compromises of CERCLA cost recovery claims due to the existence of a significant orphan share.

Keywords: *Superfund, *Government policies, *Liabilities, *Responsibility, *Payments, Violations, Hazardous materials, Waste management, Pollution control, Remedial action, Requirements, Law enforcement, Pollution regulations, Cost recovery, US EPA, *CERCLA(Comprehensive Environmental Response Compensation and Liability Act), *Comprehensive Environmental Response Compensation and Liability Act, Orphan shares, Settlement(Law).

PB98-103146REB PC A03/MF A01
Guidance on EPA Participation in Bankruptcy Cases. Final rept.
Environmental Protection Agency, Washington, DC. Office of Site Remediation Enforcement.
S. A. Herman. 30 Sep 97, 18p.
Supersedes PB92-105485.
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This guidance identifies the factors to be considered by EPA in determining whether to participate in a bankruptcy case, including whether to pursue collection of costs or penalties against debtors who have liability under CERCLA or other environmental statutes.

Keywords: *Superfund, *Waste management, *Hazardous materials, *Bankruptcy, Guidelines, Law enforcement, Liabilities, *CERCLA(Comprehensive Environmental Response Compensation and Liability Act), *Comprehensive Environmental Response Compensation and Liability Act.

PB98-103153REB PC A04/MF A01
Final Guidance on the Issuance of Administrative Orders under Section 311 (c) and (e) of the Clean Water Act. Final rept.
Environmental Protection Agency, Washington, DC. Office of Site Remediation Enforcement.
B. Breen. 1 Jul 97, 45p.
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The final guidance document on the issuance of administrative orders under section 311(c) and (e) of the Clean Water Act (CWA), as amended by the Oil Pollution Act of 1990 (OPA) provides legal authority for the issuance of administrative orders for the cleanup and prevention of discharges and threatened discharges of oil and hazardous substances into navigable waters, adjoining shorelines, and certain other areas. While the guidance document discusses the separate use of

each order authority, it recommends joint use of the section 311(c) and (e) enforcement authorities whenever possible because of broader reach of orders issued under both authorities.

Keywords: *Clean Water Act, *Oil spills, *Hazardous materials spills, *Contingency planning, *Remediation, Navigable waters, Shorelines, Authority, Responsibility, Water quality management, Law enforcement, Legal aspects, Guidance, Water pollution control, Water pollution abatement, Oil Pollution Act of 1990, Cleanup operations, Pollution prevention, National Contingency Plan.

PB98-103195REB PC A09/MF A02
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
Field Evaluation of Screening Techniques for Polycyclic Aromatic Hydrocarbons, 2,4-Diphenoxycetic Acid, and Pentachlorophenol in Air, House Dust, Soil, and Total Diet. Project rept.
Battelle, Columbus, OH.
J. C. Chuang, Y. L. Chou, M. Nishioka, R. Menton, K. Andrews, and M. Pollard. Nov 97, 160p, EPA/600/R-97/109.
Contract EPA-68-D4-0023
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
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The objectives of this project were to evaluate ELISA screening methods and determine whether these methods indicate effectively those microenvironments where high exposure to polycyclic aromatic hydrocarbons (PAH) or other semivolatile organic compounds (SVOC) is likely. The dust/soil samples as well as sample extracts of air and food samples collected from 13 low-income homes in the summer of 1995 were analyzed by PAH and C-PAH assays. These sample extracts were also analyzed by gas chromatography/mass spectrometry (GC/MS) to determine alkyl PAH and phthalates. The dust/soil samples from 13 low-income homes collected during the spring of 1996 were analyzed by PAH C-PAH, 2,4-D, and PCP assays. Different aliquots of these samples were analyzed by conventional (GC/MS) methods for PAH and by GC with electron capture detection (GC/ECD) for 2,4-D and PCP. The ELISA data were compared with GC/MS data or GC/ECD data. For PAH measurements, there is no strong relationship between the ELISA results and GC/MS results when data of similar types of samples were combined from different field studies. The ELISA data (C-PAH) and GC/MS (B2 PAH) data showed stronger relationships for dust/soil collected from 22 NHXAS homes. The ELISA screening for PAH can indicate the likely presence of high levels of PAH in dust/soil samples. There is a positive but weak relationship between GC/ECD data and ELISA data for 2,4-D and PCP.

Keywords: *Dust, *Soil contamination, *Ingestion(Biology), *Inhalation, *Sampling, *Quantitative chemical analysis, Pentachlorophenol, Polycyclic aromatic hydrocarbons, Phthalates, Food contamination, Houses, Residential buildings, Gas spectroscopy, Mass spectroscopy, Electron capture, Statistical analysis, 2,4-diphenoxycetic acid, Semivolatile organic compounds.

PB98-103211REB PC A16/MF A03
Reregistration Eligibility Decision (RED): Methylene bis (thiocyanate). (Includes RED FACTS: Methylene bis (thiocyanate) Fact Sheet).
Environmental Protection Agency, Washington, DC. Office of Prevention, Pesticides and Toxic Substances.
Aug 97, 339p, EPA/738/R-97/005.
For Fact Sheet only, see PB98-102924.
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This document presents the Agency's decision regarding the reregistration eligibility of the registered use of methylene bis(thiocyanate). Section I is the introduction. Section II describes methylene

bi(thiocyanate), its uses, data requirements and regulatory history. Section III discusses the human health and environmental assessment based on the data available to the Agency. Section IV presents the reregistration decision for methylene bi(thiocyanate). Section V discusses the reregistration requirements for methylene bis(thiocyanate). Finally, Section VI is the Appendices which support this Reregistration Eligibility Decision.

Keywords: *Thiocyanates, *Pesticides, Fungicides, Slimicides, Algicides, Biocides, Bactericides, Disinfectants, Esters, Toxicity, Risk assessment, Humans, Animals, Exposure, Environmental transport, Chemical properties, Environmental impacts, Pollution regulations, Administrative procedures, Requirements, *Methylene bis(thiocyanate), *Reregistration, Methylene dithiocyanate, Thiocyanic acid, Microbiocides, Microbiostats, Use patterns, CAS 6217-18-6.

PB98-103229REB PC A09/MF A02
Environmental Protection Agency, Washington, DC. Office of Water.
Ambient Aquatic Life Water Quality Criteria 'Tributyltin'. Draft rept.
Wisconsin Univ.-Superior.
Jul 97, 162p, EPA/822/D-97/001.
Contract EPA-68-C6-0036
See also PB93-167047. Prepared in cooperation with Great Lakes Environmental Center, Traverse City, MI. Sponsored by Environmental Protection Agency, Washington, DC. Office of Water.
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Contents:
Introduction;
Acute Toxicity to Aquatic Animals;
Chronic Toxicity to Aquatic Animals;
Toxicity to Aquatic Plants;
Bioaccumulation;
Other Data;
Unused Data;
Summary;
National Criteria;
Implementation;
and References.

Keywords: *Tributyltin, *Water pollution effects(Animals), *Water pollution effects(Plants), *Aquatic ecosystems, Aquatic animals, Aquatic plants, Tin organic compounds, Organotin, Environmental effects, Biological effects, Ecological concentration, Toxicity, Bioaccumulation, Salt water, Chemical analysis, Pollution regulations, Clean Water Act, Guidelines, Table(Data), Listings, *Water quality criteria.

PB98-103237REB PC A03/MF A01
Water Quality Criteria and Standards Newsletter. Spring and Summer 1997.
Environmental Protection Agency, Washington, DC. Office of Water.
1997, 16p, EPA/823/N-97/005.
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Water quality criteria define the chemical, physical, and biological aspects of water quality needed to protect the designated uses of the water that States and Tribes adopt in their water quality standards. EPA established a Water Quality Criteria Steering Committee and two Technical Review Committees. The Water Quality Criteria Steering Committee was established to identify and address emerging water quality criteria issues within EPA in a timely fashion and facilitate communication on these issues between Regional and Headquarters Offices. The Steering Committee works in conjunction with two Technical Review Committees (human health and aquatic life) which will draw from the scientific water quality expertise residing in various EPA offices. The Technical Review Committees evaluate scientific issues related to the development, implementation and interpretation of water quality criteria.

Keywords: *Water quality standards, *US EPA, *Criteria, Water quality management, Chemical prop-

erties, Physical properties, Biological properties, Environmental issues, Water pollution abatement, Regulations, States(United States).

PB98-103385REB PC A05/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. **Ethylene Oxide Commercial Sterilization and Fumigation Operations NESHAP. Implementation Document.** Midwest Research Inst., Cary, NC. Sep 97, 71p, EPA/456/R-97/004. See also PB93-226744. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The purpose of this document is to provide these personnel with implementation materials to assist them in conducting complete and efficient inspections at ethylene oxide commercial sterilization and fumigation operations to determine compliance with NESHAP. Chapter 2 of this document presents a summary of the requirements of the regulation. Strategies for determining applicability of the regulation, including flowcharts, are provided in Chapter 3. Chapter 4 discusses the emission reductions and limits in the regulation and the control techniques that may be used to meet these standards. Requirements for demonstrating compliance with the regulation are discussed in Chapter 5. Chapter 6 summarizes the recordkeeping and reporting requirements of the regulation. Chapter 7 covers inspection procedures, including inspector checklists. A summary of commonly asked questions and answers are included in Chapter 8, and a list of other available implementation materials is included in Chapter 9. Appendix A contains a glossary of terms and nomenclature used in the regulation. A detailed 'table of contents' of the regulation is included as Appendix B. A list of known facilities is included as Appendix C.

Keywords: *Ethylene oxide, *Air pollution standards, *Sterilization, *Fumigation, Emissions, Gases, Pollution regulations, Clean Air Act, Standards compliance, Scrubbers, Oxidation, Aeration, Implementation, Record keeping, Requirements, *NESHAP(National Emission Standards for Hazardous Air Pollutants), *National Emissions Standards for Hazardous Air Pollutants.

PB98-103393REB PC A05/MF A01
Radon Reduction Techniques for Detached Houses: Technical Guidance. Special rept. Apr 86. Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab. D. C. Sanchez, and D. B. Henschel. Jun 86, 66p, EPA/625/5-86-019. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The report represents technical guidance based on the results of the EPA tests and documented tests by other research groups on actual houses with elevated indoor radon levels, and is intended to supply radiological health officials, building contractors, and concerned homeowners with information on how to modify houses to reduce indoor radon. Introductory information is provided on sources of indoor radon, the health effects of radon exposure, methods for measuring radon levels, and how radon enters and builds up in house air. Nine methods for reducing indoor radon in detached houses are described: natural and forced-air ventilation, forced-air ventilation with heat recovery, active avoidance of house depressurization, sealing major radon sources, sealing radon entry routes, drain-tile soil ventilation, active ventilation of hollow-block basement walls, and sub-slab ventilation. For each method, information is presented on principle of operation, applicability, how much confidence one can have that the method can achieve radon reduction, and an estimate of installation costs.

Keywords: *Houses, *Radon, *Air pollution control, *Indoor air pollution, Natural radioactivity, Soil gases, Soil-structure interactions, Foundations(Structures), Ventilation systems, Air flow, Air infiltration, Concrete

slabs, Depressurization, Permeability, Sealing materials, Membranes.

PB98-103401REB PC A07/MF A02
Environmental Protection Agency, Research Triangle Park, NC. **Handbook: Operation and Maintenance of Hospital Medical Waste Incinerators.** Final rept. Midwest Research Inst., Cary, NC. R. M. Neulicht, M. B. Turner, L. S. Chaput, D. D. Wallace, and S. G. Smith. Jan 90, 112p, EPA/625/6-89/024. Contracts EPA-68-02-4395, EPA-68-C8-0011. See also PB89-190615. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The primary objective of this document is to identify the operation and maintenance (O&M) procedures that should be practiced on hospital medical waste incinerators and associated air pollution control equipment to minimize air emissions. This document provides general guidance on proper O&M procedures with the intention of identifying good operating practices. The document is intended as a technical guide for use by Federal, State, and local agency personnel, hospital waste management personnel, and hospital incinerator operators. The document presents background information on hospital and medical waste incineration systems including a summary of combustion principles and descriptions of the types of incinerators typically used for hospital medical wastes. Background information on add-on air pollution control systems also is presented. Key operating parameters and good operating practices for the incineration and air pollution systems are identified and discussed. General guidance on maintenance of the systems also is provided. Common operating problems, their possible causes, and possible solutions to the problems are presented. Other topics discussed include control and monitoring instrumentation, recordkeeping procedures, and safety.

Keywords: *Medical waste disposal, *Incinerators, *Operation and maintenance, *Combustion efficiency, Incineration, Facilities management, Combustion chambers, Air pollution control equipment, Emissions, Air pollution monitor, Scrubbers, Stack gases, Filters, Guidelines, Handbooks, Waste characterization.

PB98-104029REB PC A03/MF A01
Safe Drinking Water Act, One Year Later. Success in Advancing Public Health Protection. Environmental Protection Agency, Washington, DC. Office of Water. Sep 97, 14p, EPA/810/F-97/002. See also PB96-203351. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The SDWA amendments emphasize comprehensive public health protection through regulatory improvements, increased funding, prevention programs, and public participation. The amendments improve the existing regulatory framework in two important ways. First, a new focus on risk-based priority-setting means that EPA will decide which contaminants to regulate based on data about the adverse health effects of the contaminant, its occurrence in public water systems, and the projected risk reduction. Second, states now have greater flexibility to implement the Act responsibly to meet their specific needs.

Keywords: *Safe Drinking Water Act, *Water quality standards, *Pollution regulations, Potable water, Water sources, Water pollution abatement, Public health, Standards compliance, Infrastructure, Arsenic, Micro-organism control(Water), Guidelines, State Revolving Fund.

PB98-104037REB PC A04/MF A01
State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water. Environmental Protection Agency, Washington, DC. Office of Water.

Aug 97, 46p, EPA/816/R-97/008. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

A review of Federal, State, and Local government methods to delineate surface water source water protection areas (SWPAs) in watersheds or basins, indicates the primarily three methods have been used. These methods are: topographic boundary delineation; setback/buffer zone delineation; and time-of-travel calculation. Modeling techniques have been used to enhance these three methods. A summary of these methods is presented in this report. Many of the methods, or approaches, described in this document can be used to delineate subunits of a surface water SWPA.

Keywords: *Water sources, *Surface waters, *Drinking water, *Water quality management, Potable water, Watershed management, Water pollution abatement, Environmental protection, States(United States), State programs, Watersheds, Topography, Boundaries, Buffers, Calculation methods.

PB98-104045REB PC A04/MF A01
Small System Compliance Technology List for the Surface Water Treatment Rule. Environmental Protection Agency, Washington, DC. Office of Water. Aug 97, 50p, EPA/815/R-97/002. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The document is essentially an annotated list of treatment technologies that can be used by small water systems to comply with the surface water treatment rule. The document describes the treatment technologies listed in the SWTR as well as those not listed.

Keywords: *Water systems, *Water quality standards, *Standards compliance, Water services, Water utilities, Potable water, Water treatment, Water pollution control equipment, Filtration, Membranes, Disinfection, Requirements, Regulations, Technology utilization, Safe Drinking Water Act, *Small systems, *Surface Water Treatment Rule, National Primary Drinking Water Regulations.

PB98-104060REB PC A04/MF A01
Combined Lists of Environmental Laboratories. Semiannual rept. Illinois State Environmental Protection Agency, Springfield. Div. of Labs. Jul 97, 37p, IEPA/LABS-97/020. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

Table of Contents:
Laboratories Certified for Chemical Analyses in Potable Water;
Laboratories Certified for Microbiological Analyses in Potable Water;
Commercial Laboratories;
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Illinois Laboratories Certified for Radiological Analyses in Potable Water;
Illinois Environmental Protection Agency Contract Laboratories;
Other Laboratories Desiring to Analyze Environmental Samples;
Laboratories That Conduct Chemical Analyses;
Laboratories That Conduct Biomonitoring Acute and Chronic Toxicity Tests;
Laboratories Available for Emergency Response Analyses;
and Companies and Consultants Offering On-Site Air Pollution Testing Services.

Keywords: *Illinois, *Laboratories, *Listings, Chemical analysis, Potable water, Drinking water, Microbiological techniques, Microbiological analysis, Radiochemical analysis, Radiometric analysis, Biologi-

cal monitoring, Toxicity, Air pollution sampling, Certification, Quality control, Contract Laboratory Program, Environmental sampling.

PB98-104193REB PC A04/MF A01
Experience in Incineration Applicable to Superfund Site Remediation.

Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information. C. A. Clemens. Dec 88, 40p, CERI-88-91, EPA/625/9-88/008.

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This document is intended for use as a reference tool for hazardous waste site remediation where incineration is a treatment alternative. Its purpose is to provide the user with a collection of information garnered from the experiences of those using incineration. The document presents: useful lessons applicable to the evaluation and selection process as it pertains to incineration; guidance for good operating practice; and information useful in the planning and initiation of remedies based on incineration technology. The data and information used in the preparation of this document were collected from personnel who have been involved in the selection and application of incineration techniques to hazardous waste disposal as well as from a comprehensive literature search.

Keywords: "Superfund," "Incineration," "Remediation," "Waste treatment, Hazardous materials, Incinerators, Decontamination, Heat treatment, Combustion chambers, Operation and maintenance, Emissions, Stack gases, Pollution control, Regulations, Waste characterization.

PB98-104201REB PC A10/MF A03
Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

In-Vessel Composting of Municipal Wastewater Sludge. Summary Report. Final rept. Jan 88-Sep 89. Camp, Dresser and McKee, Inc., Boston, MA.

