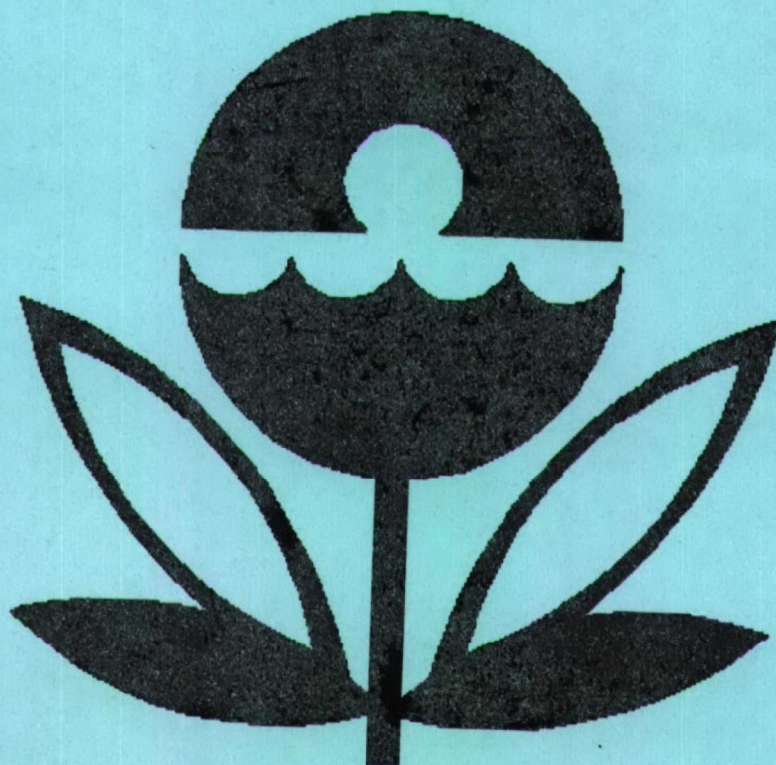


**FEDERAL FACILITIES  
MULTI-MEDIA ENVIRONMENTAL  
COMPLIANCE CONFERENCE**

**MARCH 27 - 28, 1990  
ATLANTA, GEORGIA**



**SPONSORED BY :**

**U.S. ENVIRONMENTAL PROTECTION AGENCY**

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MULTI-MEDIA  
ENVIRONMENTAL COMPLIANCE CONFERENCE

HOLIDAY INN  
ATLANTA, GEORGIA

MARCH 27-28, 1990

ARTHUR G. LINTON  
REGIONAL  
FEDERAL FACILITIES COORDINATOR

FEDERAL FACILITIES  
MULTI-MEDIA  
ENVIRONMENTAL COMPLIANCE CONFERENCE

CONFERENCE STAFF

DAVID F. HOLROYD  
CONFERENCE COORDINATOR

LORI SCOGGINS  
CONFERENCE REGISTRATION AND HOSTESS



FEDERAL FACILITIES  
MULTI-MEDIA  
ENVIRONMENTAL COMPLIANCE CONFERENCE

PURPOSE OF CONFERENCE

TO COMMUNICATE TO FEDERAL AGENCIES THEIR RESPONSIBILITY FOR COMPLIANCE WITH PUBLIC LAWS, RULES AND REGULATIONS. TO PASS ON NEW DEVELOPMENTS IN POLICY, NEW STRATEGIES, NEW INITIATIVES, AND UPDATE MEDIA PROGRAM PRIORITIES. FEDERAL FACILITIES ARE TARGET FOR ENVIRONMENTAL RESULTS.

A G E N D A  
F E D E R A L F A C I L I T I E S M U L T I - M E D I A  
E N V I R O N M E N T A L C O M P L I A N C E C O N F E R E N C E

A T L A N T A, G E O R G I A

M A R C H 2 7 - 2 8, 1 9 9 0

T U E S D A Y M A R C H 2 7, 1 9 9 0

CONFERENCE MODERATOR/MANAGER		ARTHUR G. LINTON
7:30 a.m.	REGISTRATION	LORI SCOGGINS/LENA SCOTT
8:15 a.m.	INTRODUCTION - REGIONAL FEDERAL FACILITIES COORDINATOR	ARTHUR G. LINTON
8:30 a.m.	OPENING REMARKS - DEPUTY REGIONAL ADMINISTRATOR	LEE A. DeHIHNS
9:00 a.m.	LEGAL RESPONSIBILITY and LIABILITIES OF FACILITIES ENVIRONMENTAL COORDINATOR - DEPUTY REGIONAL COUNSEL	BOB GREEN RE1
9:30 a.m.	FEDERAL FACILITIES COMPLIANCE STRATEGY IMPLEMENTATION/ GOCO ENFORCEMENT POLICY - DEPUTY DIRECTOR FEDERAL FACILITIES COMPLIANCE STAFF	JIM EDWARD WH1
10:00 a.m.	B R E A K	
10:15 a.m.	POLLUTION PREVENTION - EPA HQTRS	BRIAN SYMMES BL1
11:15 a.m.	ENVIRONMENTAL AUDITING - EPA	JIM EDWARD AM1
11:45 a.m.	L U N C H	
1:00 p.m.	ENVIRONMENTAL AUDITING CASE HISTORY AIR FORCE	BOBBY FICQUETTE YE1
	TENNESSEE VALLEY AUTHORITY - PROJECT MANAGER	MADONNA E. MARTIN GR1
	CONSULTANT - LAW ENGINEERING	HAMPTON PARKER PI1
2:30 p.m.	B R E A K	
2:45 p.m.	DEPARTMENT OF DEFENSE ENVIROMENTAL PROGRAMS	LTC JOSEPH A. MARTONE GO1
3:30 p.m.	QUESTIONS, ANSWERS and GENERAL REMARKS	ARTHUR G. LINTON
4:00 p.m.	ADJOURN	

A G E N D A  
F E D E R A L   F A C I L I T I E S   M U L T I - M E D I A  
E M V I R O N M E N T A L   C O M P L I A N C E   C O N F E R E N C E

A T L A N T A ,   G E O R G I A  
M A R C H   2 7 - 2 8 , 1 9 9 0

WEDNESDAY   MARCH 28, 1990

7:45 a.m.	OPENING COMMENT, REGIONAL FEDERAL FACILITIES COORDINATOR	ARTHUR G. LINTON	
8:00 a.m.	WASTEWATER PERMITTING - CHIEF, PERMIT SECTION, WASTMD	JAMES PATRICK	RE2
8:15 a.m.	AIR PROGRAMS - WHATS NEW?		
	NEW CAA & AIR TOXICS, CHIEF, MOBILE SOURCE, APTMD	TOM HANSEN	WH2
	PM-10 & ACID DISPOSTION, CHIEF, STATIONARY SOURCE, APTMD	DOUG NEELEY	
8:45 a.m.	TOXICS and PCB's, CHIEF, TOXICS SECTION, APTMD	BOB STRYKER	BL2
9:00 a.m.	UNDERGROUND STORAGE TANKS - CHIEF, UGST SECTION, WMD	DAVID ARIAIL	AM2
9:30 a.m.	B   R   E   A   K		
9:45 a.m.	PUBLIC PARTICIPATION - GENERAL, RCRA, and CERCLA		
	CHIEF, COMMUNITY RELATIONS - OPA	PATRICIA ZWEIG	YE2
	COMMUNITY RELATIONS - HQTRS	MELISSA F. SHAPIRO	
10:45 a.m.	RCRA - REGIONAL OVERVIEW - CHIEF, RCRA BRANCH, WASTE MANAGEMENT DIVISION	JAMES H. SCARBROUGH	GR2
	PERMITTING - CHIEF, WASTE ENGINEERING SECTION RCRA BRANCH, WASTMD	DOUG McCURRY	
	COMPLIANCE - CHIEF, WASTE COMPLIANCE SECTION RCRA BRANCH, WASTMD	JOHN LANK	
11:30 a.m.	L   U   N   C   H		
12:30 p.m.	RCRA SUBTITLE D - MEDICAL & SOLID WASTE EXPERT, WASTMD	BILL HOLLAND	PI2
1:30 p.m.	HRS II RANKING SYSTEM - PROJECT MANAGER, WASTMD	KATHARINE SIDERS	GO2
2:00 p.m.	B   R   E   A   K		
2:15 p.m.	RCRA/CERCLA - REMEDIAL CORRECTIVE ACTION	MICHAEL HARTNETT	
3:30 p.m.	CLOSING COMMENTS		

Environmental Auditing in the United States:  
Current Trends and Future Directions in the 1990's

- o Becoming more of an Accepted & Expected Practice.
- o Majority of Large Firms audit -- Many Medium and Small ones.
- o No Systematic Effort by EPA to "Measure Success of Auditing or Compare Compliance Rates with firms with no audit program.
- o Still inclined to keep auditing "voluntary" -- except for enforcement settlements or for Federal agencies. (Legislation + E.O's are for Feds only).
- o Potential for increased attempts to gain access to audit reports and papers due to new community "right-to-know" laws, committees and public awareness.
- o Move from Level 1 "compliance snapshot" audits to more sophisticated Level 2 "management audits." (Training is now more "Developing Skills + Techniques," etc.)
- o More + More "specialized audits" -- waste min. audits; prevention audits; "can be to grave" audits; property transfer audits, etc.
- o Audits being requested by different clients for SARA 120(h) aquisition/prop-transfer audits -- banks, savings + loans, real estate firms, mortgage co's. etc.
- o More of a perceived need for "uniform standards" +/-or "protocols."
- o Increasing "push" for certification/registration of Env. Auditors (e.g., CA program) .
- o Professional organizations becoming more formal with charters etc. - Likely merger of IEA, EAR, EAF.
- o Auditing coming under the "pollution prevention" umbrella probably a good thing.

---

# **EPA ENVIRONMENTAL AUDITING ACTIVITIES**

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**Office of Federal Activities  
Washington, D.C.**

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# **federal register**

Wednesday  
July 9, 1986

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Part IV

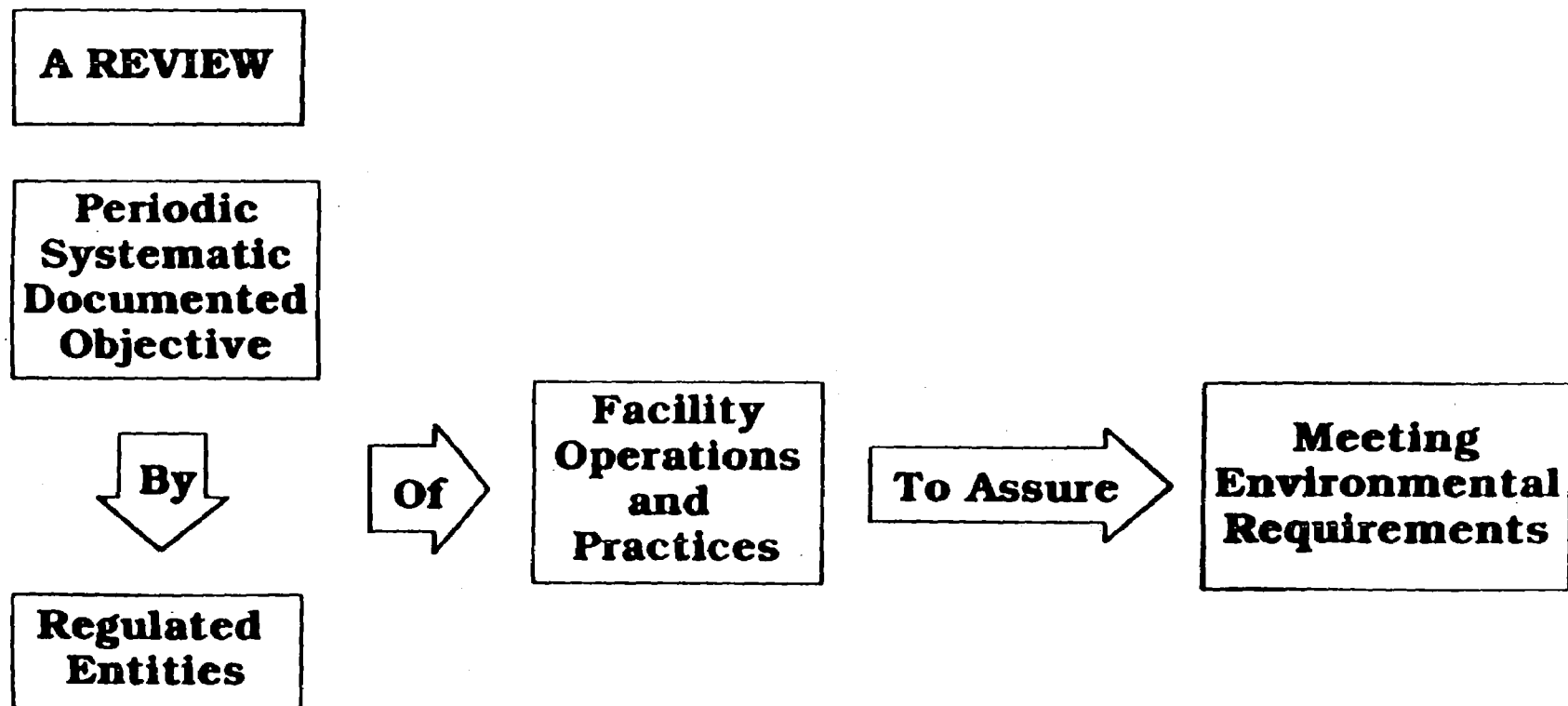
**Environmental  
Protection Agency**

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Environmental Auditing Policy Statement;  
Notice