J. Johnston, J. Donovan, A. Pincince, S. Richmond, H. Schult, L. Beyer, and C. Merrill. Sep 89, 200p, EPA/625/8-89/016.

Contracts EPA-68-03-3346, EPA-68-08-0014 Prepared in cooperation with Eastern Research Group, Inc., Arlington, MA. Sponsored by Environmental Protection Agency, Cincinnati, OH. Risk Reduction Engineering Lab.

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This report documents a survey of eight full-scale, operating in-vessel plants: Akron, OH (Paygro); Cape May County, NJ (Purac); Clayton County, GA (Taulman); Newberg, or (Ashbrook-Simon-Hartley); Plattsburgh, NY (Fairfield); Portland, or (Taulman); Sarasota, FL (Purac); and Schenectady, NY (American Bio Tech). This study confirmed that in-vessel composting is a total system comprised of several integrally related components: materials handling, reactors, an aeration system, exterior curing/storage facilities, an odor control system, and marketing of the compost product. Inadequate or improper design, management, operation, or maintenance of any of the components will seriously impact the total system, and most likely adversely affect the compost product. The major problems encountered at these facilities were not related to the reactor itself, but to the other components: materials handling and odor control.

Keywords: "Composting," "Municipal wastes," "Sludge disposal," "Land disposal, Sewage sludge, Water pollution plants, Waste water, Metals, Organic compounds, Pathogens, Odors, Bioreactors, Aeration, Project planning, Design criteria, Operation and maintenance, Case studies.

PB98-104631REB PC A09/MF A02
Nitrogen Oxides: Impacts on Public Health and the Environment.

Environmental Protection Agency, Washington, DC. Office of Air and Radiation.

D. Price, R. Birnbaum, R. Batiuk, D. Grano, M. McCullough, and R. Smith. Aug 97, 165p, EPA/452/R-97/002.

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The purpose of this document is to describe the multiple impacts on human health and welfare that result from emissions of nitrogen oxides (NOx). Emissions of NOx result in an unusually broad range of detrimental effects to human health and the environment. In addition, this document states EPA's intent to consider the multiple environmental impacts of NOx emissions when making policy decisions regarding regulation of NOx emissions.

Keywords: "Nitrogen oxides," "Public health," "Health effects," "Environmental impacts, Nitrogen dioxide, Nitrogen cycle, Air pollution effects, Emissions, Acid rain, Ozone, Photochemistry, Particulates, Visibility, Drinking water, Eutrophication, Global warming, Greenhouse effects, Ozone depletion, Terrestrial ecosystems, Air pollution sources, Air pollution control, Air pollution standards, Clean Air Act.

PB98-104706REB PC A03/MF A01
SAB Report: Review of the Sector Facility Indexing Project (SFIP).

Environmental Protection Agency, Washington, DC. Science Advisory Board.

Sep 97, 17p, EPA-SAB-EEC-97-012. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The subject of this EEC report is the Office of Enforcement and Compliance Assistance's (OECS) Sector Facility Indexing Project (SFIP). The SFIP incorporates the TRI emissions data and toxicity weighting factors (taken from the TRI Relative Risk-Based Environmental Indicators Project) in a system designed to generate an index which not only takes into account the reported quantities of the chemicals but also takes into account the chronic human health hazards associated with those chemicals, without considering exposure. The SAB was asked to examine the technical underpinnings of the use of toxicity weighting factors in the SFIP.

Keywords: "Toxicity," "Weighting functions," "Risk assessment," "Environmental exposure, Pollutants, Chemicals, Health hazards, Public health, Human health, Risk management, Emissions, Reviewing, "Sector Facility Indexing Project, TRI(Toxics Release Inventory), Hazard Ranking System, Risk indicators.

PB98-104714REB PC A04/MF A01
SAB Report: Review of the National Risk Management Research Laboratory (NRMRL).

Environmental Protection Agency, Washington, DC. Science Advisory Board.

Sep 97, 33p, EPA-SAB-EEC-97-011. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

At the request of the Office of Research and Development (ORD), the Environmental Engineering Committee (EEC) of the Science Advisory Board (SAB) conducted a review of the Agency's National Risk Management Research Laboratory's (NRMRL) program. The EEC's charge was to review NRMRL's strategic directions and approach to research within the context of both the 1995 realignment of ORD's organizational structure and its strategic plan.

Keywords: "Reviewing," "Research programs," "Program management, Laboratories, Research management, US EPA, Risk assessment, Environmental research, Research and development, Science and technology, Decision making, Peer review, "National Risk Management Research Laboratory.

PB98-104722REB PC A05/MF A01
SAB Report: Guidelines for Cancer Risk Assessment.

Environmental Protection Agency, Washington, DC. Science Advisory Board.

Sep 97, 58p, EPA-SAB-EHC-97-010. See also PB83-191262.

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EPA first issued cancer guidelines in 1986. In April 1996, new draft Guidelines were released. The Science Advisory Board's (SAB) Environmental Health Committee (EHC) was asked to review the proposed revisions, and met on February 13-14, 1997, in Washington, D.C. The Committee found the proposed Guidelines to be significant step forward in carcinogen risk assessment, and particularly commended the Agency for addressing the controversial aspects of the new Guidelines with a frank unbiased approach. The new Guidelines will cause risk assessors to place greater emphasis on the utilization of all the available scientific information in characterizing cancer risks. However, the Committee also identified areas in which improvement was possible.

Keywords: "Risk assessment," "Guidelines, Public health, Health hazards, Carcinogens, Carcinogenicity tests, Neoplasms, Human populations, Dose-response relationships, Statistical analysis, Data analysis, Information needs, "Cancer.

PB98-104730REB PC A03/MF A01
SAB Report: Evaluation of the Environmental Monitoring and Assessment Program (EMAP) Research Strategy and Research Plan.

Environmental Protection Agency, Washington, DC. Science Advisory Board.

Sep 97, 26p, EPA-SAB-EPEC-97-009. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The Ecological Processes and E1222s Committee (EPEC) of the Science Advisory Board (SAB) met on May 14, 1997 to review the Environmental Monitoring and Assessment Program (EMAP) Research Strategy and Research Plan. On the one hand, there was serious concern based on presentations made to EPEC that many of the advances made in EMAP's initial phase on important issues like development of ecological indicators and the implementation of pilot studies were being lost in the transition to Phase 2. On the other hand, the Committee was impressed with the excellent advances in the state-of-the-science that have been made in several areas, despite the recent period of institutional turmoil. In particular, the Committee applauds advances by EMAP in the critical area of landscape characterization.

Keywords: "Program management," "Research management," "Planning, Research programs, Land use, Landscapes, Ecosystems, Natural resources management, Strategies, "Environmental Monitoring and Assessment Program, Ecological integrity.

PB98-104748REB PC A06/MF A01
SAB Report: Review of the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).

Environmental Protection Agency, Washington, DC. Radiation Advisory Committee.

Sep 97, 79p, EPA/SAB/RAC-97/008. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The report addresses the charge and elaborates upon significant issues related to technical aspects of MARSSIM. In particular, this report focuses on specific technical issues that the Subcommittee felt would be most likely to require the attention of the Multi-Agency workgroup in order to provide the most comprehensive and technically-supportable basis for the manual.

EPA PUBLICATIONS BIBLIOGRAPHY

Keywords: "Radiation monitoring, "Site investigations, "Radiometric surveys, "Manuals, Radiation doses, Risk assessment, Data acquisition, Data analysis, Data quality, Information dissemination, Planning, Reviewing, Interagency cooperation, MARSSIM(Multi-Agency Radiation Survey and Site Investigation Manual).

PB98-104763REB PC A02/MF A01
Advisory on the Need to Develop Ecological Risk Management Guidelines.
Environmental Protection Agency, Washington, DC. Science Advisory Board.
30 Sep 97, 10p, EPA-SAB-EPEC-ADV-97-002.
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The Ecological Processes and Effects Committee (EPEC) of the Science Advisory Board met on July 22, 1997 in part to discuss with Agency staff approaches and key issues for future Agency guidelines on ecological risk management. The Committee's advice on how to move forward in developing ecological risk management guidance for the Agency is contained in this SAB Advisory.

Keywords: "Risk assessment, "Environmental policy, "Government policies, US EPA, Ecology, Ecosystems, Environmental monitoring, Guidelines, "Ecological risk management.

PB98-104771REB PC A03/MF A01
Advisory on the Development of Phase 2 of the Index of Watershed Indicators.
Environmental Protection Agency, Washington, DC. Science Advisory Board.
30 Sep 97, 14p, EPA-SAB-EPEC-ADV-97-003.
Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The Ecological Processes and Effects Committee of the Science Advisory Board met to review and provide comments on the National Watershed Assessment Project (NWAP), recently renamed the Index of Watershed Indicators (IWI), being developed by the Office of Water. The purpose of IWI is to provide available data in a Geographic Information System (GIS) format to interested parties, including state and tribal governments and members of the public, for assessing the condition and vulnerability of watersheds. This letter contains the Committee's overall comments on IWI, as well as responses to the five specific questions contained in the Charge.

Keywords: "Water resources, "Mapping, Watershed management, Water pollution abatement, Water quality management, Data collection, Data processing, Data analysis, Data management, Geographic information systems, Environmental impact assessments, Information dissemination, "Index of Watershed Indicators.

PB98-105190REB PC A08/MF A02
Study of Volatile Organic Compound Emissions from Consumer and Commercial Products. Volume 6. Aerosol Products and Packaging Systems. Report to Congress.
Environmental Protection Agency, Research Triangle Park, NC. Emission Standards Div.
Mar 95, 138p, EPA/453/R-94/066F.
See also PB98-105208.
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Table of Contents:

Introduction;
Aerosol System Components;
Characterization of the Aerosol Industry;
Alternative Dispensing Technologies;
Characteristics of Selected Aerosol Products;
(Personal Care Products);

Household Products;
Automotive/Industrial Products;
Paints, Primers, and Varnishes;
Insect Sprays;
Food Products;
Animal Products;
and Miscellaneous Products);
and Conclusions.

Keywords: "Consumer products, "Emissions, Clean Air Act, Aerosols, Packaging, Ozone, Photochemistry, Atomizing, Spraying, Propellants, Fluorocarbons, Valves, Containers, Automotive components, Paints, Insecticides, Food stuffs, Industry, Alternatives, Utilization, "Volatile organic compounds, "Commercial products, Personal care products, Households products.

PB98-105208REB PC A10/MF A02
Study of Volatile Organic Compound Emissions from Consumer and Commercial Products. Report to Congress.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Mar 95, 178p, EPA/453/R-94/066A.
See also PB98-105224.
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The purpose of this report is to respond to the Clean Air Act (Act) requirement to report to the Congress on consumer and commercial products as contributors to ozone nonattainment. The objectives of the study are (1) to determine the potential of consumer and commercial product VOC emissions to contribute to ozone levels which violate the national ambient air quality standard (NAAQS) for ozone; and (2) establish criteria for regulating consumer and commercial products or classes or categories of products under the authority of section 183(e) of the Act. EPA consulted with consumer product manufacturers and other interested parties to determine which products would be the most amenable to an expedited regulation that could achieve significant VOC emission reductions without serious adverse effects on consumer satisfaction or price of the products. The industry identified a group of 24 consumer products that meet these criteria.

Keywords: "Consumer products, "Emissions, Ozone, Photochemistry, Chemical reactivity, Regulations, Clean Air Act, Incentives, Landfills, Waste water, Aerosols, Packaging, Plastics, Paints, Coatings, Solvents, "Volatile organic compounds, "Commercial products, Environmental fate, Personal care products, Household products.

PB98-105224REB PC A10/MF A02
Study of Volatile Organic Compound Emissions from Consumer and Commercial Products. Volume 2. Comprehensive Emissions Inventory. Report to Congress.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
Mar 95, 190p, EPA/453/R-94/066B.
Portions of this document are not fully legible. See also PB98-105190.
Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The primary purpose of the study and report to Congress is to educate the EPA and Congress on consumer and commercial products as contributors to ozone nonattainment and to identify opportunities for reduction of VOC emissions from the use of these products. In addition, some information obtained from the EPA studies was used to establish criteria for regulation of consumer and commercial products and utilized during the process of exercising the criteria to develop the regulatory agenda. The purpose of the inventory effort was to develop estimates of annual VOC emissions in ozone nonattainment areas for every consumer and commercial product category subject to section 183(e). These estimates, along with other information, were used to develop a prioritized list of categories to be regulated as required by section 183(e).

Keywords: "Consumer products, "Emissions, Clean Air Act, Environmental surveys, Air pollution sources,

Emission factors, Waste water, Landfills, Coating processes, Solvents, Printing, Adhesives, Construction materials, Combustion products, Tobacco smokes, Cooking, Food, Mold release agents, Ozone, Photochemistry, "Volatile organic compounds, "Emission inventories, "Commercial products, Environmental fate.

PB98-105422REB PC A05/MF A01
Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
Analyzing Nonpoint Source Water Pollution Problems: Nutrient Control Policies in the Chesapeake Bay States.
Maryland Univ., College Park. Inst. for Governmental Service.
P. Favero. Oct 97, 74p, CBP/TRS-187/97, EPA/903/R-97/028.
Sponsored by Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This paper is intended for people who make public decisions about the bay and about other environmental resources—both interested citizens and public officials. It provides a nonmathematical, institutional model for investigating nonpoint source water pollution issues—beginning with a set of ideas for how to analyze the issue—to judgements about the value of policies and programs designed to solve the problem. After an explanation of nonpoint source issues, a definition of the model, and an examination of research methods, the model is used in chapters 2 through 4 to guide analyses of nonpoint source policies in Virginia, Pennsylvania, and Maryland. This discussion, in Chapter 5, offers suggestions for researchers and public policy makers about how to analyze nonpoint source water pollution issues.

Keywords: "Water pollution control, "Nonpoint sources, "State government, "Government policies, "Nutrients, "Chesapeake Bay, Water pollution sources, Environmental policy, Environmental issues, Regulations, Case studies, Maryland, Pennsylvania, Virginia, Washington DC.

PB98-105562REB PC A12/MF A03
Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
Screening Level Probabilistic Ecological Risk Assessment of Copper and Cadmium in the Chesapeake Bay Watershed. Final report.
Maryland Univ., Queenstown. Wye Research and Education Center.
L. W. Hall, M. C. Scott, and W. D. Killen. Sep 97, 228p.
Grant EPA-CB993438010
Sponsored by Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.
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The goal of this study was to conduct a screening level probabilistic ecological risk assessment for copper and cadmium in the Chesapeake Bay watershed by using problem formulation, analysis, and risk characterization. This probabilistic ecological risk assessment characterized risk by comparing the probability distributions of environmental exposure concentrations with the probability distributions of species response data determined from laboratory studies. The overlap of these distributions was a measure of risk to aquatic life. Comparative risk from copper and cadmium exposure was determined for various basins in the Chesapeake Bay watershed.

Keywords: "Copper, "Cadmium, "Chesapeake Bay, "Water pollution monitoring, Water pollution sources, Nonpoint sources, Metals, Ecological concentrations, Aquatic ecosystems, Screening, Sensitivity analysis, Probability distribution functions, Watersheds, Fish, Benthos, Zooplankton, Trophic level, Toxicity, Exposure, Salt water, Fresh water, Water pollution effects (Animals), Potomac River, Statistical analysis, "Ecological risk assessment, Environmental stressors.

EPA PUBLICATIONS BIBLIOGRAPHY

PB98-106412REB PC A08/MF A02
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
Evaluation of Barriers to the Use of Radiation Cured Coatings in Wide-Web Flexographic Printing. Final rept. Jan-Jun 95.
TRC Environmental Corp., Chapel Hill, NC.
J. B. Vitas, C. J. Harris, and W. O. Blake. Oct 97, 140p, EPA/600/R-97/113.
Contract EPA-68-D2-0181
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
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The report gives results of a study to investigate and identify the technical, economic, and educational barriers to the use and implementation of radiation-curable coatings (primarily ultraviolet (UV curable inks) in the wide-web flexographic printing industry. (NOTE: In support of the Source Reduction Review Project (SRRP), maximum achievable control technology (MACT) standards development, and the Pollution Prevention Act (PPA) Air Pollution Prevention and Control Division (APPCD) is investigating the current industrial use and barriers to the extended use of radiation-cured coatings in SRRP AND MACT categories.)

Keywords: "Ultraviolet radiation, "Printing inks, "Air pollution control, "Curing, Coatings, Pollution prevention, Barriers, Hazardous materials, Flexography, MACT(Maximum Achievable Control Technology), Maximum Achievable Control Technology.

PB98-106420REB PC A07/MF A02
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
Estimates of Global Greenhouse Gas Emissions from Industrial and Domestic Wastewater Treatment. Final rept. Sep 94-Mar 97.
Pechan (E.H.) and Associates, Inc., Durham, NC.
M. R. J. Doorn, R. P. Strait, W. R. Barnard, and B. Eklund. Sep 97, 107p, EPA/600/R-97/091.
Contract EPA-68-D4-0100
Prepared in cooperation with Radian International LLC, Austin, TX. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
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The report summarizes the findings of field tests and provides emission factors for methane (CH₄) and nitrous oxide (N₂O) from wastewater treatment (WWT). It also includes country-specific activity data on industrial and domestic WWT which were used to develop country-specific emission estimates for CH₄ and N₂O. The report concludes that WWT is unlikely to be a significant source of volatile organic carbon and carbon dioxide emissions. The biggest contributor to industrial CH₄ emissions from WWT is the pulp and paper industry in developing and Eastern European countries. The second principal contributor to CH₄ emissions from WWT is the meat and poultry industry. Russia is believed to be the largest contributor. CH₄ emissions from untreated domestic wastewater may be many times higher than those of treated wastewater. The report provides rough estimates for global N₂O emissions from WWT.

Keywords: "Greenhouse gases, "Emissions, "Industrial waste treatment, "Domestic wastes, "Waste water treatment, "Air pollution sources, "Global, Methane, Nitrous oxide, Carbon dioxide, Paper industry, Paper mills, Pulp mills, Poultry processing industry, Poultry products, Foreign countries, Developing countries, Volatile organic compounds.

PB98-106446REB PC A09/MF A02
National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
Bioremediation of BTEX, Naphthalene, and Phenanthrene in Aquifer Material Using Mixed Oxygen/Nitrate Electron Acceptor Conditions.
Johns Hopkins Univ., Baltimore, MD. Dept. of Geography and Environmental Engineering.

L. P. Wilson, P. C. D'Adamo, and E. J. Bouwer. Oct 97, 152p, EPA/600/R-97/120.
Grant EPA-R-821907
Sponsored by National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The primary goal of this research is to further our understanding of the effect of mixed oxygen/nitrate electron acceptor conditions on the biodegradation of benzene, toluene, ethylbenzene, m-xylene, naphthalene, and phenanthrene. Specific objectives include: (1) identify subsurface microbial cultures with the ability to biodegrade aromatic hydrocarbons under aerobic and anaerobic denitrifying conditions; (2) quantify the stoichiometry and kinetics of biodegradation of aromatic hydrocarbons under aerobic, anaerobic denitrifying and microaerophilic conditions; and, (3) simulate various field bioremediation schemes using different nutrient/electron acceptor delivery schemes.

Keywords: "Nitrates, "Oxygens, "Electron acceptors, "Water pollution control, "Aquifers, Naphthalene, Phenanthrene, Petroleum products, Aromatic hydrocarbons, Ground water, Biodegradation, Nutrients, Microorganisms, Biochemical reaction kinetics, Sediments, In situ processing, Bioremediation, BTEX(Benzene Toluene Ethylbenzene Xylene).

PB98-106479REB PC A03/MF A01
Environmental Protection Agency, Washington, DC. Office of Water.
Standard Method of Test for Gamma Spectrometry of Water. ASTM-D-2459-72. Book chapter.
American Society for Testing and Materials, Philadelphia, PA.
1973, 11p.
Pub. in 1973 Annual Book of ASTM Standards, Part 23. Water: Atmospheric Analysis, p576-584. Sponsored by Environmental Protection Agency, Washington, DC. Office of Water.
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This method covers the measurement by means of gamma spectrometry of gamma radioactivity of water. It is applicable to nuclides emitting gamma rays with energies greater than 0.1 MeV. The method can be used for either absolute or relative determinations. In addition to the quantitative measurement of gamma radioactivity, gamma spectrometry can be used for the identification of specific gamma emitters in a mixture of radionuclides.

Keywords: "Gamma spectroscopy, "Water analysis, "Test methods, "Standards, Gamma radiation, Radioisotopes, Gamma spectra, Emission spectra, Emission spectroscopy, Gamma emission, Gamma ray spectrometers, Water sampling, Radioassay, Quantitative analysis, Counting rates, Semiconductor detectors, Pulse height analyzers, Calibration, Procedures, Multichannel analyzers.

PB98-106487REB PC A04/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
Field Performance of Woodburning Stoves in Colorado during the 1995-96 Heating Season. Final rept. Dec 95-Apr 96.
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Mechanical Engineering.
R. Correll, D. R. Jaasma, and Y. Mukkamala. Oct 97, 48p, EPA/600/R-97/112.
Grant EPA-R-819599-01-1
See also PB94-190915 and PB94-161270. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
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The report gives results of evaluations of the field performance of 13 EPA-certified woodburning stoves in Crested Butte and Curecanti National Park, CO, during the winter of 1995-96. Measurements included particulate matter (PM), carbon monoxide (CO), and weekly average burn rates. Six non-catalytic Phase II stoves, six catalytic Phase II stoves, and one catalytic Phase I stove were monitored. The study adds to the existing database on the field emissions of newer and older certified stoves. The report compares values with results from previous studies and suggests reasons that field performance is poor relative to what might be expected from certification test results.

Keywords: "Wood burning appliances, "Stoves, "Air pollution sampling, Exhaust emissions, Emission factors, Burning rate, Combustion efficiency, Carbon monoxide, Hydrocarbons, Combustion products, Particulates, Heating, Residential building, Performance evaluation, Air pollution monitoring, Air pollution control, Field tests, Colorado, Crested Butte(Colorado), Curecanti National Park.

PB98-106495REB PC A12/MF A03
National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
NAPL: Simulator Documentation. Research rept. Oct 92-Sep 95.
Vermont Univ., Burlington. Research Center for Groundwater Remediation Design.
J. Guarnaccia, G. Pinder, and M. Fishman. Oct 97, 238p, EPA/600/R-97/102.
Contract EPA-R-820499
Sponsored by National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
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A mathematical and numerical model is developed to simulate the transport and fate of NAPLs in near-surface granular soils. The resulting three-dimensional, three phase simulator is called NAPL. The simulator accommodates three mobile phases: water, NAPL and gas, as well as water- and gas-phase transport of NAPL contaminants. The numerical solution algorithm is based on a Hermite collocation finite element discretization. Particular attention has been paid to the development of a sub-model that describes three-phase hysteretic permeability-saturation-pressure (k-S-P) relationships, and that considers the potential entrapment of any fluid when it is displaced. In addition rate-limited dissolution and volatilization mass transfer models have been included. The overall model has been tested for self-consistency using mass balance and temporal and spatial convergence analysis. The hysteretic k-S-P and mass exchange models have been tested against experimental results. Several example data sets are provided.

Keywords: "Groundwater movement, "Environmental transport, "Two phase flow, Base flow, Hydrologic models, Three-dimensional models, Vapor phases, Liquid phases, Volatilization, Dissolution, Permeability, Porous media, Biodegradation, Hysteresis, Water pollution, Mathematical models, "NAPL(Nonaqueous Phase Liquids), "Nonaqueous phase liquids, Environmental fate.

PB98-106610REB PC A04/MF A01
Pesticide Registration (PR) Notice 97-3. Notice to Manufacturers, Formulators, Producers and Registrants of Pesticide Products. Guidelines for Expedited Review of Conventional Pesticides under the Reduced-Risk Initiative and for Biological Pesticides.
Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.
4 Sep 97, 32p, EPA/730/N-97/004.
See also PB97-193213.
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The Federal Insecticide, Fungicide, and Rodenticide Act (FIRFA) as amended by the Food Quality Protection Act of 1996 (FQPA) requires the Environmental

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Protection Agency (EPA) to develop procedures and guidelines for expedited review of any pesticide. EPA has already established a Reduced Risk Initiative for conventional pesticides, has formed the Biopesticides and Pollution Prevention Division to review biological pesticides and has established the Antimicrobial Division to review antimicrobial pesticides. The purpose of this PR Notice is to provide the process and criteria to guide applicants in developing their submissions to these programs. It defines the types of pesticide products reviewed by the Biopesticides and Pollution Prevention Division and describes how an applicant can apply for biochemical pesticide classification.

Keywords: "Biocides, "Pesticides, "Risk management, "Guidelines, Insecticides, Fungicides, Repellents, Biochemistry, Biocontrol, Biological pest control, Registration, Reviewing, Classifications, FIFRA(Federal Insecticide Fungicide and Rodenticide Act), Pollution prevention.

PB98-107618REB PC A14/MF A03
Volunteer Lake Monitoring Program 1996. Volume 1. Statewide Summary Report. Annual rept.
Illinois State Environmental Protection Agency, Springfield. Bureau of Water.
R. A. Buhmester. Sep 97, 298p, IEPA/BOW/97-018.
Prepared in cooperation with Northeastern Illinois Planning Commission, Chicago., Southwestern Illinois Metropolitan and Regional Planning Commission, Collinsville, and Greater Egypt Regional Planning and Development Commission, Carbondale, IL.
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Table of Contents:
Background;
Methods;
Results and Discussion;
Laboratory Analysis;
Zebra Mussel Monitoring;
Transparency Variability and 1996 Individual Lake Sheets.

Keywords: "Illinois, "Lakes, "Water quality data, "Water pollution monitoring, Sampling, Transparency, Secchi disks, Turbidity, Color, Nitrates, Nitrites, Nutrients, Chlorophyll, Aquatic plants, Suspended sediments, Water chemistry, Water temperature, Organic carbon, State programs, Tables(Data), Zebra mussels.

PB98-108616REB PC A04/MF A01
Transmittal of Guidance on the Use of Section 7003 of RCRA. Final rept.
Environmental Protection Agency, Washington, DC. Office of Site Remediation Enforcement.
S. Herman, L. Bulatao, and M. Andrews. 20 Oct 97, 48p.
Supersedes PB91-140129.
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The new guidance addresses the meaning of 'imminent and substantial endangerment', the legal requirements for initiating administrative and judicial actions under Section 7003, case screening factors, enforcement against violators of orders issued under Section 7003, and the relationship of Section 7003 to other authorities that allow EPA to address potential endangerment and to respond to the release of materials that may harm health or the environment.

Keywords: "Optimization, Convex functions, Linear programming, Quadratic programming, Trajectories, "SUMT(Sequential Unconstrained Minimization Technique), "Sequential Unconstrained Minimization Technique, "Convex programming, Interior point method, Logarithmic barrier functions, Primal-dual method, Degeneracy.

PB98-108624REB PC A05/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
Powder Coat Applications. Final rept. Dec 95-Dec 96.
Concurrent Technologies Corp., Johnstown, PA.

M. J. Docherty, and F. J. Mulkey. Sep 97, 66p, EPA/600/R-97/101.
Contract DOD-DAAA-21-93-C-0046
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div. and National Defense Center for Environmental Excellence, Johnstown, PA.
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Current pavement design procedures are based principally on empirical approaches. The current trends toward developing more mechanistic-empirical type pavement design methods led Minnesota to develop the Minnesota Road Research Project (Mn/ROAD), a long-term pavement testing facility. The project consists of 40 heavily instrumented test sections, 14 of which are jointed plain concrete (JPC) designs. Mn/ROAD researchers determine the predicted lives of the concrete test sections by applying design and as-built data to three currently accepted concrete pavement design methods: Minnesota Department of Transportation's rigid pavement design guidelines, AASHTO Guide for Design of Pavement Structures 1993, and the PCA Thickness for Concrete Highway and Street Pavements (1984). The analysis began with determining the applicable as-built parameter values for each respective design method. Applying the as-built parameters to the three methods resulted in widely varied predictions of pavement life. For the 193 AASHTO design method, reliability levels of 50 percent and 95 percent were applied for comparison. An experimental procedure for converting PCA method fatigue and erosion results to AASHTO type CESALS demonstrated unsuitability. Validation of the predictions presented will occur as the test cells reach their terminal serviceability.

Keywords: "Concrete pavements, "Test facilities, "Highway design, Pavement bases, Sub grades, Concrete durability, Computer programs, Stress analysis, Predictions, Performance evaluation.

PB98-108863REB PC A07/MF A02
National Emission Standards for Halogenated Solvent Cleaning: Summary of Requirements for Implementing the NESHAP.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Sep 97, 124p, EPA/456/R-96/005.
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This document focuses on inspection of affected halogenated solvent cleaning machines and provides tools for ensuring compliance with the standard. It is intended to educate and provide guidance to EPA regional, state, and local agency personnel, who will be responsible for implementing and enforcing many of the provisions of this standard through inspections. This document does not exhaustively dissect and discuss the rule, but refers the reader to places where background information is already available.

Keywords: "Air pollution control, "Organic halogen compounds, "Organic solvents, "Machinery, Cleaning agents, Cleaners, Carbon tetrachloride, Chloroform, Tetrachloroethylene, Trichloroethanes, Methylene chloride, Trichloroethylene, Implementation, Requirements, Inspection, Equipment specifications, Standards compliance, Pollution regulations, Air pollution sources, Cold cleaning, Vapor solvent cleaning, NESHAP(National Emission Standards for Hazardous Air Pollutants), National Emission Standards for Hazardous Air Pollutants.

PB98-109150REB PC A20/MF A04
National Specialty Workshop on Technical Tools for Air Toxics Assessment. Held in Research Triangle Park, North Carolina on June 17-20, 1997.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Sep 97, 436p, EPA/454/R-97/010.
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customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The National Specialty Workshop Technical Tools for Air Toxics Assessment was held on June 17-29, 1997 at EPA's Administration Auditorium Research Triangle Park, North Carolina. The purpose of the workshop was to provide participants with an opportunity to learn about a variety of technical tools that are needed for air toxics assessment and provide an opportunity for Regional, State and local agency personnel to voice their opinions and define their needs as they relate to these tools. This report describes the preparation for the workshop, provides a summary of the presentation, and outlines the recommendations received from the participants. The first day devoted half-day sessions to Elements of the OAQPS Air Toxics Program and Ambient Air Toxics Monitoring and Data Analysis. Half-day sessions on June 18 were devoted to Air Toxics Emissions Inventories and Dispersion Modeling. On June 19 sessions were devoted to Exposure Assessment, Case Histories of Multi-Pathway Modeling, and Education and Outreach. On the final day of the workshop, June 20, two hands-on computer training sessions were provided on the use of dispersion models and emission estimation tools.

Keywords: "Air pollution monitoring, "Toxic substances, "Diffusion modeling, "Data analysis, "Meetings, Air pollution sampling, Air pollution dispersion, Mercury(Metal), Polycyclic aromatic hydrocarbons, Dioxins, Particulates, Air pollution effects, Risk assessment, Environmental exposure, Emission inventories, Volatile organic compounds.

PB98-109366REB PC A06/MF A01
Environmental Protection Agency, Washington, DC.
Northwest Forest Plan Research Database. Users Guide.
Forest Service, Washington, DC.
Nov 97, 76p, EPA/600/R-97/096.
Sponsored by Environmental Protection Agency, Washington, DC.
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The Forest Research Database, which contains information pertinent to the Northwest (President's) Forest Plan and other ecological issues in the Pacific Northwest and northern California, was created under a contract to the U.S. Environmental Protection Agency in Corvallis, OR for the interagency Regional Ecosystem office (REO) in Portland, OR. Database design and strategies for obtaining data to populate the database were coordinated by the REO Research and Monitoring Committee. The database was created both to obtain an overview of ongoing and planned research in the region from which to develop an interagency research plan to support the Forest Plan, and also as a vehicle to facilitate communication and cooperative efforts among researchers through distribution of the database on computer disk to participating researchers and other interested parties. The database contains project descriptions of research projects supporting ecosystem management on both forested and non-forested lands in the region.

Keywords: "Forestry, "Research projects, "Data bases, "Users manuals, Computer programs, Washington State, Oregon, California, Surveys.

PB98-109648REB PC A10/MF A02
Study of Volatile Organic Compound Emissions from Consumer and Commercial Products. Economic Incentives to Reduce VOC Emissions from Consumer and Commercial Products.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Mar 95, 180p, EPA/453/R-94/066E.
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The report presents a preliminary assessment of the feasibility and desirability of employing Federal eco-

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conomic incentive programs to reduce volatile organic compound (VOC) emissions from the use of consumer and commercial products. The principal tasks of the study are to examine alternative economic incentives and to compare them to a hypothetical command-and-control program, VOC content standards, which would consist of product-specific limitations on maximum VOC content (grams of VOC per unit of product). It is the basis of comparison because the ultimate purpose of this investigation is to search for the most desirable instrument in the set of potential instruments, which obviously would include instruments based on command-and-control. The purposes of comparison are to determine how well the instruments accomplish certain policy objectives and to appraise their ability to cope with the complexities inherent in the task of environmental regulation.

Keywords: *Consumer products, *Incentives, *Cost benefit analysis, Emissions, Air pollution abatement, Regulations, Requirements, Air pollution sources, Economic analysis, Fees, Permits, Economic impact, Program management, Monitoring, Comparisons, Technology innovation, *Volatile organic compounds, *Commercial products, Household products.

PB98-110125REB PC A05/MF A01
Hospital/Medical/Infectious Waste Incinerators: Background Information for Promulgated Standards and Guidelines. Analysis of Economic Impacts for New Sources.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Jul 97, 54p, EPA/453/R-97/008B.
See also PB97-199822.
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The economic impact analysis uses annualized control costs in conjunction with economic and financial parameters to estimate potential economic impacts that may be experienced by existing facilities in industries that generate hospital waste or medical/infectious waste. Economic impacts such as price, output, and employment changes are examined for industries such as hospitals, nursing homes, and veterinary facilities.

Keywords: *Medical waste disposal, *Incinerators, *Pollution regulations, *Air pollution control, *Economic impact, Incineration, Air pollution economics, Air pollution standards, Requirements, Standards compliance, Facilities management, Operation and maintenance, Solid waste disposal, Alternatives, Cost analysis, Market analysis, Employment, Prices, Infectious wastes, Hospital wastes.

PB98-110133REB PC A05/MF A01
Hospital/Medical/Infectious Waste Incinerators: Background Information for Promulgated Standards and Guidelines. Analysis of Economic Impacts for Existing Sources. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Jul 97, 54p, EPA/453/R-97/007B.
See also PB97-199822 and PB98-110141.
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The economic impact analysis uses annualized control costs in conjunction with economic and financial parameters to estimate potential economic impacts that may be experienced by existing facilities in industries that generate hospital waste or medical/infectious waste. Economic impacts such as price, output, and employment changes are examined for industries such as hospitals, nursing homes, and veterinary facilities.

Keywords: *Medical waste disposal, *Incinerators, *Pollution regulations, *Air pollution control, *Economic impact, Incineration, Air pollution economics, Air pollution standards, Requirements, Standards compliance, Facilities management, Operation and maintenance, Solid waste disposal, Alternatives, Cost analysis, Market analysis, Employment, Prices, Existing sources, Hospital wastes, Infectious wastes.