# What is EPA's Definition of Environmental Auditing?

---



# **Audits Can Accomplish Any or All of the Following:**

---

- **Verify Environmental Compliance**
- **Evaluate the effectiveness of environmental management system**
- **Assess risks from regulated and unregulated practices**

# **What is the Purpose of the Policy?**

---

- **Encourage environmental auditing for all regulated entities**
- **Ensure Consistent EPA Responses**
- **Clarify EPA's Policy on Requests for Audit Reports, etc.**

# **What are the Environmental Auditing Policy Statement's Key Provisions?**

---

**I. Definition**

**II. Encouragement**

**III. Requests for Reports**

**IV. Inspections and Enforcement**

**V. Federal Facilities**

**VI. State and Local Roles**

**VII Elements of Auditing**



# **Elements of Effective Environmental Auditing**

---

- **Management Support**
- **Auditor Independence**
- **Staffing and Training**
- **Written Procedures**
- **Gathering Audit Evidence**
- **Written Reports**
- **Quality Assurance**

# **What Is EPA's Policy on Requests for Audit Reports ?**

---

**"...EPA will not routinely request audit reports."**

**"...exercised on a case-by case basis..."**

**"...and where the information needed  
cannot be obtained from...data  
otherwise available..."**

# **What Is EPA's Audit Policy for Federal Agencies**

---

- **Encourages all Federal agencies to institute environmental auditing programs**
- **Same policy as toward private firms**
- **EPA will provide technical assistance to design programs**
- **Possible Interagency agreements**

# **What Is EPA's Audit Policy for Federal Agencies**

---

- **EPA encourages Federal agencies's to submit findings with action plans to EPA**
- **Report needed projects through the A-106 process**
- **EPA may coordinate with agencies on public release of findings**
- **FOIA policies govern requests for audit information**

# **EPA Assistance to Federal Agencies**

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**1984:Environmental Auditing Conference  
for Federal Agencies**

**1985:Workshop for U.S. Army**

**1987:Report on Federal Agency Auditing  
Activities**

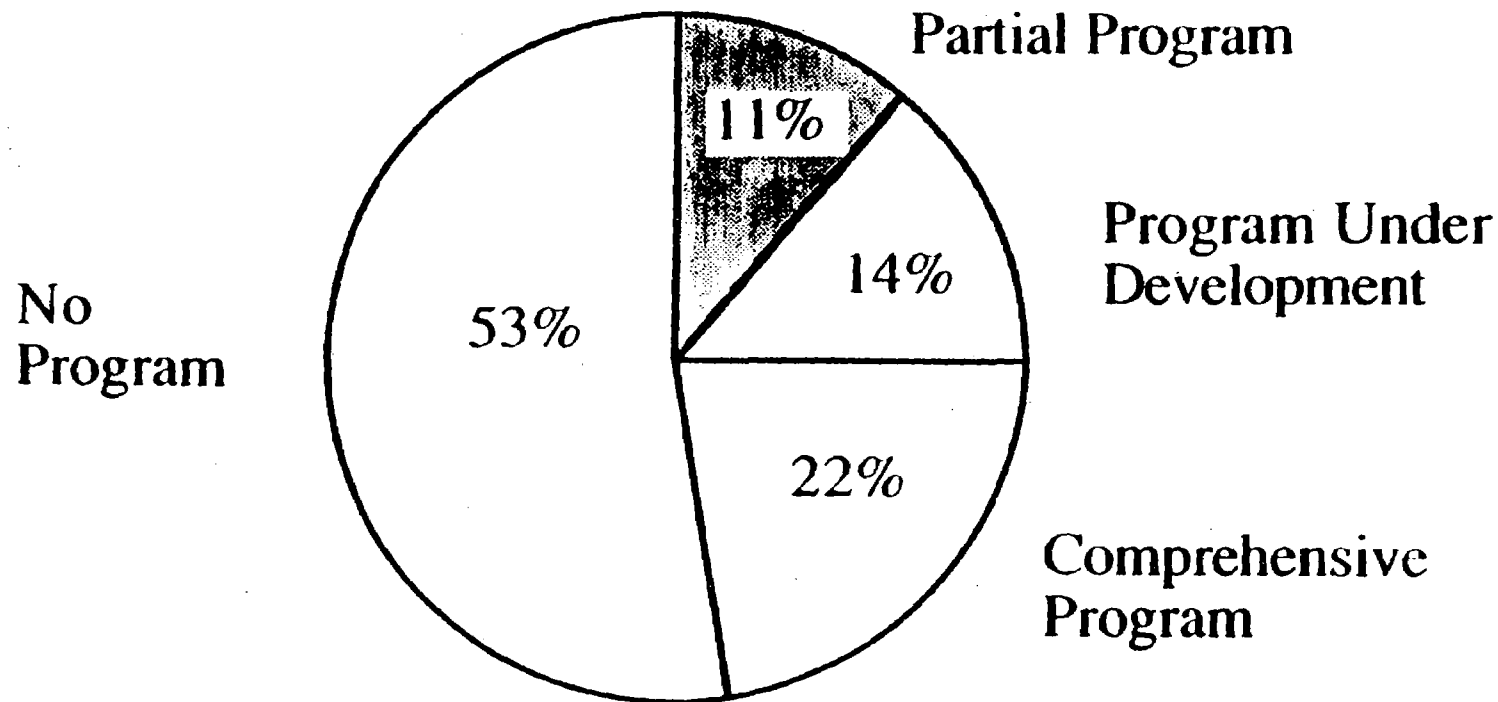
**1988:Second Environmental Auditing  
Conference for Federal Agencies**

**1989: Audit Program Design Guidelines  
and Generic Audit Protocols**



# Summary of Federal Agency Environmental Auditing Programs

---



\* Current as of end of FY 1987

36 AGENCIES

# Summary of Federal Agency Environmental Auditing Programs

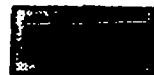
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Partial Program  
Agriculture Dept  
U.S. Navy  
U.S. Coast Guard  
GSA

Comprehensive  
COM  
Food & Drug Admin.  
Bureau of the Mint  
Bureau of Printing  
& Engraving

Comprehensive  
TVA  
DOE  
NIH  
EPA  
NASA  
U.S. Army  
U.S. Air Force  
Defense Logistics  
Agency

19 agencies have no auditing program



Partial Program



Under Development



Comprehensive



No Auditing Program

**OFFICE OF FEDERAL ACTIVITIES  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C.**

**Environmental Audit Program  
Design Guidelines  
for Federal Agencies**

# **What is the Purpose of These Guidelines?**

---

**To provide Federal agencies  
with written guidance to assist  
them in establishing internal  
audit programs.**

# **Unique Federal Facility Auditing Issues**

---

- **Agency Mission vs. Environmental Compliance**
- **Organizational Structure of Federal Agencies**
- **Organization Levels**
- **Personnel Management**
- **Budgeting and Appropriations Activities**
- **A-106 Planning Process**
- **National Security**
- **Freedom of Information Act**



# **The Design Guidelines Include:**

---

- Chapter 1. Introduction**
- Chapter 2. Unique Federal Facility Auditing Issues**
- Chapter 3. Needs and Objectives for an Audit Program**
- Chapter 4. Development of an Environmental Audit Program**
- Chapter 5. Implementation of an Environmental Audit Program**
- Chapter 6. Reporting Results of an Environmental Audit**
- Chapter 7. Corrective Actions**
- Chapter 8. Evaluation of Audit Program Effectiveness**
- Appendices: EPA's Environmental Auditing Policy Statement  
Sources of Information and Training**

**OFFICE OF FEDERAL ACTIVITIES  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C.**

**Generic Protocol for  
Environmental Audits  
at Federal Facilities**

# **What is the Purpose of these Protocols?**

---

**To provide Federal agencies with a set of multi-media generic protocols which can be used to:**

- Conduct audits at their facilities, or;**
- Provide guidance for development of agency-specific protocols**

# **What Are Audit Protocols?**

---

- **Provides detailed instructions for qualified individuals to follow in conducting environmental audits.**
- **Consists of step-by-step directions on:**
  - **What records must be reviewed,**
  - **What physical features to inspect,**
  - **Who to interview,**
  - **What questions to ask facility personnel.**

# **The Generic Protocol Includes:**

---

## **Chapter**

- 1. Introduction**
- 2. Audit Procedures**
- 3. Air**
- 4. Asbestos**
- 5. Drinking Water**
- 6. Water Pollution**
- 7. Non-Hazardous Solid Waste**
- 8. Hazardous Waste**
- 9. Past Disposal of Hazardous Material**
- 10. Emergency Planning and Community Right-to-Know**

# **The Generic Protocol Includes: (Cont.)**

---

## **Chapter**

**11. PCB Management**

**12. Pesticides**

**13. Radioactive Materials**

**14. Underground Storage Tanks**

**15. Environmental Noise**

**16. Natural Resources**

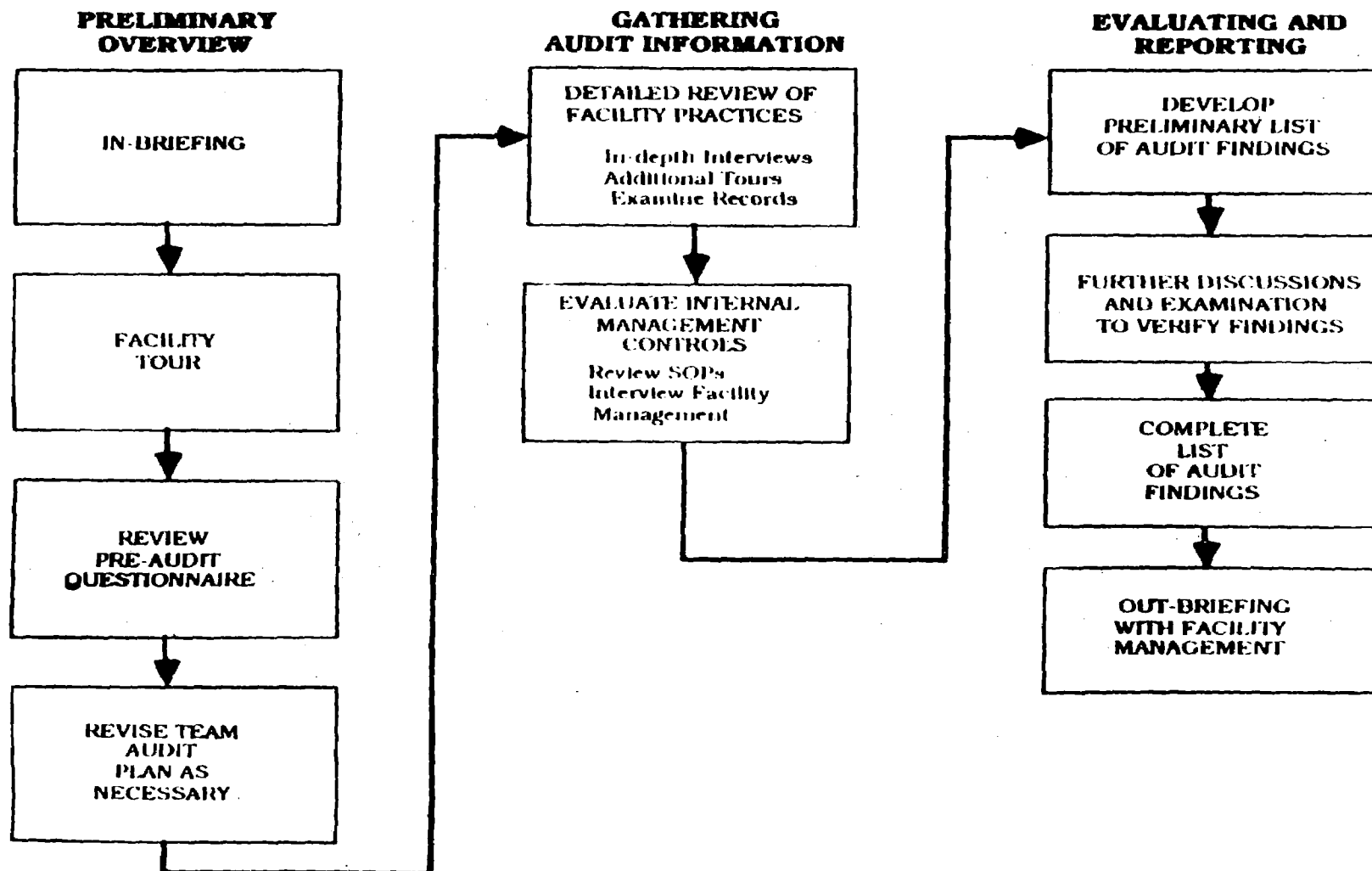
**17. Cultural Resources**

**18. Environmental Impact Documentation**

**19. Environmental Management Results**

# Schematic Overview of the Audit Process

---



# **Subparts of Each Chapter**

---

- **Description**
- **Applicability**
- **Regulatory Scope**
- **State and Local Regulatory Authority**
- **Management Issues**
- **Agency Policy**
- **Reference Checklist**



# **Example: Auditor's Instruction**

---

## **Activity: PCB Management**

### **Records to Review:**

- Inspection, storage, maintenance and disposal records for PCBs/PCB items
- PCB equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual reports.