PB98-110141REB PC A06/MF A01
Hospital/Medical/Infectious Waste Incinerators: Background Information for Promulgated Standards and Guidelines. Regulatory Impact Analysis for New and Existing Facilities. Final rept.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Jul 97, 82p, EPA/453/R-97/009B.
See also PB97-199822 and PB98-110133.
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The Regulatory Impact Analysis attempted to compare the costs to the benefits expected from the implementation of standards and guidelines. The cost and economic impact discussion refers to two 'Analysis of Economic Impacts' reports (EPA-453/R-97-007b) (PB98-110133) and (EPA-453/R-97-008b) (PB98-110125). A qualitative discussion of relevant benefit categories is presented. Due to lack of data regarding the benefits associated with reducing specific pollutants, only a few benefit categories were quantified.

Keywords: *Medical waste disposal, *Incinerators, *Air pollution control, Incineration, Combustion, Emissions, Solid waste disposal, Air pollution standards, Standards compliance, Pollution regulations, Requirements, Law enforcement, Environmental impacts, Air pollution economics, Cost benefit analysis, Cost effectiveness, Economic impact, *Regulatory impact analysis, Hospital wastes, Infectious wastes, New Source Performance Standards.

PB98-110299REB PC A09/MF A02
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab. Czech Air Quality Monitoring and Receptor Modeling Study.
ManTech Environmental Technology, Inc., Research Triangle Park, NC.
R. K. Stevens, J. P. Pinto, C. R. Shoaf, P. Preuss, R. D. Willis, Y. Mamane, J. Novak, J. Santroch, T. A. Hartlage, and J. Metcalfe. Aug 97, 158p, EPA/600/R-97/084.
Contracts EPA-68-D0-0106, EPA-68-D5-0049
Prepared in cooperation with Technion - Israel Inst. of Tech., Haifa., Ceskoslovenska Akademie Ved, Prague. Hydrometeorological Inst. and Czech Inst. of Hygiene, Teplice. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
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Air pollution measurements in the Czech Republic from 1992 through 1994 provided data on ambient concentrations of sulfur dioxide, polynuclear aromatic hydrocarbons, fine and coarse particle mass, and elemental composition. The primary monitoring sites were located in Teplice in northwestern Bohemia and Prachatic in southern Bohemia. Emissions from power plants, residential space heating, local factories, and motor vehicles were also collected and characterized. The ambient and source data were then used in receptor modeling calculations, which indicated that home heating and power plant emissions were responsible for up to 80% of fine particle mass concentrations observed during winter inversion episodes. The measurements made in Teplice were used to assess the impact of air pollution on health effects and to assist in the design of an epidemiological study for the region.

Keywords: *Czech Republic, *Air pollution monitoring, *Exhaust emissions, *Ecological concentration, Air pollution monitoring, Sulfur dioxide, Polycyclic aromatic hydrocarbons, Particulates, Aerosols, Air pollution sources, Space heating, Power plants, Motor vehicles, Industrial plants, Health hazards, Teplice(Bohemia), Prachatic(Bohemia).

PB98-110521REB PC A04/MF A01
Economic Impact Analysis for the Proposed Polyether Polyols NESHAP.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. May 97, 48p, EPA/453/R-97/013.

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An economic analysis of the industries affected by the Polyether Polyols National Emissions Standards from Hazardous Air Pollutants (NESHAP) was completed in support of this proposed standard. Manufacture of polyether polyols is a precursor to the production of various plastics, most notably polyurethanes. The facilities in this industry must control various hazardous air pollutant emissions by the level of control required in the standard. Control costs as a percentage of sales revenues were computed to estimate the economic impact of the regulation to the affected facilities and companies owning these facilities.

Keywords: *Air pollution control, *Plastics industry, *Economic impact, *Cost control, Air pollution economics, Air pollution standards, Standards compliance, Emissions control, Polyurethanes, Urethanes, Facilities management, Operation and maintenance, Industrial plants, Manufacturing, Industrial production, Economic analysis, Sales, Market analysis, *Polyether polyols, NESHAP(National Emission Standards for Hazardous Air Pollutants), National Emission Standards for Hazardous Air Pollutants.

PB98-111677REB PC A05/MF A01
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div. Field Methods to Measure Contaminant Removal Effectiveness of Gas-Phase Air Filtration Equipment; Phase 1. Search of Literature and Prior Art. Final rept. May 95-Jun 96.
Filtratech Consulting, Rancho Palos Verdes, CA.
R. T. Liu. Sep 97, 58p, EPA/600/R-97/092.
Contract EPA-R-823633-01-1
Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
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The report, Phase 1 of a two-phase research project, gives results of a literature search into the effectiveness of in-field gas-phase air filtration equipment (GPAFE) test methods, including required instrumentation and costs. GPAFE has been used in heating, ventilation, and air-conditioning (HVAC) systems for many years. Because of the emphasis on good indoor air quality (IAQ), GPAFE is being used more and more to control indoor gaseous and vaporous contaminants that are known or suspected to affect human health and comfort.

Keywords: *Air filters, *Gases, *Indoors air quality, Space HVAC systems, Air pollution monitoring, Ventilation systems, Heating equipment, Air conditioners, Health hazards, Comfort, Odors, Vapors, GPAFE(Gas-Phase Air Filtration Equipment).

PB98-111685REB PC A21/MF A04
Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div. Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances (October 1997). Final rept. Oct 94-Oct 96.
Radian Corp., Austin, TX.
B. Eklund, P. Thompson, A. Inglis, S. Roe, W. Wheelless, and W. Horton. Oct 97, 464p, EPA/600/R-97/116.
Contracts EPA-68-D2-0160, EPA-68-D3-0035
Supersedes PB92-212976. Prepared in cooperation with Pechan (E.H.) and Associates, Inc., Rancho Cordova, CA. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Air Pollution Prevention and Control Div.
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The report updates a 1992 report that summarizes available information on air emissions from the treat-

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ment of soils contaminated with fuels. Limited information also is included on air emissions from the treatment of soils contaminated with hazardous wastes. Seven general remediation approaches are addressed in this report. For each approach, information is presented about the remediation process, the typical air emission species of concern and their release points, and the available air emissions data. Control technologies for each remediation approach are identified, and their reported efficiencies are summarized. Cost data are given for each remediation approach and for its associated control technologies. Emission estimation methods (EEMs) for each remediation approach are presented along with a brief case study.

Keywords: "Soil treatment, "Oil pollution, "Emission factors, "Petroleum products, Land pollution control, Soil contamination, Fuels, Gasoline, Volatility, Soil gases, Estimating, Biodegradation, Excavation, Incineration, Remediation, Cost effectiveness, "Volatile organic compounds, "Cleanup, Thermal desorption, Soil vapor extraction, Soil washing.

PB98-111701REB PC A07/MF A02
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. **Air Emissions from Scrap Tire Combustion.** Final rept. Oct 96-Sep 97.

Pechan (E.H.) and Associates, Inc., Rancho Cordova, CA.

J. I. Reisman. Oct 97, 115p, EPA/600/R-97/115.

Contract EPA-68-D3-0035

Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.

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The report discusses air emissions from two types of scrap tire combustion: uncontrolled and controlled. Open tire fires are discussed. Data from a laboratory test program on uncontrolled burning of tire pieces and ambient monitoring at open tire fires are presented and the emissions are characterized. Mutagenic emission data from open burning of scrap tires are compared to mutagenic data for other fuels from both controlled and uncontrolled combustion. A list of 34 target compounds representing the highest potential for health impacts from open tire fires is presented. The list can be used to design an air monitoring plan to evaluate health risk potential.

Keywords: "Tires fires, "Air pollution monitoring, Incinerators, Kilns, Boilers, Tire materials, Combustion efficiency, Combustion kinetics, Combustion chemistry, Emission factors, Solid waste disposal, Emissions, Health hazards, Risk assessment, Air pollution control, "Open burning, "Controlled burning.

PB98-111800REB PC A14/MF A03
Minutes of the Stakeholder Meetings on the Report of the JSA Shrimp Virus Work Group. Held in July 1997.

Environmental Protection Agency, Washington, DC. National Center for Environmental Assessment.

Dec 97, 276p, EPA/600/R-97/136.

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New, virulent viruses have been documented in foreign shrimp aquaculture, and evidence suggests that these viruses could cause widespread disease in shrimp raised in aquaculture and in wild shrimp in the Gulf of Mexico and southeastern Atlantic coastal regions. To assess the risks associated with these emerging viral pathogens, the Joint Subcommittee on Aquaculture (JSA), which is under the auspices of the President's Office of Science and Technology Policy, formed the interagency Shrimp Virus Work Group. On June 5, 1997, the Work Group submitted a report to the JSA entitled *An Evaluation of Potential Shrimp Virus Impacts on Cultured Shrimp and Wild Shrimp Populations in the Gulf of Mexico and Southeastern U.S. Atlantic Coastal Waters* (Shrimp Virus report). During July 1997, the EPA's National Center for Environmental Assessment (NCEA), in cooperation with the JSA, sponsored a series of public meetings to gather stakeholder input on

the shrimp virus issue. This report contains the minutes of those stakeholder meetings and four appendices: Appendix A is the meeting agendas, Appendix B is the lists of attendees, Appendix C is a list of commenters and written comments, and Appendix D is the June 1997 Shrimp Virus Report.

Keywords: "Shrimp, "Viruses, "Viral diseases, Risks, Atlantic coasts, Assessments, Literature reviews, Aquaculture, Gulf of Mexico.

PB98-112931REB PC A09/MF A02
Handbook: Continuous Emission Monitoring Systems for Non-Criteria Pollutants.

Environmental Protection Agency, Cincinnati, OH. Center for Environmental Research Information. Aug 97, 174p, EPA/625/R-97/001.

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This Handbook provides a description of the methods used to continuously monitor non-criteria pollutants emitted from stationary sources. The Handbook contains a review of current regulatory programs, the state-of-the-art sampling system design, analytical techniques, and the use of computer systems for data acquisition and predictive monitoring. The Handbook is intended for those in industry or in government who are charged with implementing a continuous emission monitoring (CEM) program for this wider range of air pollutants.

Keywords: "Air pollution monitors, "Continuous sampling, "Data acquisition systems, "Handbooks, Air pollution monitoring, Air pollution sampling, Particulates, Metals, Mercury(Metal), Gases, Sewage sludge, Hazardous materials, Acid rain, Incinerators, Clean Air Act, Pollution regulations, Operation and maintenance, Air pollution standards, Standards compliance, Requirements, Data processing, Data analysis, Data base management systems.

PB98-113111REB PC A19/MF A04
Kanawha Valley Toxics Screening Study. Final Report.

Environmental Protection Agency, Philadelphia, PA. Region III. Jul 97, 404p.

See also PB88-244389.

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The report was primarily prepared to describe a limited study about toxic chemicals in the Valley undertaken by the U.S. Environmental Protection Agency (EPA), in cooperation with three West Virginia environmental agencies - the Air Pollution Control Commission, Department of Health, and Department of Natural Resources. The report also contains summary information concerning the area's environmental compliance with current environmental laws, and includes, in Appendix A, a brief description of some other ongoing activities concerning Kanawha Valley environmental issues.

Keywords: "Kanawha Valley, "Toxic substances, "Air pollution sampling, "Risk assessment, Air pollution monitoring, Air pollutants, Hazardous materials, Drinking water, Surface waters, Health hazards, Air quality data, Site surveys, Environmental issues, West Central Region(West Virginia).

PB98-113376REB PC A05/MF A01
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

Method Validation and Application for Semivolatile Organic Compounds in Dust and Soil: Pesticides and PCBs.

Battelle Memorial Inst., Columbus, OH.

M. G. Nishioka, and K. D. Andrews. Jan 98, 53p, EPA/600/R-97/141.

Contract EPA-68-D4-0023

See also PB97-122725 and PB97-122857. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

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This work assignment was designed to evaluate the extent to which persistent organic pollutants from diverse chemical classes are present in the outdoor soil, entry-way soil, and house dust of representative lower socio-economic homes. Those pollutants evaluated included organo-phosphate insecticides (OP), a cyanoaromatic fungicide (CN), organo-chlorine insecticides (OC), an acidic lawn herbicide (HA), a chlorinated phenol (multipurpose insecticide, fungicide, and herbicide; HA) and polychlorinated biphenyls (PCB). Analyses were conducted using several different analytical approaches. The methods were used to evaluate the precision and accuracy, and trade-offs in these modes of analysis, that are made with different extraction, cleanup, and detection methods. The comparison of analytical methods in this study indicated that sonication extraction with a simple solid phase extraction (SPE) cleanup step may provide more reliable data than that which can be achieved with Soxhlet extraction and no cleanup. An additional benefit to this approach is the possibility of conducting analyses with lower cost GC/ECD analyses, rather than with higher cost GC/MS analyses.

Keywords: "Pesticides, "Polychlorinated biphenyls, "Dusts, "Soils, "Environmental exposure pathway, "Detection, Residential buildings, Insecticides, Herbicides, Fungicides, Phenols, Residues, Extraction, Chemical analysis, Test methods, Analytical methods, Gas chromatography, Quality assurance, Sonication, Semivolatile organic compounds, ECD(Electron Capture Detection).

PB98-113525REB PC A20/MF A04
How to Evaluate Alternative Cleanup Technologies for Underground Storage Tank Sites. A Guide for Corrective Action Plan Reviewers.

Environmental Protection Agency, Washington, DC. Office of Solid Waste and Emergency Response.

May 95, 428p, EPA/510/B-95/007.

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The manual contains discussions of eight different alternative cleanup technologies. A table of contents is included in each chapter to help you locate the information you need. Each technology chapter contains the following tools which can help expedite and/or improve the review process: an evaluation process flow chart, the third exhibit in each chapter, can help you understand the overall review process for each technology; The checklist lists the most important factors to evaluate for the successful implementation of each technology; a list of current references, located near the end of each chapter, provides sources of additional information; and in addition, each chapter has a number of charts that display advantages and disadvantages of each technology, initial screening criteria, and other data specific to each technology.

Keywords: "Underground storage, "Storage tanks, "Alternatives, "Remediation, Land pollution control, Soil treatment, Soil contamination, Water pollution control, Ground water, Water treatment, Biodegradation, Land application, Technology utilization, "Cleanup operations, Soil vapor extraction, Bioventing, Biopiles, Landfarming, Thermal desorption, Bioremediation, Air sparging, Biosparging, Natural attenuation, Dual-phase extraction, Bioslurping.

PB98-113640REB PC A06/MF A01
Toxic Chemical Report, Ninth Annual: A Summary of Information Contained in the Toxic Chemical Report Forms for Calendar Year 1995. Final rept.

Illinois State Environmental Protection Agency, Springfield. Office of Chemical Safety.

Aug 97, 92p, IEPA/ENV/97-014.

Errata sheet inserted. See also PB89-174239.

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EPA PUBLICATIONS BIBLIOGRAPHY

For calendar year 1995, 1,185 facilities submitted 3,877 individual toxic chemical release reports totalling 139.3 million pounds of releases and transfers. This includes 18.7 million pounds from 31 chemical reportable for the first time in 1995. Zinc (fume or dust) and compounds had the highest reported releases and transfers, at 28.3 million pounds. The combined total of fugitive and stack air emissions topped all other environmental areas at 71.4 million pounds. Facilities in Standard Industrial Classification (SIC) Code 3312 (steel works, blast furnaces, coke ovens and rolling mills) exceeded all other industrial categories with reported releases and transfers of 34.6 million pounds.

Keywords: "Illinois, "Toxic substances, "Chemical compounds, "Release, Hazardous materials, Reporting, Emissions, Facilities, Industrial plants, Storm water runoff, Environmental transport, Health effects, Health hazards, Risk assessment, Land pollution, Water pollution, Air pollution, Graphs(Charts), Tables(Data).

PB98-115132REB PC A06/MF A01
Water Quality Benefits Analysis for Proposed Pretreatment Standards for Existing and New Sources for the Industrial Laundries Point Source Category.
 Environmental Protection Agency, Washington, DC. Office of Water.
 Nov 97, 84p, EPA/821/R-97/009.
 See also PB98-115272 and PB98-115140.
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The purpose of this Environmental Assessment is to estimate the environmental impact of industrial laundry discharges on waterbodies and POTWs under both current conditions and conditions corresponding to three regulatory options. First, EPA established a baseline of environmental effects by modeling current pollutant discharges from industrial laundries. Then, EPA modeled changes in pollution loading corresponding to the implementation of various regulatory options to estimate how environmental effects would change with the regulation of industrial laundry discharges.

Keywords: "Laundries, "Water quality management, "Water pollution standards, "Standards compliance, "Pretreatment, Water pollution control, Water pollution sources, Point sources, Waste water treatment, Industrial waste treatment, Waste water disposal, Discharge(Water), Sludge disposal, Aquatic ecosystems, Fresh water, Estuaries, Public health, Fish, Pollution regulations, Existing sources, New Source Performance Standards, POTW(Publicly-owned treatment works).

PB98-115140REB PC A05/MF A01
Environmental Protection Agency, Washington, DC. Office of Water.
Cost-Effectiveness Analysis for Proposed Pretreatment Standards for Existing and New Sources for the Industrial Laundries Point Source Category. Final rept.
 Eastern Research Group, Inc., Lexington, MA.
 Nov 97, 66p, EPA/821/R-97/005.
 See also PB98-115132. Sponsored by Environmental Protection Agency, Washington, DC. Office of Water.
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The report supports the proposed Pretreatment Standards for the Industrial Laundries Point Source Category (IL Standards). In the document EPA compares the total annualized cost of each of four regulatory options to the corresponding effectiveness of that option in reducing the discharge of pollutants. Section Two discusses EPA's cost-effectiveness methodology and identifies the pollutants included in the analysis. This section also presented EPA's toxic weighting factors for each pollutant and considers the removal efficiency of each option. Section Three presents the results of the cost-effectiveness analysis. In Section Four, the cost-effectiveness value for the proposed regulatory option is compared to cost-effectiveness values for other proposed and promulgated rules. Appendix A

presents data on pollutants and pollutant removals, and Appendix B presents data on annualized costs for each of the regulatory options.

Keywords: "Cost effectiveness, "Laundries, "Water pollution standards, "Standards compliance, "Pretreatment, Water pollution control, Water pollution sources, Point sources, Waste water treatment, Industrial waste treatment, Water pollution economics, Economic analysis, Cost analysis, Weighting factors, Requirements, Water pollutants, Pollution regulations, Existing sources, New Source Performance Standards.

PB98-115157REB PC A07/MF A02
Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
Statistical Support Document for Proposed Pretreatment Standards for Existing and New Sources for the Industrial Laundries Point Source Category.
 Science Applications International Corp., Reston, VA.
 Nov 97, 124p, EPA/821/R-97/006.
 Contract EPA-68-C4-0046
 See also PB98-115140. Sponsored by Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
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This document describes the statistical analyses performed for the Effluent Limitations Guidelines and Pretreatment Standards for the Industrial Laundries Point Source Category. These statistical analyses were used in estimating the number of industrial laundry facilities, estimating the number of industrial laundry facilities with particular characteristics of interest, developing the proposed effluent guideline standards and comparing influent pollutant concentrations of linen, industrial laundry, and denim prewash facilities.

Keywords: "Statistical analysis, "Laundries, "Water pollution standards, "Standards compliance, "Pretreatment, Water pollution control, Water pollution sources, Point sources, Waste water treatment, Industrial waste treatment, Statistical data, Data collection, Variability, Average, Concentration(Composition), Water pollutants, Pollution regulations, Existing sources, New Source Performance Standards.

PB98-115165REB PC A08/MF A02
Assessment of Sediments from the Upper Mississippi River. Final rept.
 Environmental Protection Agency, Washington, DC. Office of Water.
 Jun 97, 144p, EPA/823/R-97/005.
 Prepared in cooperation with Department of the Interior, Washington, DC.
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This project was designed to evaluate the current status of sediments in the UMR by: (1) measuring the concentrations of contaminants in sediments of the UMR, (2) evaluating the toxicity of sediments collected from the river, (3) determining the bioaccumulation of contaminants from UMR sediments using field-collected and laboratory exposed oligochaetes, and (4) determining the benthic community structure in fine-grain sediments within the river. Chapter 1 of this report describes whole-sediment toxicity tests which were conducted for 28 days with the amphipod *Hyalella azteca*. Chapter 2 describes the bioaccumulation of contaminants from sediments using field-collected oligochaetes and 28-day bioaccumulation studies conducted in the laboratory with the oligochaete *Lumbriculus variegatus*. Chapter 3 assesses the benthic community in all 24 C samples.

Keywords: "Saint Croix River, "Toxicity, "Bottom sediments, "Water pollution effects, Aquatic ecosystems, Benthic fauna, Biological communities, Ecological concentration, Environmental transport, Bioaccumulation, Water pollutants, Polycyclic aromatic hydrocarbons, Polychlorinated biphenyls, Aliphatic hydrocarbons, Pesticides, Survival, Invertebrates, Oligochaetes, En-

vironmental fate, *Hyalella azteca*, *Lumbriculus variegatus*, UMR(Upper Mississippi River).

PB98-115249REB PC A15/MF A03
Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
Economic Assessment for Proposed Pretreatment Standards for Existing and New Sources for the Industrial Laundries Point Source Category. Final rept.
 Eastern Research Group, Inc., Lexington, MA.
 Nov 97, 316p, EPA/821/R-97/008.
 See also PB98-115157. Sponsored by Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
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The Economic Assessment (EA) report evaluates the economic impacts resulting from pretreatment standards proposed by the U.S. Environmental Protection Agency (EPA) for the industrial laundries point source category.

Keywords: "Economic analysis, "Laundries, "Water pollution standards, "Standards compliance, "Pretreatment, Water pollution control, Water pollution sources, Point sources, Waste water treatment, Industrial waste treatment, Cost benefit analysis, Water pollution economics, Economic impact, Operating costs, Capitalized costs, Employment, Market analysis, Small businesses, Closures, Water pollutants, Pollution regulations, Existing sources, New Source Performance Standards, Regulatory impact analysis.

PB98-115272REB PC A20/MF A04
Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
Technical Development Document for Proposed Pretreatment Standards for Existing and New Sources for the Industrial Laundries Point Source Category.
 Eastern Research Group, Inc., Lexington, MA.
 7 Nov 97, 448p, EPA/821/R-97/007.
 Contract EPA-68-C5-0032
 See also PB98-115249. Sponsored by Environmental Protection Agency, Washington, DC. Engineering and Analysis Div.
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Contents:
 Background;
 Summary;
 Data collection methodology and information sources;
 Industry profile;
 Water use and wastewater characterization;
 Industry scope and subcategorization;
 Pollutants selected for regulation;
 Pollution prevention, recycling, treatment, and disposal technologies employed by the Industrial Laundries industry;
 Treatment performance data used for the development of long-term averages, variability factors, and standards;
 Development of regulatory options;
 Pollutant loading and removal estimates;
 Costs of technology bases for regulations;
 Regulatory options section;
 Non-water quality environmental impacts;
 and Pretreatment standards for existing sources and pretreatment standards for new sources.

Keywords: "Laundries, "Water pollution standards, "Standards compliance, "Pretreatment, Water pollution control, Water pollution sources, Point sources, Waste water treatment, Industrial waste treatment, Pollution regulations, Environmental impacts, Water pollutants, Water utilization, Industrial plans, Discharge(Water), Implementation, Cost analysis, Statistical analysis, Existing sources, New Source Performance Standards, Pollution prevention, Waste characterization.

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PB98-115298REB PC A03/MF A01
Pesticide Fact Sheet: Cloransulam-methyl.
 Environmental Protection Agency, Washington, DC. Office of Pesticide Programs. 29 Oct 97, 24p, EPA/730/F-98/001. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The document contains up-to-date chemical information, including a summary of the Agency's regulatory position and relationship, on a specific pesticide or group of pesticides. A Fact Sheet is issued after registration of a new chemical.

Keywords: *Pesticides, *Registration, Pest control, Pyrimidines, Herbicides, Weed control, Toxicity, Risk assessment, Exposure, Humans, Animals, Environmental impacts, Chemical properties, Environmental transport, Pollution regulation, Administrative procedures, *Chloransulam-methyl, Triazopyrimidine sulfonamide, Use patterns, CAS 147150-35-4.

PB98-115314REB PC A08/MF A02
 Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards. Final rept.
 Research Triangle Inst., Research Triangle Park, NC. R. S. Wright, and M. J. Messner. Sep 97, 132p, RTI/6699/208-01F, EPA/600/R-97/121. Contract EPA-68-D-0091. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This protocol describes two procedures for assaying the concentration of compressed gas calibration standards and for certifying that the assayed concentrations are traceable to a National Institute of Standards and Technology (NIST) Standard Reference Material (SRM). This protocol is mandatory for certifying the compressed gas calibration standards used for the pollutant monitoring that is required by the regulations of 40 CFR Parts 50, 58, 60 and 75 for the calibration and audit of ambient air quality analyzers and continuous emission monitors.

Keywords: *Air pollution monitors, *Calibration standards, *Compressed gases, *Assaying, Gas analysis, Air pollutants, Air pollution monitoring, Ambient air quality, Emissions, Gas mixtures, Tracer techniques, Ecological concentration, Dilution, Flowmeters, Permeability, Certification, Uncertainty analysis, Reference standards, Procedures, Requirements, Standard reference materials.

PB98-115322REB PC A06/MF A01
 National Health and Environmental Effects Research Lab., Corvallis, OR. Western Ecology Div.
Conceptual Framework for a Synoptic Assessment of the Prairie Pothole Region.
 Dynamac Corp., Corvallis, OR. L. S. McAllister, B. E. Peniston, J. Hyman, and B. Abbruzzese. Sep 96, 90p, EPA/600/R-96/061. Contracts EPA-68-C6-0005, EPA-68-C4-0019. Prepared in cooperation with ManTech Environmental Research Services Corp., Corvallis, OR. Sponsored by National Health and Environmental Effects Research Lab., Corvallis, OR. Western Ecology Div. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

A conceptual framework is presented for conducting a synoptic assessment of the Prairie Pothole Region (PPR), including portions of North and South Dakota, Minnesota, Iowa, and Montana. This conceptual framework presents the ecological background and conceptual models that will serve as the basis for conducting the Prairie Pothole assessment and outlines

the processes proposed for carrying out the assessment.

Keywords: *Wetlands, *Water quality management, *Flood control, Wildlife habitats, Landscapes, Restoration, Value, Environmental impacts, Concept formation, Synoptic analysis, Risk analysis, Concepts, North Dakota, South Dakota, Minnesota, Iowa, Montana, *Prairie Pothole Region, Natural attenuation.

PB98-115330REB PC A04/MF A01
 National Risk Management Research Lab., Cincinnati, OH.
Capsule Report: Aqueous Mercury Treatment.
 Patterson Associates, Inc., Chicago, IL. J. Patterson, and L. Stein. Jul 97, 48p, EPA/625/R-97/004. Contract EPA-68-C3-0315. Prepared in cooperation with Eastern Research Group, Inc., Lexington, MA. Sponsored by National Risk Management Research Lab., Cincinnati, OH. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The report describes established technologies and identifies evolving methods for treating aqueous mercury. The information provided encompasses full-, pilot- and bench-scale treatment results as presented in the technical literature. The report describes alternative technologies in terms of (1) governing physical and chemical principles (e.g., solubility, oxidation-reduction potential, volatility), (2) key treatment parameters (e.g., speciation, pH, precipitating agent type and dosage, or adsorbent type and dosage), (3) pretreatment requirements, treatment performance, advantages and disadvantages, design considerations, and economics when available. The information can be useful for evaluating mercury treatment alternatives for industrial wastewater, groundwater, and soil washing extract.

Keywords: *Industrial waste treatment, *Waste water treatment, *Mercury(Metal), *Water pollution control, Pretreatment, Ground water, Chemical effluents, Precipitation(Chemistry), Ion exchanging, Adsorption, Oxidation-reduction reactions, Solubility, Volatility, Separation processes, Coagulation, Economic analysis, Case studies, Soil washing.

PB98-115355REB PC A13/MF A03
 National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
Michigan Soil Vapor Extraction Remediation (MISER) Model: A Computer Program to Model Soil Vapor Extraction and Bioventing of Organic Chemicals in Unsaturated Geological Material. Final rept. Sep 93-Mar 96. Michigan Univ., Ann Arbor. Dept. of Civil and Environmental Engineering. L. M. Abriola, J. Lang, and K. Rathfelder. Sep 97, 264p, EPA/600/R-97/099. Grant EPA-R-822017. Sponsored by National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The report describes the formulation, numerical development, and use of a multiphase, multicomponent, biodegradation model designed to simulate physical, chemical, and biological interactions occurring primarily in field scale soil vapor extraction (SVE) and bioventing (BV) systems. The model is entitled the Michigan Soil Vapor Extraction Remediation Model, or MISER. Section 1 provides an overview of SVE and BV systems and a review of existing models. Section 2 presents the conceptual formulation of MISER and the associated mathematical representation for flow, transport, and biotransformation processes. Section 3 describes the numerical solution approach and Section 4 presents the results of model verification analyses. Description and usage of the model is provided in Section 5, and example SVE and BV simulations are described in Section 6.

Keywords: *Soil treatment, *Biodegradation, *Computer programs, Soil contamination, Environmental transport, Flow equations, Multiphase flow, Mass balance, Finite element method, Galerkin method, Nonlinear equations, Algorithms, Mathematical models, *MISER model, Bioventing, Soil vapor extraction, Bioremediation.

PB98-115363REB PC A08/MF A02
Monitoring Design for Riparian Forests in the Pacific Northwest. Research Plan.
 National Health and Environmental Effects Research Lab., Corvallis, OR. P. L. Ringold, J. Barker, M. Bollman, S. Cline, M. Fiorella, J. Stepp, G. Bradshaw, and W. Carson. Dec 97, 138p, EPA/600/R-97/125. Prepared in cooperation with Dynamac Corp., Corvallis, OR., Forest Service, Corvallis, OR. and Oregon State Univ., Corvallis. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The goal of this project is to recommend a broadly-acceptable efficient and effective methodology for characterizing streamside riparian attributes in forested settings at the site grain for regional monitoring. The authors consider monitoring design in the context of three interacting constraints: ecological functions, capabilities of technologies, and user needs. The focus is on fine grained remote methods. Comparison between candidate selected monitoring systems provides for an initial formulation of a monitoring design. A series of evaluations of these initial formulations provides for an initial recommendation. With the state's interest in the status of coastal fishes, and the programmatic interest of EPA's Western Ecology Division, the areas selected for study are in the Oregon coastal province and the Willamette basin.

Keywords: *Pacific Northwest(US), *Forests, *Environmental monitoring, Riparian land, Forest ecology, Landscapes, Vegetation, Terrestrial ecosystems, Aquatic ecosystems, Remote sensing, Regional analysis, Pattern recognition, Image analysis, Willamette River Basin, Western Region(Oregon).

PB98-115371REB PC A03/MF A01
SITE Technology Capsule: ZenoGem (Trade Name) Wastewater Treatment Process. Capsule rept.
 National Risk Management Research Lab., Cincinnati, OH. D. A. Sullivan. Aug 95, 18p, EPA/540/R-95/503A. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The ZenoGem technology is a wastewater treatment process designed to treat groundwater, landfill leachate, industrial effluent, and soil washing effluent contaminated with high concentrations of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) that cause elevated levels of biochemical oxygen demand (BOD) and chemical oxygen demand (COD). The technology uses an innovative combination of aerobic biological treatment to remove biodegradable organic compounds and ultrafiltration to separate residual suspended solids from the treated effluent.

Keywords: *Waste water treatment, *Aerobic conditions, *Ground water, *Water pollution control, Chemical effluents, Industrial wastes, Leachate, Landfills, Biological treatment, Biodegradation, Hazardous materials, Methyl methacrylate, Biochemical oxygen demand, Chemical oxygen demand, Performance evaluation, Technology assessment, SITE(Superfund Innovative Technology Evaluation), Volatile organic compounds, Semivolatile organic compounds, Soil washing, Bioremediation.

PB98-115389REB PC A04/MF A01
 National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.
Ground Water Issue: Design Guidelines for Conventional Pump-and-Treat Systems.
 GeoTrans, Inc., Sterling, VA.

R. M. Cohen, J. W. Mercer, R. M. Greenwald, and M. S. Beljin. Sep 97, 44p, EPA/540/S-97/504. Contract EPA-68-C4-0031. See also PB95-125456. Sponsored by National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This issue paper focuses on design of conventional ground-water extraction and injection systems used in subsurface remediation.

Keywords: "Ground water, "Water treatment, "Water pollution control, Remediation, Extraction, Pumping, Water wells, Containment, Aquifers, Hydraulic conductivity, Injection wells, Design analysis, Guidelines, "Pump and treat, Cleanup operations.

PB98-115587REB PC A08/MF A02
Beyond Sprawl: Land Management Techniques to Protect the Chesapeake Bay. A Handbook for Local Governments. Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program. Oct 97, 126p, EPA/903/B-97/005, CBP/TRS-190/97. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The Handbook provides 'how-to' information on techniques that local governments can implement to achieve community goals, preserve local natural resources, and protect the Chesapeake Bay. The Handbook complements the Beyond Sprawl video which highlights six land management techniques by demonstrating their effectiveness in model communities throughout the watershed. The video gives a brief overview of urban growth boundaries, infill development/community redevelopment, transit oriented development, transfer of development rights, cluster development, and traditional neighborhood development. The Handbook expands on these land management techniques by discussing their benefits to both the Chesapeake Bay and the local governments that utilize them. In addition, the Handbook identifies the steps local governments might take to implement the land management practices and tools described herein. Some details concerning the use of these techniques are further illustrated by successful local government models that demonstrate local application. Although many local governments share similar land management problems in the Chesapeake Bay watershed, not all the techniques described in this Handbook will be applicable to every community. However, the Handbook's techniques will help to challenge your community to develop its own means to address the impacts of sprawl growth and development patterns that are affecting communities and the Chesapeake Bay.

Keywords: "Land use, "Water pollution control, "Chesapeake Bay, "Handbooks, Land development, Local government, Regional planning, Environmental protection, Watershed management, Community development, Urban areas, Transportation management, Government policies, Maryland, Virginia.

PB98-116270REB PC A02/MF A01
Beta Test of Models-3 with Community Multiscale Air Quality (CMAQ) Model. Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab. S. LeDuc. 1997, 8p, EPA/600/A-97/100. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The Models-3 framework for advanced air quality modeling, developed by the Environmental Protection Agency, Office of Research and Development (EPA/ORD), was provided to a limited number of beta test sites during the summer of 1997. Tutorial datasets and the Community Multiscale Air Quality (CMAQ) model were also provided. Valuable feedback on framework

installation, performance, functionality, intuitiveness, user friendliness resulted from the beta test. This information will be used to guide framework improvements preparatory to public release in June 1998.

Keywords: "Testing, Air pollution dispersion, Environmental transport, Emissions, Calibration, Validation, Performance evaluation, Mathematical models, Computerized simulation, "CMAQ(Community Multiscale Air Quality), "Community Multiscale Air Quality Model, "Models-3 modeling system.