### **Physical Features to Inspect:**

- PCB storage areas
- Equipment, fluids and other items used or stored at the facility that contain PCBs.

### **People to Interview:**

- Environmental Compliance Officer
- Facilities Manager.

# Example: Checklist

**Activity: PCB Management**

**Facility:** \_\_\_\_\_

**Auditor:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Regulatory Citation	Auditor's Instructions	Comments	Finding Number
<p>40 CFR 761.65</p>	<p><b>Storage of PCB Items:</b></p> <ul style="list-style-type: none"> <li>• Stored PCB items are inspected every 30 days for leaks.</li> <li>• PCB items are stored in DOT-approved containers.</li> <li>• Moveable equipment used to handle PCB items is decontaminated prior to leaving storage area.</li> <li>• Stored PCBs and PCB items are disposed of within one year from date they were placed in storage.</li> <li>• Long-term storage facilities (between 30 days and one year) meet the following requirements: <ul style="list-style-type: none"> <li>- Roof and walls of the facility prevent rainwater from reaching PCBs and PCB items</li> <li>- The facility has continuous curbing (minimum 6 inches) and there are no cracks in floor</li> <li>- The floor and curbing are made of continuously smooth and impervious materials such as Portland cement or steel</li> <li>- Containment volume of the facility equals or exceeds the volume equal to twice the internal volume of the largest</li> </ul> </li> </ul>		

## **Also Included in Protocol**

---

- **A survey to evaluate the environmental management system in place at the facility**
- **Numerous Appendices**
  - **List of state environmental agencies**
  - **Waste streams that are landfill banned**
  - **Suspended, cancelled, and restricted pesticides**
  - **PCB labels**

# **What are Major Components of EPA's Audit Program?**

---

- **Laboratories**
- **Multi-Media**
- **3-Year Cycle**
- **Audit Protocols**
- **Third-Party**
- **HQ Member on all Audit Teams**
- **Overview of Agencywide  
Non-Compliance Patterns/Problems**

# **EPA Reports & Papers on Environmental Auditing**

---

- **Current Audit Practices**
- **Auditing Issues**
- **Guidance on Auditing Under Settlement Agreements**
- **Protocols for Auditing Underground Tanks**
- **EPA Lab Audit Protocols**
- **Federal Agencies' Auditing Activities**
- **Bibliographies on:**
  - **Environmental Auditing**
  - **Environmental Management Programs**
- **Sources of Environmental Auditing Information and Training**

February, 1990



## **Pollution Prevention Research Branch**

### **Current Projects**



**RISK REDUCTION ENGINEERING RESEARCH LABORATORY  
OFFICE OF RESEARCH AND DEVELOPMENT  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
CINCINNATI, OHIO 45268**

# POLLUTION PREVENTION RESEARCH BRANCH'S CURRENT PROJECTS

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## INTRODUCTION

This publication contains one page summaries of recently completed and currently active projects sponsored by the Pollution Prevention Research Branch at the U.S. EPA's Risk Reduction Engineering Laboratory in Cincinnati. The PPRB is responsible for supporting projects that develop and demonstrate clean production technologies, clean products, and innovative approaches to reducing the generation of pollutants in all media. Many of these projects are carried out cooperatively with State agencies, universities, and other environmental research organizations. The FY 90 budget for the Branch is approximately \$3.5 million.

It is our intention to update this publication every six months to reflect program additions or changes. The reader is encouraged to contact the EPA Project Officer listed for more information about any of the projects contained in the publication.

Harry M. Freeman  
Chief  
Pollution Prevention Research Branch

**Personnel Roster**

**POLLUTION PREVENTION RESEARCH BRANCH**

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26 West Martin Luther King Drive  
Cincinnati, Ohio 45268**

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Brown, Lisa M. ....	569-7634
Curran, Mary Ann ....	569-7837
Freeman, Harry M. ....	569-7529
Harten, Teresa M. ....	569-7565
Howell, S. Garry ....	569-7756
Licis, Ivars J. ....	569-7718
Ober, Deborah L. ....	569-7215
Randall, Paul M. ....	569-7673
Springer, Johnny ....	569-7542
Stephan, David G. ....	569-7896
Stone, Kenneth R. ....	569-7474
Westfall, Brian A. ....	569-7755

POLLUTION PREVENTION RESEARCH BRANCH  
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Deborah L. Ober, Secretary  
David G. Stephan, Senior Science Advisor

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Curran, Mary Ann  
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Stone, Kenneth R.  
Howell, S. Garry

PROCESS ENGINEERING SECTION

Licis, Ivars J., Acting Chief  
Bender, Rita A., Secretary  
Brown, Lisa M.  
Randall, Paul M.  
Harten, Teresa M.  
Springer, Johnny

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REGION VI	Johnny Springer	569-7542	684-7542
REGION VII	Kenneth R. Stone	569-7474	684-7474
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REGION IX	Teresa M. Harten	569-7565	684-7565
REGION X	Ivars J. Licis	569-7718	684-7718

PROJECT TITLE: CLEAN PRODUCTS BACKGROUND INFORMATION

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Not yet selected  
NUS Corporation  
910 Clopper Road  
Gaithersburg, Maryland 20878

PROJECT DESCRIPTION:

The objective of this project is to identify, collect and summarize available information on the subjects of clean products, methodologies for comparative evaluations of products to determine "environmental friendliness," environmental labeling programs and methodologies for life-cycle analyses (both environmental impacts and costs related thereto) of products.

Published and unpublished information plus information from other appropriate sources will be gathered and succinctly summarized. Its relative quality is to be judged as may be possible. The result will be used as background material for an in-house meeting on clean products research planned of Spring, 1990.

TIME PERIOD: 12/15/89 - 3/15/90

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Develop detailed workplan	12/31/89
	Produce draft report	1/31/90
	Provide final report	2/28/90

RESOURCES: FY 90 \$30.0K

PROJECT TITLE: CRITERIA FOR ENVIRONMENTALLY FRIENDLY PRODUCTS

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Gary Davis  
University of Tennessee  
Knoxville, TN 37996  
(615) 974-4251

PROJECT DESCRIPTIONS:

This research effort will develop background information and data to contribute to the development of technical criteria that can serve as the framework for a system of environmental labelling of consumer products. It will develop technical evaluation criteria for identifying environmentally "safe" products based on product, packaging, and process. The project will develop a sound methodology for evaluating products, then demonstrate the approach by developing technical criteria for a few classes of consumer products.

The Principal Investigator will plan and conduct a conference on environmental labelling to promote coordination of similar efforts in the US and allow for technical information transfer.

TIME PERIOD: 2/5/90 - 1/31/92

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Conference	10/90
	Paper	12/90
	Final Report	7/92

RESOURCES: FY 89 \$0K, FY 90 \$50K, FY 91 \$50K

PROJECT TITLE: CLEAN PRODUCTS CASE STUDIES

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Joanna Underwood  
INFORM  
381 Park Avenue South  
New York, NY 10016  
(212) 689-4040

PROJECT DESCRIPTION:

This three-year project is designed to produce several outputs to document the experiences of various companies involved in developing programs to produce and market products that might be categorized as "clean products." The first-year's studies will be devoted to products that are high profile products within the municipal solid waste stream. The study team will visit the sites of the companies selected and interview those involved with the subject programs. Eligible products for study will be chosen from those available in the United States, Canada, and Europe. The European investigations will be carried out in cooperation with the Product Life Institute in Geneva, Switzerland. Out-year projects will be devoted to more in-depth analysis of the potential environmental improvements possible through the greater use of environmentally-friendly products. Explorations of using environmental labelling schemes are to be included in the group of projects.

TIME PERIOD: 4/90 - 3/92

PUBLICATIONS, PAPERS TO DATE: TBD

OUTPUTS/MILESTONES: Report, "Case Studies of Cleaner Products," 1/91

RESOURCES: FY 89 \$ 0, FY 90 \$100K, FY 91 \$100K

PROJECT TITLE: COMPARATIVE RISK OF CONSUMER PRODUCTS FOR POLLUTION PREVENTION

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Timothy Mohin  
Office of Air Quality Planning and Standards  
Durham, NC 27711  
(919) 541-5349

PROJECT DESCRIPTION:

This project proposes to prevent pollution at the pre-production stage by reducing market demand for consumer-products entailing "risk" to human health and the environment. Every day, American consumers make purchasing decisions, such as between plastic and paper bags, or between cloth diapers or disposables. These decisions have direct and indirect impact and vary in the cumulative risk they create through their production, transportation, use, maintenance and disposal. Public awareness of the full cost of products can result in behavioral changes and new purchasing patterns. This phenomenon has been most obvious in recent public education campaigns on cancer and heart disease leading to modified diets to include high fiber and low cholesterol foods.

This project will be a cooperative effort involving several EPA Offices (OAQPS, OSW, OW, OPTS, ORD), as well as other groups representing industry and environmental interests. The initial study will focus on a group of consumer goods selected by associated risks and effects on all media. Risks will be estimated from raw material processing to final disposal and culminate in a risk score to be used for product comparison. The final product will be a guide for consumers and producers describing the product group, resultant scores, and risks associated with alternative products.

TIME PERIOD: 2/90 - 1/92

PUBLICATIONS, PAPERS TO DATE: N/A

OUTPUTS/MILESTONES: Risk Analysis Results 5/91  
Final Guidance Report 2/92

RESOURCES: FY 89 \$ K, FY 90 \$ 250K, FY 91 \$ K  
(The FY 91 and 92 funding for this project are to be supported by funds from the Agency's 2% Set-aside exercise)

**TITLE: RESEARCH STRATEGY BACKGROUND DEVELOPMENT**

**EPA PROJECT OFFICER: Ivars J. Lics (513) 569-7718**

**PRINCIPAL INVESTIGATOR: Dr. Herbert Skovronek (201) 599-0100**  
Science Applications International Corp  
8400 Westpark Drive  
McLean, Virginia 22102

**PROJECT DESCRIPTION:**

This project is part of a technical support task funded in FY 89 with the objective of developing a basis for assigning research priorities to work performed within the Process Engineering Section of the Pollution Prevention Research Branch. The Process Engineering Section is partly responsible for defining, establishing and carrying out a research program to enhance and accelerate the implementation of new pollution prevention technologies available at full- or pilot-scale and helping state and local government programs in this area. It is also charged with speeding the development of new technologies and participation in the identification of future pollution problems and designing anticipatory research programs to assist in the development of new technology that will help to avoid these problems.

In order to best prioritize research efforts within a limited budget, this project is designed to gather information on the pollution problems in existence, the new technologies available or being developed and the perceived relative importance of both problems and opportunities in the area by a wide spectrum of people involved. To this end, a prioritization activity was performed using SIC as a basis and involving members of the EPA, industry and academia. The resulting list of 10 to 20 SIC areas will be investigated further by consultation and workshops with the respective trade associations, technical associations and individual experts in the area. The result of this effort will be a table presenting high priority pollution problems and associated opportunities for research. The table will be used as background information to establish a research strategy and prioritize funding of research projects.