PB98-116288REB PC A03/MF A01
Development of the EIIP Emission Inventory Data Model for Purposes of Facilitating Data Transfer between the States and U.S. EPA. Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab. J. Slade, W. Benjey, A. Blackard, and M. Pring. 1997, 22p, EPA/600/A-97/101. Prepared in cooperation with Pennsylvania Dept. of Environmental Resources, Harrisburg., National Oceanic and Atmospheric Administration, Research Triangle Park, NC. Atmospheric Sciences Modeling Div. and Eastern Research Group, Morrisville, NC. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The Emission Inventory Improvement Program (EIIP) was formed with the cooperation of the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) as a cooperative effort between State and local agencies, industry, and EPA to improve emission estimates and establish a National Standard for Emission Data Exchange. The Data Management Committee (DMC) of the EIIP was charged with the goal of developing the data exchange standard, and undertook the task of developing a data model on which to base the data exchange format. The purpose of developing the data model was to establish a standardized set of data relationships which reflect physical reality and ensure accurate and consistent reporting of emissions and emission related data.

Keywords: "Air pollution monitoring, "Data transmission, Air quality data, Air pollution control, Estimating, States(United States), US EPA, Data analysis, Data management, Mathematical models, "Emission inventories, "Data formats, EIIP(Emission Inventory Improvement Program), Data models, Data exchange, National Ambient Air Quality Standards.

PB98-116387REB PC A04/MF A01
Ecological Effects of Tropospheric Ozone: A U.S. Perspective; Past, Present and Future. National Health and Environmental Effects Research Lab., Corvallis, OR. Western Ecology Div. W. E. Hogsett, and C. P. Andersen. 1997, 32p, EPA/600/A-97/090. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The authors will present experimental and modeling activities from their laboratory that show how they are beginning to address the problems of scale, complexity, and multiple stresses in forested ecosystems exposed to ozone stress.

Keywords: "Ozone, "Air pollutant effects(Plants), "Vegetation, "Biomass, Plant populations, Plant ecology, Ecosystems, Exposure, Forest soils, Carbon cycle, Ecological concentration, Growth stages, Seasonal variation, Long term effects, Environmental stress.

PB98-116395REB PC A04/MF A01
National Health and Environmental Effects Research Lab., Corvallis, OR. Western Ecology Div. Development of IBI Metrics for Lakes in Southern New England. Dynamac International, Inc., Corvallis, OR. T. R. Whittier. 1997, 50p, EPA/600/A-97/089. Contract EPA-68-C5-0005

Sponsored by National Health and Environmental Effects Research Lab., Corvallis, OR. Western Ecology Div. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This manuscript evaluates the performance of numerous candidate metrics for lake fish assemblages in southern New England, comparing metric behavior with total phosphorus (as a measure of eutrophication stress) and a generalized measure of human activity in the watersheds (% of land in urban and agriculture, road and population density). This manuscript presents solutions to issues of species tolerances to stressors in lakes and to trophic guild membership. These modifications improved the performance of four candidate metrics (% individuals of highly tolerant species, % top carnivore individuals, % insectivorous individuals, % generalist feeder individuals). A total of seven metrics appear to be useful for evaluating biotic integrity of lakes in southern New England.

Keywords: "New England, "Lakes, "Fish populations, "Aquatic ecosystems, Biological communities, Biological indicators, Aquatic habitats, Eutrophication, Trophic level, Lake stages, Species diversity, Water chemistry, Phosphorus, Measurement, Man environment interactions, "IBI(Index of Biotic Integrity), "Index of Biotic Integrity, Environmental stress.

PB98-116403REB PC A04/MF A01
National Health and Environmental Effects Research Lab., Corvallis, OR. Gradient Analysis of Biomass in Costa Rica and a First Estimate of Total Emissions of Greenhouse Gases from Biomass Burning. Oregon State Univ., Corvallis. Dept. of Forest Science. E. H. Helmer, and S. Brown. 1997, 34p, EPA/600/A-97/088. Sponsored by National Health and Environmental Effects Research Lab., Corvallis, OR. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

One important component of sustainable development for a nation is the degree to which it can balance greenhouse gas (GHG) exchange with the atmosphere. Scientists at NHEERL-WED recently estimated the release of such GHGs from the conversion of a range of forest types in Costa Rica between 1940-1983. They also evaluated the influence of environmental gradients that affect the rates and patterns of deforestation and the carbon pools of the forest cleared on GHG emissions.

Keywords: "Costa Rica, "Burning, "Biomass, "Tropical forests, "Greenhouse gases, Emissions, Deforestation, Air pollution monitoring, Carbon dioxide, Methane, Carbon monoxide, Nitrogen oxides, Trace gases, Carbon cycle, Carbon sinks, Environmental impacts, Atmospheric chemistry, Developing countries, Sustainable development, Forest inventory.

PB98-116411REB PC A04/MF A01
Ecosystem Management, Chapter 2. Draft rept. National Health and Environmental Effects Research Lab., Corvallis, OR. W. T. Sommers, and R. T. Lackey. 1997, 38p, EPA/600/A-97/087. Prepared in cooperation with Forest Service, Washington, DC. Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This chapter provides information on the ongoing development of the ecological risk assessment process and the ecosystem management assessment process. The linking of these two processes can bring improved organizational and analytical consistency to the assessment of information in support of multiple scales of resource planning and decision making needed for ecosystem management.

EPA PUBLICATIONS BIBLIOGRAPHY

Keywords: *Ecosystems, *Risk assessment, *Environmental impacts assessments, Environmental health, Environment management, Environmental protection, Natural resources management, Planning, Decision making, Cost benefit analysis.

PB98-116445REB PC A04/MF A01
Chromium Biotreatment in Soil, Chapter 6. Book chapter.

Robert S. Kerr Environmental Research Lab., Ada, OK.
G. W. Swell, H. Shen, and P. H. Pritchard. 1997, 34p, EPA/600/A-97/084.

Pub. in the Encyclopedia of Environmental Analysis and Remediation. Prepared in cooperation with Dynamac Corp., Ada, OK. and Naval Research Lab., Washington, DC.

Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The potential for the biotreatment of Cr(VI) wastes has received increased attention because the microbially mediated processes may offer costs, effectiveness and sludge production. There are several biological mechanisms which may be suitable for metal treatments, including translocation, extracellular binding, complex formation, biosorption, and intracellular accumulation. Considering the more immobile and less toxic characteristics of Cr(III), the microbial reduction of Cr(VI) to Cr(III) appears to hold the most promise for the development of an innovative biotreatment technology. This reductive biotransformation not only leads to Cr(VI) detoxification but precipitates the metal in soils, therefore minimizing its potential risk to human health and impacted ecosystem through decreases toxicity and exposure.

Keywords: *Soil treatment, *Biodegradation, *Land pollution control, Soil contamination, Heavy metals, Biological treatment, Microorganisms, Reduction(Chemistry), Detoxification, Precipitation(Chemistry), Chemical reactions, *Hexavalent chromium, *Biotreatment.

PB98-116510REB PC A03/MF A01
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.
AREMOD's Simplified Algorithm for Dispersion in Complex Terrain.

California Univ., Riverside. Coll. of Engineering.
A. Venkatram, J. Weil, A. Cimarelli, R. Wilson, R. Paine, R. Lee, and S. Perry. 1997, 12p, EPA/600/A-97/077.

Prepared in cooperation with Colorado Univ. at Boulder. Cooperative Inst. for Research in the Environmental Sciences, and ENSR Consulting and Engineering, Acton, MA. Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

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The AMS/EPA Regulatory Model Improvement Committee's dispersion model, AERMOD (Cimorelli et al, 1996), is designed to handle both flat and complex terrain within the same framework. The structure of AERMOD incorporates our knowledge of flow and dispersion in complex terrain. Under stable conditions, the flow and hence the plume, tends to remain horizontal when it encounters an obstacle. The formulation of AERMOD attempts to capture the essential physics of dispersion in complex terrain in as simple a framework as possible.

Keywords: *Air pollution dispersion, *Mathematical models, *Diffusion modeling, *Atmospheric diffusion, Atmospheric boundary layer, Flow patterns, Flow profiles, Plumes, Complex terrain, Topography, Algorithms, AERMOD computer model.

PB98-116528REB PC A03/MF A01
Description of the Models-3 Community Multiscale Air Quality (CMAQ) Modeling System.

Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

D. Byun, J. Young, G. Gipson, S. Roselle, B. Benjey, J. Pleim, J. Ching, J. Novak, J. Godowitch, and F. Binkowski. 1997, 12p, EPA/600/A-97/076.

Prepared in cooperation with National Oceanic and Atmospheric Administration, Research Triangle Park, NC. Atmospheric Sciences Modeling Div. and MCNC, Research Triangle Park, NC. North Carolina Supercomputing Center.

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The key science characteristics and science process modules of the Models-3/CMAQ are discussed with respect to the terms in the governing atmospheric conservation equation. The authors also demonstrated the modular functionality of the CMAQ science process codes by comparing results with different numerical algorithms for a regional scale air quality simulation. The Models-3/CMAQ system achieves multipollutant and multiscale capability by combining several distinct modeling techniques. First, the authors recast the governing atmospheric diffusion equation in a generalized coordinate system to accommodate many different meteorological coordinates and assumptions on atmosphere. Second, CMAQ uses a nesting capability to refine grid resolutions to apply to the small-scale air quality problem. Third, a Plume-in-Grid module allows the computation of subgrid scale plume-scale dispersion and reactions. Finally, the multi-pollutant capacity is provided by a generalized mechanism chemistry reader, generalized mechanism chemistry reader, generalized chemistry solvers, linked aqueous reaction processor, and aerosol modules.

Keywords: *Air pollution dispersion, *Mathematical models, Atmospheric diffusion, Diffusion modeling, Plumes, Emissions, Aerosols, Air pollutants, Atmospheric chemistry, Photochemistry, Environmental transport, Euler equations of motion, Meteorological data, Spatial resolution, Algorithms, Computerized simulation, *CMAQ(Community Multiscale Air Quality), *Community Multiscale Air Quality Model, *Models-3 modeling system.

PB98-116536REB PC A03/MF A01
Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

Comparison of Commercial vs Homeowner Application for Transport of Lawn-Applied Herbicide 2,4-D into Homes.

Battelle Memorial Inst., Columbus, OH.
M. Nishioka, C. Hines, M. Brinkman, H. Burkholder, and R. G. Lewis. 1997, 14p, EPA/600/A-97/075.
Grant EPA-R-822082

Sponsored by Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

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Homeowners are participating in a three year study to measure the migration and transport of lawn-applied herbicide acids 2,4-D (2,4-dichlorophenoxyacetic acid) and dicamba into the home, the spatial distribution of these residues in the home, and the temporal profile of exposures of residents to these residues. Associated activity patterns that are being considered in the study design as contributing factors for transport and exposure include homeowner vs commercial application, activity levels of children and pets, and wearing vs removal and outdoor shoes indoors. Sample types being collected include air, surface wipes, and urine. All sample types are collected pre- and post-application, over two one-week periods at each home. Studies have included eight occupied and two unoccupied homes.

Keywords: *Herbicides, *Pesticide residues, *Environmental transport, *Detection, 2,4-dichlorophenoxyacetic acid, Spatial distribution, Temporal distribution, Ecological concentration, Environmental exposure, Houses, Sampling, *Application methods, *Indoor environments.

PB98-116544REB PC A03/MF A01
Processing Emission Inventory Data in the Models-3 Integrated Distributed Modeling System: A Tutorial Example.

Environmental Protection Agency, Research Triangle Park, NC. National Exposure Research Lab.

W. G. Benjey, N. M. Moghari, J. W. Susick, and D. E. Tivel. 1997, 22p, EPA/600/A-97/074.

Prepared in cooperation with Science Applications International Corp., Arlington, VA. EPA Systems Development Center, and National Oceanic and Atmospheric Administration, Research Triangle Park, NC. Atmospheric Sciences Modeling Div.

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The paper presents a brief tutorial example and describes the benefits of emission inventory data processing for air quality modeling using the windows of the Study Planner of the Models-3 environmental modeling system. The functions of the key windows and the procedure for using them are illustrated using a 21 column by 21 row spatial grid with 12 km cell resolution, centered on Birmingham, Alabama. The Study Planner makes manipulation of input data and processing programs relatively simple and flexible. It is not necessary to change processor coding for different study areas, spatial resolutions, and time, to remember the locations of data files and processors in the system, and to use command line instructions to initiate and control the processing system for each step.

Keywords: *Emissions, *Air pollution dispersion, *Mathematical models, Air pollutants, Environmental transport, Photochemistry, Air quality data, Urban areas, Regional analysis, Temporal variations, Data processing, Computerized simulation, *CMAQ(Community Multiscale Air Quality), *Community Multiscale Air Quality Model, *Models-3 modeling system, Emission inventories, Tutorials.

PB98-116767REB PC A04/MF A01
Pesticide Registration (PR) Notice 97-9. Notice to Manufacturers, Formulators, Producers, and Registrants of Pesticides. Electronic Submission of Child-Resistant Packaging Test Data for all Pesticides and Child-Resistant Testing of Prefilled, Nonrefillable Insecticide Bait Stations Not Designed or Intended to Be Opened or Activated in a Manner That Exposes the Contents to Human Contact.

Environmental Protection Agency, Washington, DC. Office of Pesticide Programs.

18 Nov 97, 32p, EPA/730/N-97/010.

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This notice addresses four separate issues: (1) electronic submission of child-resistant packaging (CRP) test data for all pesticides; (2) unit packaging - individual unit (actual bait station) must be CRP; (3) test procedures clarification on when and how to test prefilled nonrefillable insecticide bait stations not designed or intended to be opened or activated in a manner that exposes the contents to human contact; and (4) exemption from the senior and younger adult test for prefilled nonrefillable ant or roach insecticide bait stations not designed or intended to be opened or activated in a manner that exposes the contents to human contact.

Keywords: *Pesticides, *Registration, Containers, Consumer products, Insecticides, Baits, Testing, Procedures, Exposure, Exemptions, *Child-resistant packaging, *Electronic submission.

PB98-117013REB PC A04/MF A01
Chesapeake Bay Nutrient Reduction Progress and Future Directions. Nutrient Reduction Reevaluation Summary Report.

Environmental Protection Agency, Annapolis, MD. Chesapeake Bay Program.

Oct 97, 50p, CBP/TRS-189/97.

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orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

As part of the effort to set and meet challenging goals, the Bay Program periodically measures—or reevaluates—the progress that has been made to date, and measures how close we are to attaining our goals. The following report is a summary of the 1997 Nutrient Reduction Reevaluation findings. The numbers and findings are preliminary. A more detailed final report will be available in early 1998.

Keywords: "Water pollution control, "Nutrients, "Chesapeake Bay, Phosphorus, Nitrogen, Habitat restoration, Fisheries, Point sources, Watersheds, Water quality, Runoff, Nonpoint sources, Agriculture.

PB98-117054REB PC A11/MF A03
Locating and Estimating Air Emissions from Sources of Mercury and Mercury Compounds.
Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards. Dec 97, 220p. EPA/454/R-97/012.
See also PB94-118080 and PB94-173101.
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This document deals specifically with mercury and mercury compounds. Its intended audience includes Federal, State and local air pollution personnel and others interested in locating potential emitters of mercury and mercury compounds and in making gross estimates of air emissions therefrom. This document presents information on (1) the types of sources that may emit mercury and mercury compounds, (2) process variations and release points for these sources, and (3) available emissions information indicating the potential for mercury and mercury compound releases into the air from each operation.

Keywords: "Mercury(Metal), "Air pollution sources, "Emissions, Mercury compounds, Air pollution monitoring, Combustion products, Incinerators, Industrial plants, Power generation, Chemical industry, Agricultural chemicals, Manufacturing, Point sources, Stationary pollutant sources, Mobile pollutant sources, Emission inventories, Fugitive emissions.

PB98-500010REB CD-ROM \$140.00
Test Guidelines from Office of Prevention, Pesticides and Toxic Substances (OPPTS) Series (on CD-ROM). Data file.
Environmental Protection Agency, Washington, DC. Office of Prevention, Pesticides and Toxic Substances. Nov 97, 1 CD-ROM.
Contains search and retrieval software. Adobe Acrobat search engine included. Supersedes PB95-504452, PB95-504478, PB95-504494, PB95-504510, PB95-504436, PB95-504460, PB95-504486, PB95-504502, PB95-504528, and PB95-504544.
The datafile is on one disc. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This CD-ROM product contains the series of harmonized test guidelines that have been developed by the Office of Prevention, Pesticides and Toxic Substances (OPPTS), U.S. EPA for use in the testing of pesticides and toxic substances, and the development of test data that must be submitted to the EPA for review under the Toxic Substances Control Act (15 U.S.C. 2601) and the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136, et seq.). The purpose of harmonizing these guidelines into a single set of OPPTS guidelines is to minimize variations among test procedures that must be performed to meet the EPA data requirements. Save time spent searching through numerous hard copy specifications by using the Adobe Acrobat with Search software which provides an intuitive interface for search, display and printing. With Acrobat, you can (1) search words or full text phrases to locate testing standards, data reporting guidance, definition of terms and acceptance protocols, (2) search for specific guideline numbers or CFR citations, (3) browse the Table of Contents much like a book and electronically connect via hypertext links to guidelines of interest, (4) cut and paste a page or print

the entire guideline. Also included on the CD-ROM is a bibliography of Pesticide Assessment Guidelines and their amendments available through NTIS. Large chemical manufacturers who make pesticides, corporate regulatory professionals, quality assurance personnel, project managers, study directors, and technical staff responsible for laboratory and field studies will find this CD-ROM invaluable. The CD-ROM contains issued OPPTS test guidelines and any subsequent updates. It is periodically updated after major EPA additions or updates are issued. The OPPTS has developed these guidelines through a process of harmonization that blend the testing guidance and requirements that existed in the Office of Pollution Prevention and Toxics (OPPT) and appeared in Title 40, Chapter I, Subchapter F of the Code of Federal Regulations (CFR), the Office of Pesticide Programs (OPP) which appeared in publications of the NTIS and the guidelines published by the Organization for Economic Cooperation and Development (OECD).

Keywords: "Data bases, "Data file, "Pesticides, "Guidelines, "Chemical analysis, Pesticide residues, Toxic substances, Test methods, Toxic Substances Control Act, Regulations, Standardization, Registration, Information retrieval, Toxicity, Analytical methods, Reporting, Reviewing, US EPA, CD-ROM, FIFRA(Federal Insecticide Fungicide and Rodenticide Act), Reregistration, Data requirements.

PB98-500077REB CD-ROM \$480.00
Biennial Reporting System (BRS) Data: Generation and Management of Hazardous Waste, 1995 (Final) (on CD-ROM). Data file.
Environmental Protection Agency, Washington, DC. Office of Solid Waste. 1995, 1 CD-ROM.
This product contains text only. Customers must provide their own search and retrieval software. Supersedes PB97-501933. See also PB95-503520, PB96-592571, and PB96-502182.
The datafile is on one disc. The documentation is in Adobe Acrobat PDF format. It includes the Instruction Manual, the 1995 Hazardous Waste Report Instructions and Forms, and the Flat File Index. The Windows version of Acrobat is provided.

The product contains data compiled by the Biennial Reporting System (BRS) for the 'National Biennial RCRA Hazardous Waste Report (Based on 1995 data)'. The data were collected by states using the '1995 National Hazardous Waste Report Instructions and Forms' (EPA Form 8700-13-A/B), or the state's equivalent information source. Data submitted by states prior to December 31, 1996 are included. Data for reports protected by RCRA Confidential Business Information (CBI) claims are not included. These data are preliminary and will be replaced by the final data. The data contain information describing the RCRA wastes generated and/or managed during 1995 by RCRA Treatment, Storage and Disposal Facilities (TSDFs) and RCRA Large Quantity Generators (LQGs). Data are reported by sites meeting the LQG and/or TSDF definitions. Sites are identified by their EPA/RCRA identification number. Response codes match those of the '1995 Hazardous Waste Report: Instruction and Forms' (EPA Form 8700-13-A/B).

Keywords: "Data file, "Hazardous materials, "Waste management, Waste treatment, Waste disposal, Facilities, Sites, United States, CD-ROM, RCRA(Resource Conservation and Recovery Act).

PB98-500325REB CP D01
Integrated Air Pollution Control System (IAPS), Executable Model and Source Model (Version 5.a) (on Diskette). Model-Simulation.
Environmental Protection Agency, Research Triangle Park, NC. Air and Energy Engineering Research Lab. Sep 97, 2 diskettes, EPA/600/R-95/169A-E.
Memory: 640K. Language: Fortran and C. Supersedes PB87-127775, PB91-506469, PB91-506477, and PB96-501937.
The software is on two 3 1/2 inch DOS diskettes, 1.44M high density. Documentation included; may be ordered separately as PB96-157383, PB96-157391, and PB96-157409.

The Integrated Air Pollution Control System (IAPCS) Cost Model was developed to estimate costs and performance for emission control systems applied to coal-fired utility boilers. The model can project a material balance, an equipment list, and capital investment and revenue requirements based on user-specified input

data. The model includes conventional and emerging technologies for controlling nitrogen oxides (NOX), sulfur dioxide, and particulate matter emissions. A variety of technology modules built into the model can be incorporated and combined. Cost and performance estimates can be analyzed in terms of integrated technologies. Conventional and emerging technologies included are low NOX combustion (overfire air/low NOX burners), natural gas reburning, advanced gas reburning, selective catalytic reduction, selective noncatalytic reduction, limestone injection multistage burners, the advanced silicate process, wet limestone flue gas desulfurization, dry sorbent injection, physical coal cleaning, coal switching, lime spray drying, spray humidification, electrostatic precipitators, fabric filters, atmospheric fluidized bed combustion, pressurized fluidized bed combustion, the integrated gasification combined cycle process, and pulverized coal burning boilers. The following revisions have been made to version 5.a: - Addition of Gas Substitution (GS) to the Natural Gas Reburning (NGR) and Advanced Gas Reburning (AGR) Module. Gas Substitution (GS) was added to allow the user to estimate the cost of substituting natural gas for coal in a utility boiler. - Flue Gas Flow Rate Revision. The user can now choose to use coal analyses to compute the mass and volumetric flue gas flow rate. Previously, an F-Factor was used, which calculated flue gas flow rate as a function of heat input to the boiler (dscf/MMBtu). - ADVACATE Revision. The maximum size of a tower mill is 60 MW. The previous ADVACATE cost equations were based on a tower mill size of 100 MW. The tower mill costs based on 100 MW of \$150,000 per tower mill were subtracted out of the SO₂ Removal Process Area costs.

Keywords: "Models-simulation, "Software, "Boilers, "Coal, "Fossil-fuel power plants, "Air pollution control equipment, "Cost estimates, Particulates, Combustion kinetics, Sulfur dioxide, Nitrogen oxides, Stationary sources, Performance evaluation, Diskettes, Integrated Air Pollution Control System.

PB98-500333REB CP D02
Hydrologic Evaluation of Landfill Performance (HELP) Model, Version 3.05 (on Diskette). (Re-announcement with New Order Number). Software.
Environmental Protection Agency, Washington, DC. Dec 95, 2 diskettes.
System requirements: a hard disk drive with 6 MB of available storage, a 80386 or 80486 preferred. Supersedes PB85-100725 (magnetic tape) and PB96-501432.
The software is on two 3 1/2 inch DOS diskettes, 1.44M high density. Documentation included; may be ordered separately as PB98-104474 and PB98-104482. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

In Version 3, the HELP model has been greatly enhanced beyond Version 2. The number of layers that can be modeled has been increased. The default soil/material texture list has been expanded to contain additional waste materials, geomembranes, geosynthetic drainage nets, and compacted soils. The model also permits the use of a user-built library of soil textures. Computations of leachate recirculation and groundwater drainage into the landfill have been added. Moreover, HELP Version 3 accounts for leakage through geomembranes due to manufacturing defects (pinholes) and installation defects (punctures, tears and seaming flaws) and by vapor diffusion through the liner based on the equations compiled by Giroud et al. (1989, 1992). The estimation of runoff from the surface of the landfill has been improved to account for large landfill surface slopes and slope lengths. The snowmelt model has been replaced with an energy-based model; the Priestly-Taylor potential evapotranspiration model has been replaced with a Penman method, incorporation wind and humidity effects as well as long wave radiation losses (heat loss at night). A frozen soil model has been added to improve infiltration and runoff predictions in cold regions. The unsaturated vertical drainage model has also been improved to aid in storage computations. Input and editing have been further simplified with interactive, full-screen, menu-driven input techniques. The HELP model requires daily climatologic data, soil characteristics, and design specifications to perform the analysis. Daily rainfall data may be input by the user, generated stochastically, or taken from the model's historical data base. The model contains parameters for generating synthetic precipitation for 139 U.S. cities. The historical

data base contains five years of daily precipitation data for 102 U.S. cities. Daily temperature and solar radiation data are generated stochastically or may be input by the user. Necessary soil data include porosity, field capacity, wilting point, saturated hydraulic conductivity, and Soil Conservation Service (SCS) runoff curve number for antecedent types for use when measurements or site-specific estimates are not available. Design specifications include such things as the slope and maximum drainage layers, layer thicknesses, leachate recirculation procedure, surface cover characteristics, and information on any geomembranes.

Keywords: *Model-simulation, *Software, *Landfills, *Hydraulic performance, Leakage, Leachate, Linings, Membranes, Covers, Geotechnical engineering, Design analysis, Subsurface drainage, Surface runoff, Design criteria, Performance evaluation, Land pollution, Water pollution, Precipitation(Meteorology), Solar radiation, Meteorological data, Evapotranspiration, Soil water, Hydrologic models, Diskettes, HELP model, HELP(Hydrologic Evaluation of Landfill Performance).

PB98-500366REB Diskette \$50.00
INDIPAY Model: Evaluates Individual Taxpayer's Claims of Inability to Afford Penalties and Compliance Costs (on Diskette). Model-Simulation. Environmental Protection Agency, Washington, DC. Office of Enforcement. Jan 98, 2 diskettes.

Windows 3.1 operating system. Language: Visual Basic 3.0 that uses Axis 1.1 database engine; SVGA with at least 800x600 resolution required; compatible with Windows 3.1 and Windows 95; disk space: 2.5 MG; RAM-Windows 3.1, 16 MG; Windows 95, 32 MG. See also PB96-503396, PB96-503404, PB96-503800, and PB96-503875.

The software is on two 3 1/2 inch diskettes, 2.0M double density. Documentation included; may be ordered separately as PB98-104490. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

INDIPAY evaluates individual taxpayers' claims of inability to afford penalties, clean-up costs or compliance costs. INDIPAY can evaluate claims from individuals, partnerships and sole proprietorships. Violators raise the issue of inability to pay in most of EPA's enforcement actions regardless of whether there is any hard evidence supporting those claims. INDIPAY was designed to enable Federal, State and local enforcement professionals to quickly determine if there was any validity to those claims. One of the other computer models, ABEL, does this same analysis for corporations. INDIPAY assesses the two fundamental methods by which an applicant could fund a contribution – cash flow and a loan from a commercial lending institution. Both of these scenarios compare the maximum contribution the individual can make with the penalty sought by EPA. If this maximum contribution exceeds the penalty amount, the model concludes that the individual can afford to pay and EPA makes no adjustments for inability to pay. If this maximum contribution is positive but less than the penalty amount, the model presents this amount as the partial payment the individual can afford through the particular funding approach. If the applicant's maximum contribution is zero or negative, then the model concludes that the applicant can afford no penalty payment through the particular funding scenario and it directs the enforcement personnel to review other financial reports before making any adjustments downward. INDIPAY, like ABEL, is a tool that promotes quick settlements by performing screening analyses of defendants and Superfund potentially responsible parties (PRP's) to determine their financial capacity. EPA's Office of Enforcement and Compliance Assurance (OECA) has developed a series of models to support its penalty assessment and cost recovery responsibilities. INDIPAY and the four other OECA financial analysis models (ABEL, BEN, CASHOUT, PROJECT) deal with three different financial issues that frequently arise in enforcement cases. Users do not need any background in computers, finance or accounting to operate them effectively. Primary users will be: attorneys defending firms in environmental enforcement actions and citizen suits; attorneys representing citizen groups that are bringing private enforcement actions; and environmental compliance directors from businesses, municipalities and federal facilities in advising management about potential civil penalty liability for failure to comply with environmental requirements.

Keywords: *Software, *Models-simulation, *Violations, *Payments, Penalties, Costs, Claims, Liabilities, Responsibility, Enforcement, Pollution control, Waste management, Superfund, Hazardous materials, Diskettes, *INDIPAY computer model, *Taxpayers, *Ability to pay, Settlement(Law).

PB98-500382REB Diskette \$50.00
BEN Model: Calculates Violators' Economic Benefits from Noncompliance (Version 4.4) (on Diskette). Software.

Environmental Protection Agency, Washington, DC. Office of Enforcement.

Jan 98, 1 diskette.

DOS operating system. Requires 232K of hard drive space. Is menu driven. Supersedes PB96-503875.

The software is on one 3 1/2 inch DOS diskette, 2 MB high density. Documentation included; may be ordered separately as PB98-104508. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The model calculates the economic savings that a company gains or avoiding payment necessary for compliance with environmental regulations or permits. While the primary purpose of the BEN model is to calculate the economic benefit of EPA regulation non-compliance, the model may also be used to calculate the after tax net present value of a pollution prevention or mitigation project. BEN is not limited to just environmental regulations; rather, it is a cost analysis model that presents savings from delaying or avoiding any expenditures. The software is extremely easy to use. Users are taken through a series of prompts to enter specified costs including initial capital investments, nondepreciable expenditures, annual expenses, dates of compliance and noncompliance, date of penalty payment, useful life of pollution control equipment, income tax rates, inflation rate, and discount rate. The savings from not paying are then calculated. Once calculated, that economic savings amount (plus some nontrivial amount reflecting the seriousness of the violation) become the EPA's minimum civil penalty. The model is mainly responsible for the dramatic rise in civil penalties from \$6 million in fiscal year 1984 to over \$100 million in fiscal year 1994. If the Agency actually goes to hearing or court, it almost always uses an expert witness to present the defendant's economic gain from noncompliance, not the BEN model. Version 4.4 updates the standard values for inflation and discount rate. EPA's Office of Enforcement and Compliance Assurance (OECA) has developed a series of computer models to support its penalty assessment and cost recovery responsibilities. The models are also used in most states. The models deal with four different financial issues that frequently arise in enforcement cases: calculating the violator's economic savings noncompliance (BEN model); evaluating the validity of a violator's claim that it cannot afford compliance costs (ABEL and INDIPAY models), clean-up costs and civil penalties; determining the present year value of Superfund clean-up (CASHOUT model); and determining the real cost of proposed extra compliance project (PROJECT model). The user's manual contains all the formulas that make up the BEN computer model. On screen 'help' information is available at any time.

Keywords: *Pollution abatement, *Cost benefit analysis, *Software, *Models-simulation, Standards compliance, Pollution regulations, Superfund, Mitigation, Penalties, Violations, Economic analysis, Law enforcement, Hazardous materials, Diskettes, *BEN computer model, *Noncompliance.

PB98-500390REB Diskette \$50.00
CASHOUT Model: Calculates Current Value of Superfund Cleanup Costs (Version 1.6) (on Diskette). Model-Simulation.

Environmental Protection Agency, Washington, DC. Office of Enforcement.

Jan 98, 1 diskette.

Supersedes PB94-501012, PB95-502530, and PB96-503396.

The software is available on one 3 1/2 inch DOS diskette, 360K double density. Documentation included; may be ordered separately as PB94-141678. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

CASHOUT determines in current year dollars what all the future clean-up costs of a Superfund site will be. Since those costs could be as much as 50 years in the future, this allows the enforcement professionals in the Superfund program to quickly determine what the total current cost of a clean-up would be. Then they can use that number to 'cash out' of the case the small contributors. The small contributors just pay an appropriate portion of the CASHOUT number, and then they are out of the case. The other contributors usually are responsible for the site for a substantial amount of time. Version 1.6 updates the standard values for inflation and discount rate. EPA's Office of Enforcement and Compliance Assurance (OECA) has developed a series of computer models to support its penalty assessment and cost recovery responsibilities. The models are also used in most states. The models deal with four different financial issues that frequently arise in enforcement cases: calculating the violator's economic savings noncompliance (BEN model); evaluating the validity of a violator's claim that it cannot afford compliance costs (ABEL and INDIPAY models), clean-up costs and civil penalties; determining the present year value of Superfund clean-up (CASHOUT model); and determining the real cost of proposed extra compliance project (PROJECT model).

Keywords: *Superfund, *Costs, *Pollution control, *Remedial action, *Software, *Models-simulation, Hazardous materials, Waste management, Economic analysis, Funds, Allocations, Cost repayments, Law enforcement, Pollution regulations, Diskettes, *CASHOUT computer model, Cleanup, Potentially responsible parties, Settlement(Law).

PB98-500408REB Diskette \$50.00
PROJECT Model: Evaluates the Value of Supplemental Environmental Projects (SEP) (Version 1.3) (on Diskette). Model-Simulation.

Environmental Protection Agency, Washington, DC. Office of Enforcement.

Jan 98, 1 diskette.

DOS operating system. Supersedes PB95-502548 and PB96-503800.

The software is available on one 3 1/2 inch DOS diskette, 360K high density. Documentation included; may be ordered separately as PB95-169637. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

PROJECT was developed to assist EPA's enforcement program in its penalty assessment responsibilities. The PROJECT Model evaluates the after-tax, net present value of supplemental environmental project (SEP). Violators propose SEPs to mitigate their penalty liability. SEPs are appearing with increasing frequency in enforcement negotiations. In addition, SEPs allow the Agency to effect some extra environmental improvement. This model allows personnel without any background in accounting or corporate finance to determine the real cost of a SEP to a defendant for settlement purposes. It prompts the user for costs, dates and certain interest and tax rates. It then calculates the actual cost of a SEP to a defendant by reducing the cost of the project to reflect its tax consequences and net-present value. Projected users of this model are the citizen environmental groups, attorneys representing defendants in enforcement actions, and corporate officials with environmental responsibilities. The software will allow them to easily evaluate proposed SEPs in the same way the EPA evaluates them. This provides clearer communication among parties involved in compliance issues. Version 1.3 updates the standard values for inflation and discount rate.

Keywords: *Software, *Models-simulation, *Superfund, *Hazardous materials, *Waste management, Pollution regulations, Law enforcement, Liabilities, Costs, Violations, Fines(Charges), Penalties, Payments, Pollution control, Pollution abatement, Remedial action, Government policies, Diskettes, *PROJECT computer model, *Supplemental environmental projects, *Settlement(Law), Potentially responsible parties.

PB98-500416REB Diskette \$50.00
ABEL Model: Evaluates Corporations' Claims of Inability to Afford Penalties and Compliance Costs (Version 2.9) (on Diskette). Model-Simulation. Environmental Protection Agency, Washington, DC. Office of Enforcement. Jan 98, 1 diskette.