**TIME PERIOD: 6/89 - 6/90**

**PUBLICATIONS, PAPERS TO DATE: NONE**

**OUTPUTS/MILESTONES:**

**6/90 - Final Report**

**RESOURCES: FY 89 - \$40K**



PROJECT TITLE: NEW JERSEY/EPA WASTE MINIMIZATION ASSESSMENT PROGRAM

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Sanat Bhavsar  
New Jersey Dept. of Env. Protection  
Trenton, NJ 08625  
(609) 292-8341

PROJECT DESCRIPTION:

The project is designed to evaluate the use of waste minimization assessments in thirty hazardous waste generating facilities (across ten industries) in New Jersey. The assessments are being conducted by the New Jersey Institute of Technology (NJIT) personnel and will follow the EPA-recommended procedure. Some of the participants are being targeted for long-term studies to evaluate implementation strategies. NJDEP refers to the project as "Assessment of Recycling and Recovery Opportunities for Hazardous Waste (ARROW)."

Initial industries to be studied include: 1) Chemical Manufacturers, 2) Pharmaceutical, 3) R&D Facilities, 4) Metal Finishing and Fabrication, 5) Utilities, 6) Printing and Dying, and 7) Dry Cleaners. #8, 9, and 10 are to be determined.

TIME PERIOD: 9/1/88 - 8/31/91

PUBLICATIONS, PAPERS TO DATE: Paper to be presented at the June 1990  
Clean Products conference.

OUTPUTS/MILESTONES:	30 Project Summaries (assessments)	3/90 - 3/91
	10 Research Briefs (industries)	3/91
	1 Final Report	2/92

RESOURCES: FY 89 \$100K, FY 90 \$50K, FY 91 \$0K

PROJECT TITLE: TECHNICAL SUPPORT FOR THE WASTE REDUCTION INNOVATIVE  
TECHNOLOGIES EVALUATION PROGRAM (WRITE)

EPA PROJECT OFFICER: Ivars J. Licis (513) 569-7718

PRINCIPAL INVESTIGATOR: To be determined (201) 599-0100  
Science Applications International Corporation  
8400 Westpark Drive  
McLean, Virginia 22102

PROJECT DESCRIPTION:

This project consists of a collection of technical support tasks associated with the WRITE Program and with the research under the Process Engineering Section of the Pollution Prevention Research Branch. The major specific tasks include test plan design assistance, testing and analyses for waste reduction technologies to be evaluated under the Write Program, (primarily California) and providing expert technical reviews of proposals received by the Section.

TIME PERIOD: The project is scheduled for the FY 90-91 time period. The funding package is presently being drafted.

PUBLICATIONS TO DATE: None

OUTPUTS/MILESTONES:

A final report (Research Brief) is planned for each technology evaluated in California. Approximately four technologies are to be evaluated during the FY 90-91 period. The first of these is a research project with Hewlett-Packard to evaluate reusable oil filters and extended oil use. There are no formal report requirements for the remaining technical support tasks.

RESOURCES: FY 90 - \$150K FY 91 - \$150K

PROJECT TITLE: NEW JERSEY/EPA WRITE PROGRAM

EPA PROJECT OFFICER: Johnny Springer, Jr. (513) 569-7542

PRINCIPAL INVESTIGATOR: Dr. Mohamed Elsaady (609) 292-8341  
NJDEP  
401 East State Street  
5th Floor West CN-028  
Trenton, New Jersey 08625

PROJECT DESCRIPTION:

Technical and economic evaluations will be conducted on manufacturing and processing operations in which waste minimization technologies reduce the volume and/or toxicity of wastes generated. The objectives of the project are to: establish reliable performance and cost information on pollution prevention techniques by conducting evaluations/demonstrations, encourage active participation of small and medium-sized companies in evaluating and adopting pollution prevention concepts, encourage transfer of knowledge and technology between large, medium, and small-sized firms and provide solutions to important chemical, waste stream and industry-specific pollution prevention research needs.

The first technology evaluation will examine the Zerpul "Zero Discharge" electroplating wastewater recovery system. Other technology evaluations will be performed in the areas of cleaning solvent substitution, acid/base recovery/reuse, and electroplating metals recovery. Negotiations are underway for a possible project in the area of CFC reclamation.

TIME PERIOD: 8/14/89 - 8/13/92

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

9/1/89 - Requests for technology evaluation proposals  
11/15/89 - Site visits and preliminary on-site reviews  
12/1/89 - Detailed review of potential technologies  
12/12/89 - Selection of technologies  
1/5/90 - Negotiations for technology evaluation #1  
1/31/90 - Development of QA Project Plan

RESOURCES: FY 89 - \$75K R&D FY 90 - \$125K R&D FY 91 - \$100K R&D

PROJECT TITLE: CALIFORNIA/WRITE

EPA PROJECT OFFICER: Lisa M. Brown (513) 569-7634

PRINCIPAL INVESTIGATOR: Robert Ludwig (916) 324-2659  
California Department of Health  
Services  
Toxic Substances Control Program  
Alternative Technology Division  
400 P Street  
Sacramento, California 94234-7320

PROJECT DESCRIPTION:

The main objective of this project is to identify, develop, and evaluate innovative pollution prevention techniques through the cooperative efforts of California DHS and EPA. Through this program we are exploring methodologies that through engineering and economic assessments have the potential of reducing the quantity and/or the toxicity of waste produced at the source of generation, or to achieve practicable on-site reuse or recycling of these waste materials. California DHS under a Memorandum of Understanding with EPA will identify at least five techniques for evaluation during this three year project.

TIME PERIOD: 6/30/89 - 6/30/92

PROGRESS TO DATE:

Five technologies were evaluated at General Dynamics Pomona Division. The report from this study is being revised. Two additional projects have been identified: one involves reverse osmosis, and the other reusable filters.

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

4/1/90 - Interim Technology Report  
11/1/90 - Interim Technology Report  
5/1/91 - Interim Technology Report  
11/1/92 - Interim Technology Report  
5/1/92 - Interim Technology Report  
6/30/92 - Final Report

RESOURCES: SAIC support contract

PROJECT TITLE: WASHINGTON WRITE PROGRAM

EPA PROJECT OFFICER: Ivars J. Lics (513) 569-7718

PRINCIPAL INVESTIGATOR: Robert Burmark (206) 438-7370  
Washington State Department of Ecology  
Office of Waste Reduction and Recycling MS PV-11  
Olympia, Washington 98504

PROJECT DESCRIPTION:

This project will evaluate five waste minimization technologies that are either implemented at full-scale at the present time or have been developed through relatively large scale and are to be implemented within the time frame of the study. The five technologies will be evaluated during a three-year project period. At the present only one technology has been identified for which companies have been found willing to participate in evaluation. This technology involves the recycling of acetone still bottoms and the substitution of water-based cleaners for acetone with the objective of eliminating these RCRA wastes. Wastes of this type are generated by a large number of relatively small fiberglass fabrication shops in the State of Washington and also across the country. The State of Washington is in the process of implementing a regulation that includes the prohibition of landfilling these still bottoms.

The Washington Department of Ecology (WA-DOE) has arranged a technology evaluation that involves the participation of a builder of fiberglass boats and a company that makes bathtubs, spas and shower stalls to obtain data on the environmental and economic effects on recycling the still bottoms, drying, grinding and reformulating the product into a resin filler putty that was previously purchased and made from virgin material. The major benefit to companies is that they can eliminate the creation of RCRA waste. Q/A and test plans are being prepared at this time.

Specific plans for the other technologies have not been completed. Candidate technologies include: cement kiln uses for sand blasting grit; recycling/reuse of baghouse dust from electric arc furnaces; wastewater elimination in auto engine rebuilding (engine bake out and ball-peening substituted for engine boilout); coating technology improvements such as dry powder applications vs. paint, paint curing, improvements in curing ovens; and reduction/recycling of pot liner waste in aluminum industry. Candidate participants are being sought via Pollution Prevention Workshops sponsored by the WA-DOE, DOE publications ("Ecology Today" and "Baseline") and site visits to state regional offices and their associated industry contacts.

TIME PERIOD: 6/16/89 - 6/15/92

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES: One report is being planned per technology evaluated.  
The first Research Brief is planned for 5/90.

RESOURCES: FY 89 - \$100K FY 90 - \$100K FY 91 - \$100K

PROJECT TITLE: CONNECTICUT/WRITE PROGRAM

EPA PROJECT OFFICER: Lisa M. Brown (513) 569-7634

PRINCIPAL INVESTIGATOR: Frederic W. Kaeser (203) 244-2007  
Connecticut Hazardous Waste Management Service  
900 Asylum Avenue - Suite 360  
Hartford, Connecticut 06105-1904

PROJECT DESCRIPTION:

The main objective of this cooperative agreement is to identify, develop, and evaluate innovative pollution prevention techniques through the cooperative efforts of CHWMS and EPA. Specifically, this cooperative program will explore methodologies that through engineering and economic assessments have the potential of reducing the quantity and/or the toxicity of waste produced at the source of generation, or to achieve practicable on-site reuse or recycling of these waste materials. CHWMS in coordination with its state grant program will identify at least five techniques for evaluation during this three-year project.

PROGRESS TO DATE: CHWMS has gone through the procurement process to hire a contractor.

TIME PERIOD: 10/1/89 - 9/30/92

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

9/1/90 - Interim Technology Report  
2/1/91 - Interim Technology Report  
9/1/91 - Interim Technology Report  
2/1/92 - Interim Technology Report  
9/1/92 - Interim Technology Report  
9/30/92- Final Report

RESOURCES: FY 89 - \$75K FY 90 - \$125K FY 91 - \$100K

PROJECT TITLE: ILLINOIS/EPA WRITE RESEARCH PROGRAM

EPA PROJECT OFFICER: Paul M. Randall (513) 569-7673

PRINCIPAL INVESTIGATOR: Dr. Gary Miller (217) 333-8942  
Hazardous Waste Research and Information Center  
1808 Woodfield Drive  
Savoy, Illinois 61874

PROJECT DESCRIPTION:

In June of 1989, HWRIC/EPA began a three-year research program as part of the Waste Reduction Innovative Technology Evaluation (WRITE) Program. In the Program, HWRIC is working with industry in Illinois to demonstrate and evaluate at least five innovative source reduction and recycling options. The scope of the technology evaluations will include both engineering effectiveness and economic pay-back. The primary objective is to establish reliable performance and cost information on promising pollution prevention techniques and technologies.

Six projects have been tentatively selected out of over 40 companies, trade associations, equipment vendors, and consultants. Technologies or techniques under consideration include substituting water based inks for solvent based inks in flexographic printing, evaluating soybean oil inks, using zinc hydroxide in place of zinc cyanide for zinc electroplating, substituting citrus cleaners for chlorinated solvents in metal fabricating and printing, and recovery of metals and zircon sand in investment foundries. Also, a method to determine the degree of toxicity reduction will be expanded and applied to the waste streams.

Effort has focused on developing detailed project schedules and work plans for projects. A detailed draft of a QA Project Plan was completed to evaluate water based ink technology in a flexographic printing process. Sampling, analysis, and other data collection will begin in the next quarter. Also, a cooperative agreement with the University of Illinois Office of Printing Services was signed to evaluate soybean inks in printing operations. A QA Project Plan will be drafted on this technology.

TIME PERIOD: 6/19/89 - 6/18/92

PUBLICATIONS, PAPERS TO DATE: None to date.

OUTPUTS/MILESTONES:

06/90 - Technical paper at the ICCP in Washington, D.C.  
12/90 - Research paper  
06/91 - Research paper  
12/91 - Research paper  
06/92 - Project final report and summary

RESOURCES: FY 89 - 100K, FY 90 \$100K, FY 91 - \$100K

PROJECT TITLE: MINNESOTA/EPA WRITE (WASTE REDUCTION INNOVATIVE TECHNOLOGY EVALUATION)

EPA PROJECT OFFICER: Teresa M. Harten (513) 569-7565

PRINCIPAL INVESTIGATOR: Cindy McComas (612) 625-4949  
Minnesota Technical Assistance Program  
420 Delaware St. S.E.  
University of Minnesota  
Minneapolis, MN 55455

PROJECT DESCRIPTION:

The objective of this project, which is funded by a cooperative agreement between EPA and the University of Minnesota, is to identify, implement, and evaluate innovative waste reduction technologies. The Minnesota Technical Assistance Program (MnTAP) is the state organization responsible for carrying out the evaluations for this project. MnTAP's WRITE Program focuses on evaluating innovative rinsing technologies in the plating, metal finishing, and circuit board manufacturing industries; both economic and engineering evaluations will be performed. Five or six technology evaluations at operating manufacturing facilities are planned for the three-year cooperative agreement project period.

During the first six months of the project, MnTAP publicized the WRITE Program within the target industrial community, performed site visits at candidate industries and selected one industry for conducting the first evaluation. MICOM, Inc., a printed circuit board manufacturer in the Minneapolis area, is the subject of the initial evaluation. Specifically, waste reducing modifications of rinsing equipment following an etchant bath and an electroless copper plating bath will be assessed. A Quality Assurance Project Plan has been prepared for this evaluation and base line sampling is scheduled to begin at MICOM in January 1990.

MnTAP is continuing its efforts to locate and finalize remaining industrial sites for the project and has tentatively decided on sites for the second and third evaluations, which are scheduled to be carried out during mid and late 1990.

TIME PERIOD: 7/1/89 - 6/30/92

PUBLICATIONS, PAPERS TO DATE: N/A

OUTPUTS/MILESTONES:

6/1/90 - First technology report, Paper  
9/15/90 - Second technology report, Paper  
1/15/91 - Third technology report, Paper  
5/15/91 - Fourth technology report, Paper  
9/15/91 - Fifth technology report, Paper  
6/30/92 - Final project report

RESOURCES: FY 89 - \$100K, FY 90 - \$100K, FY 91 - \$100K



PROJECT TITLE: ERIE COUNTY/EPA WRITE RESEARCH PROGRAM

PROJECT OFFICER: Paul M. Randall (513) 569-7673

PRINCIPAL INVESTIGATOR: Mr. Paul B. Kranz, P.E. (716) 858-6370  
Erie County Department of Environment and Planning  
Division of Environmental Compliance  
95 Franklin Street  
Buffalo, New York 14202

PROJECT DESCRIPTION:

The Erie County Division of Environmental Compliance Services, Department of Environment and Planning, is proposing to develop and evaluate pollution prevention technologies for small- medium-sized businesses in western New York state. The program will be a cooperative effort utilizing the resources of the New York State Center for Hazardous Waste Management and RECRA Environmental Inc., which is a private chemical analysis, prevention, and control firm located in Erie County.

The Erie County proposal is being reviewed by Grants Administration in Washington D.C., and within the Risk Reduction Engineering Laboratory. In Erie County, over 2500 companies are small- to medium-sized businesses such as electroplating, motor vehicle servicing, dry cleaning, printing, and photography. The solicitation of proposals from industry will be facilitated by the New York State Center for Hazardous Waste Management. The New York State Center has developed a round table on source reduction which consists of representatives from western New York industries and state and local government officials concerned with waste minimization. Approximately five technologies will be evaluated over a three year program period.

TIME PERIOD: 3/1/90 - 2/28/93

PUBLICATIONS, PAPERS TO DATE: None to date.

ESTIMATED OUTPUTS/MILESTONES:

3/91 - Research paper  
9/91 - Research paper  
3/92 - Research paper  
9/92 - Research paper  
3/93 - Project final report and summary

RESOURCES: FY 90 - \$100K FY 91 - \$100K FY 92 - \$100K

PROJECT TITLE: WASTE REDUCTION EVALUATIONS AT FEDERAL SITES (WREAFS) PROGRAM

EPA PROJECT OFFICER: James S. Bridges (513) 569-7683

PRINCIPAL INVESTIGATOR: Barry Langer (201) 599-0100

SAIC

1 Sears Drive

Paramus, New Jersey 07652

#### PROJECT DESCRIPTION:

The WREAFS Program is a series of assessment and demonstration projects for pollution prevention and waste reduction conducted cooperatively by EPA and various parts of the DOD, DOE, and other Federal agencies. The objectives of the WREAFS Program include: 1) performing waste minimization opportunity assessments, 2) demonstrating pollution prevention techniques or technologies at Federal facilities, 3) conducting pollution prevention workshops within the Federal sector, and 4) enhancing pollution prevention benefits within the Federal community.

Waste minimization opportunity assessments have been conducted at the Philadelphia Navy Shipyard, Ft. Riley (Kansas) Army Forces Command, Naval Undersea Warfare Engineering Station (Washington), and the Veterans Medical Center (Cincinnati). Assessments are on-going with the Coast Guard (Governor's Island, NY) and EPA's Andrew W. Breidenbach Environmental Research Center in Cincinnati. Planned assessments and demonstrations are with NASA in New Orleans, with the DOE, and others. A cooperative information transfer effort is being planned for Region 10 in early 1990. In addition, a joint USAF RD&D project seeking to obtain information for its chlorinated solvents recycling program is underway with Auburn University. The DOD and DOE work is focused on a wide range of industrial and military operations including: metal cleaning, solvent degreasing, spray painting, vehicle and battery repair, ship bilge cleaning, and equipment overhaul. The other Federal activities more often concentrate on commercial services specific to their activity such as source reduction and recycling opportunities of hospital wastes at a Veteran's Hospital. The resultant pollution prevention recommendations are applicable to both the private and public sectors.

TIME PERIOD: Jun 1, 1988 -

PUBLICATIONS, PAPERS TO DATE: "Summary of Cooperative Hazardous Waste Minimization with DOD"

#### OUTPUTS/MILESTONES:

1/15/90 - WMOA Report and Project Summary - Philadelphia Naval Shipyard  
1/30/90 - WMOA Report and Project Summary - Ft. Riley, Kansas  
2/15/90 - Cincinnati Veteran's Medical Center Case Study Report  
3/1/90 - WMOA Report and Project Summary - Keyport, Washington  
3/31/90 - AWBERC WMOA Report and Project Summary  
4/3/90 - WMOA at Selected DOD Facilities - 16th Annual RREL Conference  
4/15/90 - Region 10 Federal Facilities Pollution Prevention Workshop  
5/15/90 - Coast Guard WMOA Report and Project Summary - Governor's Island  
6/10/90 - Three Paper Session at the ICCP in Washington, D.C.

RESOURCES: FY 89 - \$300.9K R&D FY 90 - \$250K R&D FY 91 - \$500K R&D

PROJECT TITLE: CHEMICAL SUBSTITUTES FOR TCE AND METHANOL IN  
MANUFACTURING OPERATIONS

EPA PROJECT OFFICER: LISA BROWN (513) 569-7634  
JOHNNY SPRINGER, JR. (513) 569-7542

PRINCIPAL INVESTIGATOR: IN-HOUSE PROJECT IN COLLABORATION WITH

Matthew Bower (513) 278-6547	Mike Szabo (513) 782-4829
APS Materials, Inc.	PEI Associates, Inc.
153 Walbrook	11499 Chester Road
Dayton, Ohio	Cincinnati, Ohio 45246

PROJECT DESCRIPTION:

A technical evaluation has been conducted at a small metal finishing company to determine the waste reduction/pollution prevention that can be achieved by substituting a dilute terpene-based cleaning solution for TCE and methanol in the cleaning of orthopedic implants. The tests have been completed and the final report is currently being drafted. The water based solvent performs adequately as a substitute for TCE and methanol in degreasing operations.

TIME PERIOD: 3/1/89 - 9/30/89

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

4/3/89 - Paper to be presented at ORD Symposium

RESOURCES: FY 89 - \$10K R&D

PROJECT TITLE: CHROMATE RECOVERY BY ADSORPTIVE FILTRATION

EPA PROJECT OFFICER: Lisa M. Brown (513) 569-7634

PRINCIPAL INVESTIGATOR: Mark M. Benjamin (206) 543-7645  
University of Washington  
Department of Civil Engineering - FX-10  
Seattle, Washington 98195

PROJECT DESCRIPTION:

The objective of this project is to evaluate the performance of packed beds of granular media coated with iron oxide and other adsorbents for recovering chromate from industrial waste solutions. The initial testing will be conducted using synthetic wastes. Following that, tests will be conducted using batches of real waste. A small recovery unit will be installed on-site at an industry near the University at the culmination of the project for pilot-scale evaluation.

The experimental tasks have been divided into three phases: I. Optimization of the process for coating the media with an adsorbent surface; II. Optimizing collection and recovery of chromate from relatively dilute synthetic waste solutions; and, III. Testing the process with real industrial wastes both at bench-scale and on-line at an industrial site.

PROGRESS TO DATE: The University has submitted a work plan and QAPP for review.

TIME PERIOD: 10/1/89 - 4/30/92

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES: Final Report April 30, 1992

RESOURCES: FY 89 - \$120K FY 90 - \$89K

PROJECT TITLE: POLLUTION PREVENTION PROTOTYPE SYSTEMS

EPA PROJECT OFFICER: Paul M. Randall (513) 569-7673

PRINCIPAL INVESTIGATOR: Mr. Sanat Bhavsar (609) 292-8341  
State of New Jersey  
Department of Environmental Protection  
401 E. State Street - 5th Floor CN-028  
Trenton, New Jersey 08625-0402

PROJECT DESCRIPTION:

In September 1989, the USEPA and NJDEP entered into an agreement to investigate pollution prevention prototype systems. This cooperative agreement has a unique approach to evaluating source reduction and on-site reuse/recycling technologies to reduce waste generated. Main results of this study and current progress are as follows:

1. Measurement of waste minimization efforts by New Jersey industries. A detailed analysis of a waste minimization data base compiled through New Jersey waste minimization reports will be provided. This first phase has been completed and the contractor has issued a draft for review.

2. Develop and implement prototype systems in the vehicle maintenance and repair industry. Phase two studies pollution prevention technologies such as: antifreeze recycling units, freon recapture devices, ultrasonic and environmentally-safe degreasing methods, raw material substitutes, and low VOC paint application systems. A New Jersey Department of Transportation (NJDOT) facility was selected for this study. A detailed project schedule has been completed and the QA Project Plan is being developed. Detailed engineering analysis will include studying the effectiveness of the procedures and proposed vendors equipment to reduce and/or eliminate wastes and verify its economic efficiency. A base line evaluation of the current waste management techniques, raw materials, and types and volumes of waste generated at the NJDOT is in progress and will be compared to implementing equipment, material substitutions, and innovative techniques. Prototypes will be tested at the NJDOT facility. Results will be used as a model and guide for the vehicle maintenance and repair industry.

TIME PERIOD: 9/1/89 - 8/31/91

PUBLICATIONS, PAPERS TO DATE: None to date.

ESTIMATED OUTPUTS/MILESTONES:

6/90 - Technical paper in Washington D.C.  
9/90 - Research paper  
2/91 - Research paper  
9/91 - Project final report and summary

RESOURCES: FY 89 - \$61K, FY 90 - \$62.5K

**PROJECT TITLE: INDUSTRY-SPECIFIC WASTE MINIMIZATION MANUALS**

**EPA PROJECT OFFICER: Teresa M. Harten (513) 569-7565**  
**(Work Assignment Manager)**

**PRINCIPAL INVESTIGATOR: Carl Fromm (818) 449-2171**  
**Jacobs Engineering**  
**251 South Lake Avenue**  
**Pasadena, California 91101-3063**

**PROJECT DESCRIPTION:**

Under this project the Pollution Prevention Research Branch is publishing a series of industry-specific waste minimization guidance manuals. Existing manuals already developed by the State of California Department of Health Services for targeted industries are modified and augmented so that they are comprehensive, nationally applicable guidance documents. In January 1990, seven manuals were cleared for the industrial categories designated in the titles provided below, making up the first set of manuals in the series, to be published in FY 90. A second set of eleven manuals are scheduled for publication throughout 1990 and early 1991; industrial categories that will be addressed and the publication schedule are listed below.

**TIME PERIOD: 11/30/88 - 3/1/91**

**OUTPUTS/MILESTONES: First set of manuals - (to be published in FY 90)**

- "Guide to Waste Minimization in the Paint Manufacturing Industry"
- "Guide to Waste Minimization in the Pesticide Formulating Industry"
- "Guide to Waste Minimization in the Commercial Printing Industry"
- "Guide to Waste Minimization in the Fabricated Metal Industry"
- "Guide to Waste Minimization in Selected Hospital Waste Streams"
- "Guide to Waste Minimization in Research and Educational Institutions"
- "Guide to Waste Minimization in the Printed Circuit Board Manufacturing Industry"

**Publish second set of Industry-Specific Waste Minimization Manuals**

**10/31/90 - Photographic Labs**  
**Fiberglass Reinforced and Composite Plastics**  
**Marine Maintenance and Repair**

**12/31/90 - Pharmaceutical Preparation**  
**Auto Body Repair**  
**Automotive Shops and Repair**

**1/31/91 - Thermal Metal Working**  
**Building Construction and Trade**  
**Non-Agricultural Pesticide Use**

**3/31/91 - Precious Metal Products**  
**Mechanical Equipment Repair**

**RESOURCES: FY 89 - \$25K FY 90 - \$87**

PROJECT TITLE: SMALL GENERATOR WASTE MINIMIZATION ASSESSMENTS

EPA PROJECT OFFICER: Brian A. Westfall (513) 569-7755  
FTS 684-7755

PRINCIPAL INVESTIGATOR: Dr. F. William Kirsch (215) 387-2255  
Industrial Technology and Energy Mgmt. Div.  
University City Science Center  
3624 Market Street  
Philadelphia, Pennsylvania 19104

PROJECT DESCRIPTION:

Technical assistance to small and medium-sized businesses which lack in-house capability for initiating waste minimization programs is provided through a cooperative agreement with the University City Science Center. Assessment teams composed of faculty and students have been established at the University of Tennessee (Knoxville), Colorado State University (Fort Collins), and the University of Louisville (Kentucky). The assessment teams apply and adapt the procedures in EPA's Waste Minimization Opportunity Assessment Manual to candidate facilities at no cost to the site owner. Waste minimization alternatives are identified and accompanied with estimated implementation costs and projected savings. All aspects of implementation are the responsibility of the host facility. A follow-up visit within one year documents the actual costs and savings generated by any of the recommendations which are implemented.