Supersedes PB94-501004, PB95-502522, and PB96-503404.

The software is available on one 3 1/2 inch DOS diskette, 360K double density. Documentation included; may be ordered separately as PB98-104518. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The easy-to-use ABEL software evaluates for-profit company claims of inability to afford penalties, clean-up costs, or compliance costs. Violators raise the issue of inability to pay in most of EPA's enforcement actions regardless of whether there is any hard evidence supporting those claims. The program enables Federal, State and local enforcement professionals to quickly determine if there was any validity to those claims. ABEL is a tool that promotes quick settlements by performing screening analyses of defendants and potentially responsible parties (PRPs) to determine their financial capacity. If ABEL indicates the firm can afford the full penalty, compliance or clean-up costs, then EPA makes no adjustments for inability to pay. If it indicates that the firm cannot afford the full amount, it directs the enforcement personnel to review other financial reports before making any adjustments. After analyzing some basic financial ratios that reflect a company's solvency, ABEL assesses the firm's ability to pay by focusing on projected cash flows. The model explicitly calculates the value of projected, internally generated cash flows from historical tax information, and compares these cash flows to the proposed environmental expenditure(s). The software is extremely easy to use. Version 2.9 updates the standard values for inflation and discount rate. Users are taken through a series of prompts to enter specified data. On screen 'help' information is available at any time. Two other similar models are INDIPAY and MUNIPAY (PB98-500374). INDIPAY does the same analysis for individual taxpayers (including sole proprietorships and partnerships). MUNIPAY does this same analysis for municipalities, towns, counties, drinking water authorities, and sewer authorities. EPA's Office of Enforcement and Compliance Assurance (OECA) has developed a series of computer models to support its penalty assessment and cost recovery responsibilities. The models are also used in most states. The models deal with four different financial issues that frequently arise in enforcement cases: calculating the violator's economic savings noncompliance (BEN model); evaluating the validity of a violator's claim that it cannot afford compliance costs (ABEL and INDIPAY models), clean-up costs and civil penalties; determining the present year value of Superfund clean-up (CASHOUT model); and determining the real cost of proposed extra compliance project (PROJECT model).

Keywords: *Software, *Models-simulation, *Businesses, *Pollution control, Cash flow, Penalties, Fines(Charges), Taxes, Costs, Standards compliance, Pollution regulations, Working capital, Cost benefit analysis, Hazardous materials, Corporations, Expenses, Violations, Diskettes, *ABEL computer model, *Ability to pay, Noncompliance, Financial capacity.

PB98-963204REB PC A02/MF A01
Second Supplemental Five-Year Review Guidance.
Environmental Protection Agency, Washington, DC.
Office of Emergency and Remedial Response.
21 Dec 97, 6p, EPA/540/F-98/002, OSWER-9355.7-03A.

See also PB94-963283.

Paper copy available as an ongoing subscription, credit card payment accepted. Single copies also available in paper copy or microfiche. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

cated at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This document has three purposes. The first is to supplement guidance to previous Environmental Protection Agency (EPA) directives on five-year reviews. The second is to encourage Regions to leverage resources by using potentially responsible parties (PRPs) to provide information for five-year reviews. The third is to remind Regions that five-year reviews should include a signed EPA determination of whether a remedy remains protective of human health and the environment.

Keywords: *Superfund, *US EPA, *Program management, Hazardous materials, Waste management, Pollution sampling, Remedial action, Site characterization, Pollution regulations, Site surveys, Inspection, Pollution control, Program administration, Federal programs, Reviewing, Evaluation, Assessments, Requirements, Standards compliance, Government policies, Guidelines, *OSWER(Office of Solid Wastes and Emergency Response), *Office of Solid Wastes and Emergency Response.

AD-A329 242/2REB PC A07/MF A02
Adduction of Nitroaromatic Compounds with Blood Proteins and DNA as Biological Markers of Exposure. Final rept. 19 Jan 93-15 May 97.
Environmental Protection Agency, Cincinnati, OH.
T. V. Reddy, Jun 97, 117p.
Product reproduced from digital image. Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

The ability of TNB, DNB and tetryl, to form adducts in rats was investigated using ¹⁴C labeled compounds. Our results showed that all three test chemicals (TNB, DNB and tetryl) were able to form adducts with blood proteins and tissue DNA. The optimum time required for maximum adduct formation for TNB, DNB and tetryl varied. For example, TNB adducts (blood proteins and DNA) were maximum at 48 h. Peak levels of DNB adducts (blood proteins) were detected at 8 h and maximum DNB-DNA adducts levels reached by 24 hours. In the case of tetryl the maximum blood protein adduct levels were observed at 24 h, while DNA adducts peaked at 48 h after exposure. At the end of ten weeks, significant amount (10-50%) of radioactivity was intact in the DNA of TNB or tetryl treated rat liver, kidney, and spleen. 3,5-dinitroaniline was identified from TNB treated rat liver DNA and picric and picramic acids from tetryl treated rat liver and kidney DNA. This suggests that these are the adducts of DNA and released during hydrolysis. In contrast, 3-nitroaniline was identified in hemoglobin hydrolysate as well as in albumin soup from rats treated with DNB. Hence, protein and DNA adducts appear to have promise as dose monitors for nitroaromatic munitions and their by-products.

Keywords: *Aromatic compounds, *Nitrogen compounds, *Blood proteins, Rats, Explosives, Deoxyribonucleic acids, Ammunition, Tables(Data), Pollutants, Exposure(Physiology), Contamination, Hydrolysis, Hemoglobin, Tnt, Labeled substances, Nitramines, Tetryl, *Nitroaromatic compounds, Ecological health risk assessment, Biomarkers, Adduction.

DE97008803REB PC A04/MF A01
Department of Energy, Washington, DC.
Animal Investigation Program (AIP), A.I.P. summary report on and around the Nevada Test Site from 1982-1995.
Environmental Protection Agency, Las Vegas, NV. Radiation and Indoor Environments National Lab.
K. R. Giles. Apr 97, 37p, EPA-402-R-97-009.
Contract A108-91NV10963
Sponsored by Department of Energy, Washington, DC.
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customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

This report describes the Animal Investigation Program conducted from 1982-1995 by the Environmental Protection Agency's (EPA's), Radiation and Indoor Environments National Laboratory (R and IE), formerly Radiation Sciences Laboratory-Las Vegas. This laboratory operates an environmental radiation monitoring program in the region surrounding the Nevada Test Site. The surveillance program was designed to measure levels and trends of radionuclides in animals on and around the Nevada Test Site to ascertain whether world-wide fallout, current radiation levels, and associated doses, to the general public were in compliance with existing radiation protection standards. The surveillance program additionally had the responsibility to take action to protect the health and well-being of the public in the event of any accidental release of radioactive contaminants. Comparison of the measurements and sample analysis results indicated that no significant amounts of biological radionuclides had been detected in the near offsite areas or on the NTS, except in animals drinking water that drains from tunnels in Area 12.

Keywords: *Food Chains, *Nevada Test Site, *Radiation Hazards, Biological Accumulation, Contamination, Numerical Data, Radiation Monitoring, Radiation Protection, Radioecological Concentration, Tables(data), EDB/560162, EDB/540230, EDB/540130, EDB/450200.

N19970027271
(Order as N19970027257REB, PC A12/MF A03)
Show Me the Technology: Institutional Barriers to Environmental Technology Transfer.
Environmental Protection Agency, Washington, DC.
Office of Research and Development.
L. A. Friedl. Jul 97, 1p.

In the environmental arena, both the public and private sectors are exploring technologies, techniques, and information sources which allow them to monitor environmental conditions with fast, comprehensive, and credible methods. However, the technologies are not the only factor limiting application. Institutional issues, such as management practices, agency policies, and legal precedents, pose barriers to the development, transfer and adoption of technologies between the sectors. The U.S. Environmental Protection Agency (EPA) has recently begun the Advanced Measurement Initiative (AMI) to advance the agency's measurement capabilities, taking into account these institutional barriers. The AMI program sponsors projects that (1) adapt existing technologies (from the public or private sectors) that can meet an identified EPA need, and (2) identify and address institutional barriers to their use and acceptance. AMI projects are primarily focused on fulfilling EPA's measurement needs. However, EPA recognizes that increased capabilities can improve its ability to provide the private sector greater flexibility in regulatory reporting, which, in turn, can increase the search for new monitoring and measurement technologies that the private sector can use and supply. This paper examines EPA's AMI program in the context of institutional barriers to technology application and implementation. AMI projects provide a broad view of issues to address and approaches to take to resolve institutional barriers. One AMI project, involving the use of remote sensing to characterize a hazardous waste site, is examined in depth. Lessons learned are placed in the context of technology transfer.

Keywords: *Environment protection, *Information systems, *Policies, *Procedures, *Technology utilization, *Environment management, Technology transfer, Hazardous wastes, Regulations.

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Reports are listed alphabetically by title. A, An, and The at the beginning of a title are ignored in alphabetizing.

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NTIS Order Number/Media Code Price Codes	PB94-100443/REB PC A10/MF A03

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PB97-177570REB PC A05/MF A01
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- Analyzing Nonpoint Source Water Pollution Problems: Nutrient Control Policies in the Chesapeake Bay States.
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- Animal Investigation Program (AIP). A.I.P. summary report on and around the Nevada Test Site from 1982-1995.
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PB98-116510REB PC A03/MF A01
- Assessment of Sediments from the Upper Mississippi River.
PB98-115165REB PC A08/MF A02
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PB97-176978REB PC A15/MF A03
- BEN Model: Calculates Violators' Economic Benefits from Noncompliance (Version 4.4) (on Diskette).
PB98-500382REB Diskette \$50.00
- Best Demonstrated Available Technology (BDAT) Background Document for Wood Preserving Wastes: F032, F034, and F035; Final.
PB97-176911REB PC A22/MF A04
- Beta Test of Models-3 with Community Multiscale Air Quality (CMAQ) Model.
PB98-116270REB PC A02/MF A01
- Beyond Sprawl: Land Management Techniques to Protect the Chesapeake Bay. A Handbook for Local Governments.
PB98-115587REB PC A08/MF A02
- Biennial Reporting System (BRS) Data: Generation and Management of Hazardous Waste, 1995 (Final) (on CD-ROM).
PB98-500077REB CD-ROM \$480.00
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- CASHOUT Model: Calculates Current Value of Superfund Cleanup Costs (Version 1.6) (on Diskette).
PB98-500390REB Diskette \$50.00
- Catalog of Publications: Office of Science and Technology, 1997 Edition.
PB98-102692REB PC A08/MF A02
- Chesapeake Bay Nutrient Reduction Progress and Future Directions. Nutrient Reduction Reevaluation Summary Report.
PB98-117013REB PC A04/MF A01
- Chromium Biotreatment in Soil, Chapter 6.
PB98-116445REB PC A04/MF A01
- Combined Lists of Environmental Laboratories.
PB98-104060REB PC A04/MF A01
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- Conceptual Framework for a Synoptic Assessment of the Prairie Pothole Region.
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- Ecological Effects of Tropospheric Ozone: A U.S. Perspective: Past, Present and Future.
PB98-116387REB PC A04/MF A01
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PB98-115249REB PC A15/MF A03
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PB98-102288REB PC A03/MF A01
- EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards.
PB98-115314REB PC A08/MF A02
- Estimates of Global Greenhouse Gas Emissions from Industrial and Domestic Wastewater Treatment.
PB98-106420REB PC A07/MF A02
- Ethylene Oxide Commercial Sterilization and Fumigation Operations NESHAP. Implementation Document.
PB98-103385REB PC A05/MF A01
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KEYWORD INDEX

Index entries in this section are selected to indicate important ideas and concepts presented in a report. When using the keyword index, be sure to look under terms narrower, broader, or related to a particular topic. Although some of the keywords are not selected from a controlled vocabulary of terms, most of them have been selected from the DoD, DoE, NASA, or NTIS controlled vocabularies. The entries are arranged by keyword and then by the NTIS order number.

SAMPLE ENTRY

Use: Keywords Term	RECYCLED MATERIALS	
Title	Engineering and Environmental Aspects of Recycled Materials for Highway Construction	
NTIS Order Number/Media Code Price Codes	PB94-100443/REB	PC A10/MF A03

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A09 \$70.00 \$77.00		E09 \$77.00
A10 \$76.00 \$84.00		E10 \$84.00
A11 \$82.00 \$90.50		E11 \$90.00
A12 \$88.00 \$97.00		E12 \$99.00
A13 \$94.00 \$103.50		E13 \$106.00
A14 \$98.00 \$108.00		E14 \$114.00
A15 \$98.00 \$108.00		E15 \$123.00
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D10 \$1,124.00	T10 \$2,530.00
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REB		\$							\$	\$
REB		\$							\$	\$
REB		\$							\$	\$
REB		\$							\$	\$
REB		\$							\$	\$
REB		\$							\$	\$
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REB		\$							\$	\$
REB		\$							\$	\$
REB		\$							\$	\$

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				STANDARD NONLABELED	EBCDIC ASCII

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GRAND TOTAL	\$

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Product Announcement



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EPA Releases Definitive Water Testing CD-ROM

Water Analysis Methods and Guidance Available at NTIS

The U. S. Environmental Protection Agency is now making available through the National Technical Information Service the most comprehensive collection of wastewater and drinking water test methods and related guidance ever compiled by one source and in one convenient location.

Methods and Guidance for the Analysis of Water (on CD-ROM) includes, from over 50 EPA documents, more than 350 drinking water and wastewater methods to test for 776 analytes. It contains the full text of all wastewater methods approved at 40 CFR 136 and all drinking water methods approved at 40 CFR 141, including 500, 600, and 1600 series methods. Additionally, this CD-ROM contains a complete version of the March 1983 revision of Methods for Chemical Analysis of Water and Wastes (MCAWW) and also several other key guidance documents related to EPA's wastewater and drinking water programs.

Customers will be pleased to find this CD-ROM easy to use. Each document is complete including all tables, diagrams, figures, and flowcharts and the user can cut and paste text and tables to develop laboratory standard operating procedures. It also has a powerful search engine to allow searches by method number, analyte name, and key words. All methods and guidance are linked allowing the user to electronically jump from the Table of Contents to documents of interest or search the Analyte List for a regulated pollutant and instantaneously connect to the recommended methods.

Methods and Guidance for the Analysis of Water (on CD-ROM) is available from NTIS, (703) 487-4650, for \$60 plus \$4 handling fee, no additional charge for shipping; quote order number PB97-501308KKH. Most major credit cards accepted. Order via e-mail: orders@ntis.fedworld.gov. Fax order to: (703) 321-8547.

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Product Announcement



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Latest Environmental Protection Agency Update Describes Clean Up Needs

Numerous Business Opportunities Outlined in New Report at NTIS

Nearly a quarter of a million U. S. sites with potential contamination from hazardous waste and petroleum products are identified in a new report from EPA's Office of Solid Waste and Emergency Response. The study, *Cleaning Up the Nation's Waste Sites: Markets and Technology Trends*, is available from the National Technical Information Service.

Invaluable information on site characteristics, market size, and other factors is backed by liberal use of charts for quick grasp of demand. The estimated cost for all future work is about \$187 million or higher.

According to the study, it will take several decades of planned investment from federal, state, and local government agencies and private industry to meet the continuing demand for site remediation services and technologies. But, with information provided in the report, technology vendors, developers and investors, and government officials can assess the demand for cleanup services. And, from that assessment, they may better identify business opportunities and plan technology research and development efforts.

The report covers all the major cleanup programs in the United States, including:

- Superfund
- Resource Conservation and Recovery Act (RCRA)
- Underground storage tanks
- State programs
- U.S. Departments of Defense and Energy
- Many others

In addition to updating the previous issue, the report includes significant new information on cleanup needs related to underground storage tanks, RCRA corrective actions, and sites administered by DOD, DOE, and other federal agencies.

Cleaning Up the Nation's Waste Sites: Markets and Technology Trends is available from NTIS, 1-800-553-NTIS (6847), for \$44 plus \$4 handling fee, no additional charge for shipping; quote order number PB96-178041KLS. Most major credit cards accepted. Order via e-mail: orders@ntis.fedworld.gov. Fax order to: (703) 321-8547.

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EPA CD-ROM Guides Both Testing and The Development Of Test Data For Pesticides and Toxic Substances

In an effort to minimize variations among test procedures, the U.S. Environmental Protection Agency, through its Office of Prevention, Pesticides, and Toxic Substances, has compiled a series of test guidelines which cover two major aspects of pesticide and toxic substance submissions and registration:

- The actual inspection of pesticides and toxic substances as required by the EPA
- The development of test data that conforms to the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act and is reviewed by the EPA

These guidelines may be searched, viewed and printed on CD-ROM and are available from the National Technical Information Service.

With the CD's Adobe Acrobat with Search software, users are able to save time previously needed for hunting through hard copy specifications. Acrobat provides an intuitive interface for search, display, and printing. The operator may:

- Search words or full text phrases for testing standards and data reporting guidance
- Search for specific guideline numbers or CFR citations
- Browse the Table of Contents and connect electronically to guidelines of interest

Large chemical manufacturers who make pesticides, corporate regulatory professionals, quality assurance personnel, project managers, study directors, and technical staff responsible for laboratory and field studies will find this CD-ROM invaluable.

Test Guidelines from Office of Prevention, Pesticides, and Toxic Substances (OPPTS) Series (on CD-ROM) is available from NTIS, 1-800-553-NTIS (6847), for \$140 plus \$4 handling fee, no additional charge for shipping; quote order number PB98-500010KLQ. Most major credit cards accepted. Order via e-mail: orders@ntis.fedworld.gov. Fax order to (703) 321-8547.

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