A broad spectrum of businesses have been included among the sites visited, as reflected in the following partial list:

- Metal Can Production
- Plastic Sign Manufacturing
- Automobile Bumper Refurbishing
- Glass Products
- Logging
- Railroad Car Refurbishing
- Printed Circuit Boards
- Paint Production
- Commercial Printing
- HVAC Equipment Production

TIME PERIOD: June 20, 1988 - March 19, 1991

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Paper at EPA Hazardous Waste Symposium	4/90
	Paper at Clean Technology Conference	6/90
	Twenty-four Case Study Project Reports and Summaries	8/90

RESOURCES: FY 89 \$200K FY 90 \$200K FY 91 \$245K

PROJECT TITLE: WASTE REDUCTION FROM CHLORINATED AND PETROLEUM-BASED  
DEGREASING OPERATIONS

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Dr. Ray Tarer  
Auburn University  
Auburn, Alabama 36849  
(205) 826-4827

PROJECT DESCRIPTION:

In support of the Department of Defense waste minimization program, the Air Force is seeking to obtain the best available technology for its chlorinated solvents program. The major chlorinated degreasing solvent in use is 1,1,1,- trichloroethane (TCA). Concerns about the hazards associated with solvent recycling, as well as the handling of common chlorinated solvent inhibitors, have motivated the Air Force to investigate solvent use and recycling. In this joint effort with EPA, Auburn University will ascertain what is required to make state-of-the-art solvent recycling technology available and 2) minimize the risks to operators, liability, and damage to parts being cleaned. Under this charge, Auburn University has proposed a research effort in cooperation with a major solvent manufacturer. Initially, a risk assessment will be performed for the ongoing solvent recycling program at Tinker Air Force Base. The results will be used in formulating a model technology service program.

TIME PERIOD: 10/10/89 - 10/9/90

PUBLICATIONS, PAPERS TO DATE: None to date

OUTPUTS/MILESTONES: Final Report 4/91

RESOURCES: EPA: FY 89 \$20K, FY 90 \$10K, FY 91 \$0K  
DOD: \$100K \$ 0K \$0K



PROJECT TITLE: POLLUTION PREVENTION BY AND FOR SMALL BUSINESS

EPA PROJECT OFFICER: Kenneth R. Stone (513) 569-7474  
RREL, FTS 684-7474

Karen V. Brown (202) 557-2027  
Office of Small FTS 557-2027  
and Disadvantaged Business

PRINCIPAL INVESTIGATOR: TBD

PROJECT DESCRIPTION:

This program will support the implementation and demonstration of promising pollution prevention techniques and technologies by small businesses and to transmit the results of those demonstrations to others in the same, or similar industries. Small businesses will be solicited for demonstration proposals. A selection committee will choose the best proposals for award. Award selection will also involve the relevant association to assist the awardee with the demonstration. Results of the demonstrations will be evaluated, published and transferred throughout the relevant industries through a variety of methods.

This project will provide awards of \$25,000 each to small businesses that will demonstrate innovative approaches to pollution prevention. The demonstrations will be conducted on-site by the small business awardee. The EPA, along with supporting trade associations, will monitor the demonstration, analyze the results and disseminate the conclusions among small businesses, relevant trade associations and interested parties.

Fifteen trade associations have agreed to participate in this program and provide assistance to small businesses in the areas of technology and information transfer. Presentations of demonstration results will be sponsored at annual conferences and regional workshops as appropriate.

TIME PERIOD: October, 1990 - September, 1992

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Publish Demo Reports from 1990 Pilot Program	11/90
	Publish Demo Reports from 1991 Active Program	9/91
	Publish Demo Reports from 1992 Active Program	9/92

RESOURCES:	<u>FY 90</u>	<u>FY 91</u>	<u>FY 92</u>
R&D (available under 2% set-aside)	\$ 50K	\$400K	\$400K
R&D (RREL)	\$ 50K	\$ 50K	\$ 0K
S&E (RREL)	\$ 10K	\$ 20K	\$ 25K

PROJECT TITLE: OHIO WASTE MINIMIZATION ASSESSMENTS

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Barry Langer  
SAIC  
Paramus, NJ 07652  
(201) 599-0100

PROJECT DESCRIPTION:

This project is to carry out waste minimization assessments in several types of generating facilities in the immediate vicinity of the Risk Reduction Engineering Laboratory in Cincinnati. Assessments are carried out in accordance with the EPA Waste Minimization Opportunity Assessment Manual. To date, assessments have been carried out in a truck assembly facility, a mini photo lab, and a large church. Each of these assessments are to produce a report outlining findings and recommendations for waste reduction. From two to four more assessments are planned. Additional sites are being sought.

TIME PERIOD: 4/89 - 9/90

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES: Assessment Report - Mini Photo Lab 2/90  
Assessment Report - Church 4/90  
Assessment Report - Truck Assembly 5/90

RESOURCES: FY 89 \$75K

PROJECT TITLE: IDAHO TECHNICAL EXCHANGE

EPA PROJECT OFFICER: Teresa M. Harten (513) 569-7565

PRINCIPAL INVESTIGATOR: Roger Korus, PhD. (208) 885-6793  
Department of Chemical Engineering  
308 Buchanan Engineering Laboratory  
University of Idaho  
Moscow, Idaho 83843

PROJECT DESCRIPTION:

This cooperative agreement has been undertaken by the Chemical Engineering Department of the University of Idaho (UI) and EPA to support development of pollution prevention environmental and chemical engineering curricula and to support collaborative pollution prevention research efforts among UI, DOE, and other organizations.

Research projects planned to be addressed under this cooperative agreement include efforts to:

- o incorporate process design modifications to reduce emissions of sulfur oxides during combustion of fossil fuels,
- o investigate recycling of agricultural wastes via secondary reaction schemes,
- o elucidate a biotechnological kinetic model for the microbiological degradation of sulfurous inorganic materials in coal,
- o develop process systems to biosorb heavy metals and transuranides,
- o improve KBES and AI techniques to monitor and control process streams to minimize production of environmental contaminants from pulp and paper manufacturing facilities.

TIME PERIOD: 8/1/89 - 7/31/92

PUBLICATIONS, PAPERS TO DATE: N/A

OUTPUTS/MILESTONES:

RESOURCES: FY 89 - \$40K FY 90 - \$27K

PROJECT TITLE: POLLUTION PREVENTION INFORMATION CLEARINGHOUSE (PPIC)

EPA PROJECT OFFICER: Myles Morse (202) 382-5747  
FTS 382-5747

PRINCIPAL INVESTIGATOR: Chris Messner (703) 821-4800  
Science Applications International Corp.  
8400 Westpark Drive  
McLean, Virginia 22102

PROJECT DESCRIPTION:

The objective of this project is to establish and operate a national information clearinghouse on the subject of pollution prevention. The clearinghouse provides a wide range of information services related to pollution prevention and is meant to serve the needs of Federal, State and local government agencies (including EPA itself), large and small businesses, trade associations and others needing information on this subject.

PPIC contains abstracted and indexed technical information regarding pollution prevention techniques applicable to different industries, different manufacturing processes and different types of wastes. It also contains information concerning Federal and state assistance programs, legislative and policy matters, lists of knowledgeable contacts, a schedule of pertinent meetings, conferences and training sessions and even information on international activities on pollution prevention.

PPIC can be accessed by toll-free telephone "hotline" or by computer. Information packets containing general and industry-specific materials are available either by mail or through computer downloading. In addition, PPIC allows a user to order pertinent EPA reports directly from the National Technical Information Service or PPIC supplies the necessary ordering information for reports from other sources.

TIME PERIOD: 7/1/88 - N/A

PUBLICATIONS, PAPERS TO DATE: N/A

OUTPUTS/MILESTONES:	Transfer Clearinghouse from OSW to ORD	7/1/88
	Conduct planning workshop	12/31/88
	Define Clearinghouse specifications	2/28/89
	Initiate pilot test of computer system	3/31/89
	Arrange for and train hotline staff	9/30/89
	Complete pilot test of computer system	12/31/89
	Place PPIC in full operation	1/15/90
	Produce annual progress report	2/15/90
	Produce annual progress report	2/15/91

RESOURCES: FY 89 \$200.0K, FY90 \$200.0K, FY91 \$200.0K  
(plus approx \$200K per year from PPO)

PROJECT TITLE: AMERICAN INSTITUTE FOR POLLUTION PREVENTION

EPA PROJECT OFFICER: David G. Stephan (513) 569-7896  
FTS 684-7896

PRINCIPAL INVESTIGATOR: Thomas R. Hauser (513) 556-3693  
Dept. of Civil & Environmental Engineering  
University of Cincinnati  
Cincinnati, Ohio 45221

PROJECT DESCRIPTION:

The objective of this project is to establish and support an Institute that can provide a new liaison channel between EPA and potential implementors of pollution prevention techniques, primarily in industry, that can assist the EPA in improving the quality and cost-effectiveness of its programs in the pollution prevention area and that can help generate both private and public sector support for pollution prevention concepts.

Some 20 individuals with records of accomplishment in pollution prevention have been appointed to Institute membership. Dr. Joseph T. Ling has been elected Institute Chairman and Dr. Thomas L. Hurst has been elected as Vice-Chairman. The Institute's Executive Director is Dr. Thomas R. Hauser of the University of Cincinnati. Four Councils representing areas of special concern (Economics, Education, Implementation and Technology) have been established and a set of specific 1- to 2-year objectives have been developed, including promoting/sponsoring several meetings on pollution prevention, assisting EPA on several of its "2% set-aside" projects, developing a plan for development/dissemination of pollution prevention curricula materials, examining pollution prevention economic models and other economic materials for effectiveness, defining various pollution prevention barriers/incentives, developing a measurement tool for pollution prevention progress and participating in several pollution prevention demonstration projects.

TIME PERIOD: 10/1/88 - N/A

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Solicit member nominations	12/15/88
	Appoint members	3/31/89
	Hold inaugural meeting	6/30/89
	Establish initial objectives	10/31/89
	Produce annual progress report	6/30/90
	Produce annual progress report	6/30/91

RESOURCES: FY 88 \$50.0K, FY89 \$50.0K, FY90 \$105K, FY91 \$115K  
(plus approx. \$25K per year from PPO)

PROJECT TITLE: INTERNATIONAL CONFERENCE ON POLLUTION PREVENTION

EPA PROJECT OFFICER: Kenneth R. Stone (513) 569-7474  
FTS 684-7474

PRINCIPAL INVESTIGATOR: Mary Bourassa (703) 734-3198  
SAIC  
8400 Westpark Drive  
McLean, Virginia 22102

PROJECT DESCRIPTION:

On June 10-13, 1990, this three-day conference will be held at the Omni Shoreham Hotel in Washington, D. C. Co-organized by this Laboratory, the Pollution Prevention Office (PPO, Deborah Hanlon) and the International Association for Clean Technology (IACT), this conference will explore the innovative technologies and socio-economic issues arising in the field of pollution prevention. Our expected attendance is 1000.

This conference is also a demonstration project on how to run such a large meeting as a clean product. Every effort will be made to examine options that will minimize the volume of waste generated. Costs/savings from implementing these options will be recorded and presented in an enclosure for the registration package. This enclosure will describe how the conference organizers balanced cost with pollution prevention interests and include a questionnaire, requesting the attendee's assessment of this decision-making process. All of this data will be incorporated into a final report.

TIME PERIOD: June 10-13, 1990

PUBLICATIONS, PAPERS TO DATE: First Announcement - Call for Papers  
Second Announcement - Call for Papers  
CEM Message: "EPA Plans Conference as a Clean Product"  
Registration Brochure

OUTPUTS/MILESTONES:

International Conference on Pollution Prevention	- 6/10-13/90
Conference Proceedings	- 8/90
Report on the Conference as a Clean Product	- 9/90

RESOURCES:

	<u>FY 89</u>	<u>FY 90</u>
R&D (RREL)	\$ 50K	\$ 20K
R&D (PPO)	\$ 0K	\$ 50K
R&D (DOD)	\$ 0K	\$ 20K
R&D (DOE)	\$ 0K	\$ 20K

PROJECT TITLE: WASTE REDUCTION ASSESSMENT AND TECHNOLOGY TRANSFER  
TELECONFERENCE

EPA PROJECT OFFICER: Kenneth R. Stone (513) 569-7474  
FTS 684-7474

PRINCIPAL INVESTIGATOR: Cam Metcalf (615) 242-2456  
University of Tennessee  
Center for Industrial Services  
226 Capitol Boulevard Building  
Nashville, Tennessee 37219-1804

PROJECT DESCRIPTION:

On March 19-21, 1990, there will be a three-day teleconference on Waste Reduction Assessment and Technology Transfer, organized by the University of Tennessee. Reaching attendees in at least eighteen states, this teleconference is designed to provide pollution prevention technical assistance to selected participants by generating a forum for technology transfer and contacts for future cooperative efforts.

TIME PERIOD: March 19-21, 1990

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

Waste Reduction Assessment and Technology Transfer Teleconference 3/19-21/90

RESOURCES:	<u>FY 89</u>	<u>FY 90</u>
R&D (RREL)	\$ 0K	\$20K

PROJECT TITLE: POLLUTION PREVENTION TRAINING FOR EPA STAFF

EPA PROJECT OFFICER: Mary Ann Curran (513) 569-7837  
FTS 684-7837

PRINCIPAL INVESTIGATOR: Terry Foecke  
Minnesota Technical Assistance Program  
Box 197 Mayo  
University of Minnesota  
Minneapolis, MN 55455  
(612) 625-4949

PROJECT DESCRIPTION:

MnTAP has proposed a program for EPA personnel which will present instruction and practice in techniques and information useful for the promotion, persuasion, and encouragement of industrial pollution prevention. The goal of the training is to teach an understanding of industrial pollution prevention and identify the important factors to successful discovery and implementation, recognizing that promoting change requires good communication skills. The two-day training course is being developed for regulatory personnel, policy makers, researchers and managers within the Agency and can be applied to State and local government personnel. Sessions are expected to be held in Washington, D.C., Cincinnati, and each Regional office for a total of twelve.

TIME PERIOD: 3/1/90 - 10/31/91

PUBLICATIONS, PAPERS TO DATE: Training Program w/ Curriculum 9/91

OUTPUTS/MILESTONES:	Develop Training Program	1/91
	Conduct Training	4/91 - 9/91
	Program Materials	10/91

RESOURCES: FY 89 \$ OK, FY 90 \$ 40K, FY 91 \$ OK



PROJECT TITLE: EPA RESEARCH PROJECT CASE STUDIES

EPA PROJECT OFFICER: Johnny Springer, Jr. (513) 569-7542

PRINCIPAL INVESTIGATOR: IN-HOUSE PROJECT

PROJECT DESCRIPTION:

To prepare a compilation of summaries of waste minimization demonstrations, assessments and research projects for publication as an EPA publication. This publication will contain all waste minimization activities conducted in the Waste Minimization Branch. The publication will contain an introduction and a subject index. All case studies will be represented according to a common format. A format for the publication is being developed at this time.

TIME PERIOD: Annual

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:

1 volume to be produced annually

RESOURCES:

PROJECT TITLE: SPECIAL EDITION ON WASTE MINIMIZATION FOR JOURNAL OF  
HAZARDOUS MATERIALS

PRINCIPAL INVESTIGATOR: S. Garry Howell (513) 569-7756  
FTS 684 7756

PROJECT DESCRIPTION:

A special edition on waste minimization for the Journal of Hazardous Materials is being prepared. After consulting with the editor of the regular edition of the Journal, Gary Bennett of the University of Toledo, it was decided that authors with diverse viewpoints (EPA, academia, and industry) would be solicited for papers. If more than 10 or 12 acceptable papers are received, the excess would be considered for another special edition, or they might be submitted to another journal. Since the Journal of Hazardous Material is peer reviewed, most authors would prefer to publish in it.

To date we have seven outside authors giving oral commitments, and one tentative. The Waste Minimization Branch will contribute another nine or ten, so even with a 50% rate of participation, there should be enough to fill one edition.

TIME PERIOD: 11/1/89 - 12/1/90

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Submit Titles	12/1/89
	Submit Abstracts	1/15/90
	Submit Manuscripts	3/1/90
	Finish Reviews & Corrections	1/2/91
	Write Guest Editorial	1/2/91

RESOURCES: None Required.

PROJECT TITLE: RECLAIMING FIBER FROM NEWSPRINT

EPA PROJECT OFFICER: Teresa M. Harten (513) 569-7565

PRINCIPAL INVESTIGATOR: Dennis Gunderson (608) 231-9200  
Forest Products Laboratory  
One Gifford Pinchot Drive  
Madison, Wisconsin 53705-2398

PROJECT DESCRIPTION:

This project, which is funded under an Interagency Agreement with USDA's Forest Products Laboratory in Madison, Wisconsin, is designed to investigate the potential for reclaiming newsprint by means of a dry fiberizing process. It is part of a larger research program at FPL that will explore dry and/or semi-dry paper making processes; the American Newsprint Publishing Association (ANPA), FPL, and EPA are co-funding the total program. For the dry fiberizing portion of the program, FPL is looking at three methods for disintegrating newsprint that achieve the goals of fiberizing: effective separation of fibers with minimal damage to or shortening of these fibers. The three methods are hammermilling, ballmilling, and single disk refining.

During the first six months of the project, FPL has acquired needed equipment, conducted familiarization and check-out trials with the new equipment, and designed and constructed a laboratory device for separating the dry fiberized material. In addition, FPL drafted a Quality Assurance Project Plan which has received EPA approval. In December 1989, fiberizing and sampling were begun in earnest and preliminary results appear to indicate that fiber damage is sensitive to controllable variables.

TIME PERIOD: 6/15/89 - 9/30/92

PUBLICATIONS, PAPERS TO DATE: N/A

OUTPUTS/MILESTONES:

6/1/90 - Paper  
9/1/90 - Interim Report  
6/15/91 - Paper  
9/1/91 - Interim Report  
6/15/92 - Paper  
9/1/92 - Final Report

RESOURCES: FY 89 - \$40K FY 90 - \$50K FY 91 - \$60K

PROJECT TITLE: DETERMINATION OF LEGITIMATE HAZARDOUS WASTE RECYCLING

EPA PROJECT OFFICER: Brian A. Westfall (513) 569-7755  
FTS 684-7755

PRINCIPAL INVESTIGATOR: Barbara L. Cormier (513) 252-1222  
PEER Consultants  
4134 Linden Avenue, Suite 202  
Dayton, Ohio 45432

PROJECT DESCRIPTION:

The Resource Conservation and Recovery Act (RCRA), as well as EPA's waste management hierarchy, places a high priority on recycling waste rather than using conventional treatment and disposal methods. An incentive for recycling hazardous waste is the exemption of recycling operations from the RCRA permit requirements for hazardous waste treatment, storage or disposal facilities. The regulatory requirements for treatment facilities are detailed and specific, but the requirements for recyclers are very general and little guidance has been developed to apply the requirements to a proposed recycling operation.

The Ohio EPA and U.S. EPA's Region 5 are reviewing the claims of a company proposing to recycle hazardous electroplating sludges (RCRA Waste Code F006) by producing a material with uses in the abrasives industry or in ceramic building materials and fixtures. Technical assistance to determine whether or not the process meets the regulatory requirements as legitimate recycling is being provided by the project officer and contracted consultants. Technical criteria for legitimate recycling include the following:

- The hazardous constituent(s) of the waste must be an essential ingredient of the end product.
- The product must be marketable.
- The recycler must have equipment capable of producing material which meets market specifications.

The proposed process has been evaluated at bench-scale and in a brief test of a full-scale unit. Monitoring of a six-week period of full-scale operation will complete the assistance on this hazardous waste recycling determination.

TIME PERIOD: January 20, 1989 - March 31, 1990

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES: Internal Report - March, 1990

RESOURCES: FY 89 \$ 0 FY 90 \$ 0 FY 91 \$ 0 (\$20 K from OSW)

**PROJECT TITLE: COMPOSITES FROM RECYCLED PLASTICS, WOOD, AND RECYCLED  
WOOD FIBER**

**EPA PROJECT OFFICER:** Teresa Harten (513) 569-7565  
FTS 684-7565

**PRINCIPAL INVESTIGATOR:** To be determined  
Forest Products Laboratory  
One Gifford Pinchot Drive  
Madison, Wisconsin 53705-2398

**PROJECT DESCRIPTION:**

This research project will involve lab and pilot-scale work to develop commercially viable thermoformable composite products using recycled high density polyethylene (HDPE), wood flour, recycled wood fiber, and reclaimed polyester fiber. Proof of concept research performed at USDA's Forest Products Laboratory (FPL) in Madison, Wisconsin has produced promising results. This project will be an interagency agreement with FPL and will build on existing research to develop a variety of composite products; the most promising would be scaled-up to pilot-scale.

A three-year interagency agreement will be made between the FPL and EPA to investigate and develop wood/plastic composites. The program will examine the application of conventional equipment for thermomechanical production of wood fiber to the simultaneous formation of wood fibers and ground plastic from wood chips and plastic bottles. It will also investigate forming operations such as extrusion, injection molding and nonwoven web technology.

**TIME PERIOD:** 7/90 - 6/93

**PUBLICATIONS, PAPERS TO DATE:** None

<b>OUTPUTS/MILESTONES:</b> Award interagency agreement to USDA-FPL	0-6 months
Setup test, start test program using bench-scale apparatus	6-10 months
Complete test and provide report regarding results of concept	10-13 months
If favorable, setup pilot-scale and start testing	13-24 months
Complete parametric testing of system	24-32 months
Write report, evaluate economics at pilot-scale, project economics at full-scale	32-36 months

**RESOURCES:** FY 90 \$150K FY 91 \$100K FY 92 \$100K

**PROJECT TITLE: POLLUTION PREVENTION IN PUBLIC AGENCIES**

**EPA PROJECT OFFICER:** Brian A. Westfall (513) 569-7755  
FTS 684-7755

**PRINCIPAL INVESTIGATOR:** Gordon R. Garner (502) 587-0591  
Executive Director, Louis and Jefferson County  
Metropolitan Sewer District  
400 South Sixth Street  
Louisville, Kentucky 40202

**PROJECT DESCRIPTION:**

The Louisville and Jefferson County Metropolitan Sewer District (MSD) has proposed a project to develop and implement a comprehensive pollution prevention assessment process for public agencies and institutions located in the Louisville Metropolitan area. Under a cooperative agreement with EPA, the MSD will evaluate the current status of pollution prevention awareness and activities at a number of State, local and Federal government organizations, including municipal governments, public schools, the water utility, the regional airport, State offices, the University of Louisville and MSD itself. A pollution prevention assessment process specifically for public agencies will be developed and then tested at MSD and one or two additional agencies. The process will be modified as necessary and then used at all facilities which will participate. The widespread use of a uniform procedure will enhance the transfer of information among facilities having common waste management problems and similar waste reduction opportunities.

**TIME PERIOD:** May 1, 1990 - October 31, 1991

**PUBLICATIONS, PAPERS TO DATE:** None

**OUTPUTS/MILESTONES:**

Phase I	-	Evaluate current pollution prevention activities, Interim Report - August, 1990
Phase II	-	Develop and test assessment process, Interim Report - April, 1991
Phase III	-	Assessments at remaining agencies, Final Report - October, 1991

**RESOURCES:** FY 89 \$ 0 FY 90 \$ 50K FY 91 \$ 0

PROJECT TITLE: MODEL COMMUNITY POLLUTION PREVENTION CASE STUDY

EPA PROJECT OFFICER: Kenneth R. Stone (513) 569-7474  
FTS 684-7474

PRINCIPAL INVESTIGATOR: Not yet selected

PROJECT DESCRIPTION:

This project is to establish a model environmental risk reduction program on a military base to demonstrate how pollution prevention techniques can be combined into a community through all the everyday community institutions, business and services. This model plan will address community organization, facilities and services, energy, transportation and education.

This is to be a cooperative project between the RREL, the Pollution Prevention Office, and the Department of Defense. A pollution prevention task force, staffed to represent significant segments of the selected community, is to be established to facilitate cross-media coordination between community agencies, facilities, services and consumers. EPA will provide technical assistance in selecting the pollution prevention alternatives and monitoring their implementation. A workshop is to be conducted to discuss successes and failures in existing community programs to familiarize the task force members. A second workshop will review the program and include officers from other military bases. A final conference will provide the opportunity to disseminate results to public communities.

TIME PERIOD: 4/90 - 3/93

PUBLICATIONS, PAPERS TO DATE: None

OUTPUTS/MILESTONES:	Workshop on Community Programs to Brief the Task Force Members	7/90
	Workshop to Review 1990 Efforts and Successes, and to Brief Other Bases	7/91
	Conference on Community Programs for Base Officers and Public Community Leaders	7/92

RESOURCES: FY 90 - \$50K FY 91 - \$200K FY 92 - \$100K

**PROJECT TITLE: METHODOLOGY FOR MEASURING POLLUTION PREVENTION**

**EPA PROJECT OFFICER:** James Bridges (513) 569-7683  
FTS 684-7683

**PRINCIPAL INVESTIGATOR:** To be determined

**PROJECT DESCRIPTION:**

To adequately reflect the progress of waste reduction and determine the success of pollution prevention, it is necessary to utilize an appropriate measurement methodology that is acceptable to the private and public sectors. The objective of this initiative is to develop a single methodology which integrates mass-based pollution prevention. The final report will be a decision-makers guide for calculating the progress of pollution prevention goals and present technical information on how to set reasonable pollution prevention goals. The report should include a series of worksheets that can be used to guide industry and government through the methodology.

In cooperation with a yet to be determined research center, the project will develop a measurement methodology for hazardous and nonhazardous multi-media pollution prevention. Necessary input will be required through coordination with professional or trade associations, State governments, DOD, DOE, EPA and others who set pollution prevention goals. EPA will present a unified approach with the assistance of representatives of PPO, OSW and OEETD.

**TIME PERIOD:** 7/90 - 6/91

**PUBLICATIONS, PAPERS TO DATE:** None

<b>OUTPUTS/MILESTONES:</b> Planning research and funds transfer	0-2 months
Approved work plan and coordination within EPA	2-4 months
Draft methodology	4-6 months
Consensus approval of methodology (public and private sectors)	6-8 months
Decision-makers guide and methodology report	8-10 months
Demonstrate guide with methodology	10-12 months

**RESOURCES:** FY 90 \$200K FY 91 \$100K



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# EPA ENFORCEMENT AT GOCO\* FACILITIES

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\* Government-Owned/Contractor-Operated Facilities

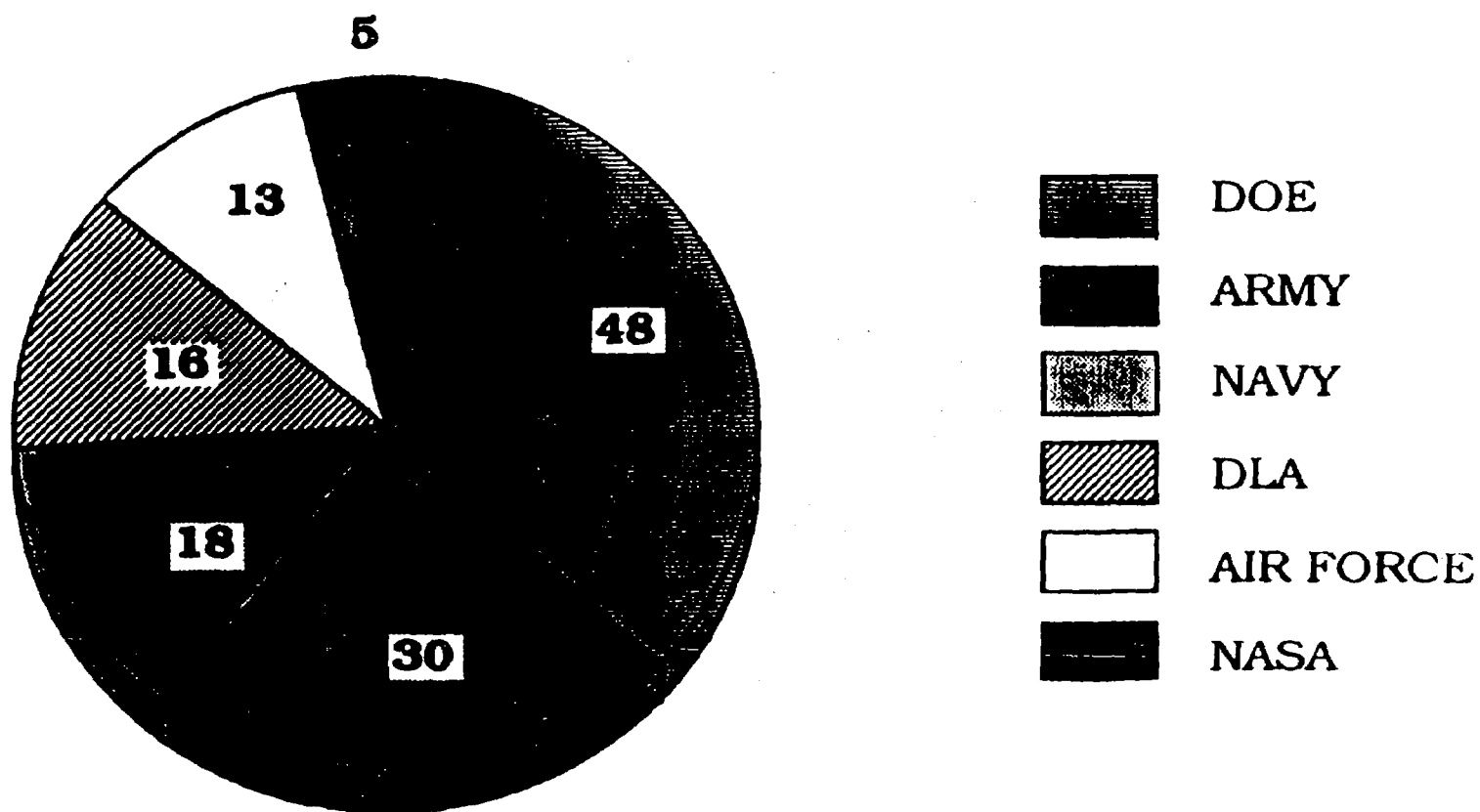


Office of Federal Activities  
Washington, D.C.

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# IDENTIFICATION OF THE GOCO UNIVERSE

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**"KNOWN UNIVERSE"**

**130 GOCO Facilities identified  
by Federal Agencies**

# TYPES OF GOCO FACILITIES

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- **USAF Industrial Plants (Aircraft, Missile, Space Shuttle, Bombing System Production)**
- **Army Ammunition Plants**
- **Army Aircraft, Engine and Tank Plants**
- **Naval Industrial Ordnance Plants**
- **Naval Weapons Plants**
- **Naval Ship Repair Facilities**
- **Defense Fuel Supply Centers (DLA)**

# TYPES OF GOCO FACILITIES

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(Continued)

- DOE National Research Laboratories
- DOE Weapons Testing Support Facilities
- DOE Atomic Power and Nuclear Reactor Facilities
- DOE Strategic Petroleum Reserves
- NASA Assembly Facilities and Industrial Plants
- NASA Jet Propulsion Laboratories

# DEFINITION(S) OF GOCO FACILITIES

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## EPA Federal Facilities Compliance Strategy:

**GOCO** = "Government Facility owned by a  
Federal Agency, but all or portions of it  
are operated by private contractor(s)."

# FEDERAL FACILITIES WITH PRIVATE ARRANGEMENTS

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GOGO	vs.	GOCO
	vs.	COCO
	vs.	COCO(E)
	vs.	POGO
	vs.	GOPO
	vs.	JOCO
Federal Lands	vs.	Leasee
	vs.	Grantee
	vs.	Claimant
	vs.	Patent Holder
	vs.	Permittee
	vs.	Withdrawal

# HISTORY OF FEDERAL GOVERNMENT GOCO POLICY

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October 1983 • DOJ - Response Letter to Rep. John Dingell:

"... is prepared to sue GOCO facilities when the contractor is the responsible party and it is otherwise appropriate ..."

April 1987 • DOJ - Written Testimony at Oversight Hearing:

"... ready to utilize the full panalopy of its judicial enforcement tools against GOCO violators ... on Federal facilities."

# HISTORY OF EPA GOCO POLICY

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1983-85 • OAR

- 2 Memos on GOCO Enforcement to EPA Regions

1985-88 • OSWER

- 5 Memos to EPA Regions on GOCO Enforcement, Permit Issues and Operator Determinations

1988 • EPA Administrator

- Letter to Other Agencies clarifying full applicability of SARA Title III to contractors at GOCOs



# **EPA GOCO ENFORCEMENT STRATEGY**

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## **Schedule and Milestones:**

- August 1988**      - Formation of EPA GOCO Enforcement Workgroup
- October 1988**    - Colloquium on EPA Enforcement at GOCO Facilities
- December 1988** - Colloquim Proceedings Completed
- March 1989**     - Draft Strategy (review/comment)
- September 1989** - Final Strategy

# COLLOQUIUM ON EPA ENFORCEMENT AT GOCO FACILITIES

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- Sponsored by EPA Office of Federal Activities (October 1988)
- "Springboard" for development of an EPA GOCO Enforcement Strategy
- Forum for exchange of viewpoints among all affected parties:
  - EPA HQ and Regions
  - Federal Agencies
  - Government Contractors
  - State Agencies
  - Environmental and Public Policy Groups
  - Private Law Firms
- Intended Outcome:
  - Identification of key issues for EPA GOCO Strategy

# **EPA GOCO POLICY IN THE FEDERAL FACILITIES COMPLIANCE STRATEGY**

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- **EPA committment "to develop an Agencywide GOCO Enforcement Strategy"**
- **To provide:**
  - ". . . more detailed criteria and factors to be considered in determining which party to pursue enforcement action against."**

# **EPA GOCO POLICY IN THE FEDERAL FACILITIES COMPLIANCE STRATEGY**

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- **Contractor Listing Program (CAA, CWA):**
  - **Results in ineligibility to receive government contracts**
  - **Clarifies applicability to GOCO contractors**
  - **Congress has introduced legislation to expand to include RCRA**

# EPA GOCO POLICY IN THE FEDERAL FACILITIES COMPLIANCE STRATEGY

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## Notification Procedures for Actions at GOCO Facilities:

- **EPA Enforcement vs. Contractor:**

- Copy (cc) of notice sent to Federal agency
- Plus a Letter to agency:
  - Emphasizing importance of responsibilities to oversee contractor
  - Request agency's cooperation in returning facility to compliance quickly

- **EPA Enforcement vs. Federal Agency:**

- Enforcement Action sent directly to agency officials
- Copy of notice sent to involved contractor

# GOCO ENFORCEMENT RESPONSE

## EPA INITIAL ENFORCEMENT RESPONSE TO VIOLATIONS AT FACILITIES WITH FEDERAL INVOLVEMENT

Acronym/ Term	Definition	Exception or Other Comment	Initial Enforcement Response Directed at:
<b>GOGO:</b>	<u>Government owned/government operated</u> facility is the traditional Federal facility where the government owns and operates all regulated activity.		<b>FEDERAL FACILITY</b>
<b>PERMITTEE:</b>	Parties granted a permit for short-term use of government land (special use permit holders).		
<b>WITHDRAWAL FROM PUBLIC USE:</b>	Permit granted to a Federal agency or instrument of the Federal government to use the land of another Federal agency for up to twenty years, under the Federal Land Policy and Management Act, as long as the intended use does not involve destruction of the land (e.g. military uses and dams).	If administering the lands when the violation occurred.	
<b>GOCO:</b>	<u>Government owned/contractor operated</u> facility is owned by a Federal agency but all or portions of it are operated by private contractor(s).	Except if dictated by statute or other factors. Action may also be against both parties.	<b>FEDERAL FACILITY OR PRIVATE PARTY</b>
<b>JOCO:</b>	<u>Jointly owned/contractor operated</u> is a facility where a portion is owned by the Federal agency and a portion is owned by a private operator which operates the entire facility and produces some goods and services for the Federal agency and some for its own use or profit.		
<b>GOPO:</b>	<u>Government owned/private operator</u> is a facility where the government has leased all or part of its facility to a private operator for their operation and profit.		
<b>COGO:</b>	<u>Contractor owned/contractor operated</u> facility is a non-government owned, privately operated facility that provides goods and/or services to a Federal agency under contract.	Except if pollution abatement is to be paid by the Federal facility for the furnished equipment.	<b>PRIVATE PARTY</b>
<b>COGO(E):</b>	Same as COGO, however, contractor may be furnished government equipment to manufacture a product or provide a service.	Except if violation resulted because of Federal agency operation.	
<b>POGO:</b>	Privately owned/government operated is a facility where the government leases buildings or space for its operations.	Or non-Federal parties.	
<b>LEASEE:</b>	Parties granted use of government land by a rental agreement or a title transfer with a reversionary clause (municipal landfills, oil and gas, mining, grazing, agricultural and industrial operations).	Or non-Federal parties.	
<b>GRANTEE:</b>	Parties having received a grant for permanent authorization to use government land or given right of way. Grants usually involve a single payment for the land or transfer of land use rights.		
<b>CLAIMANT:</b>	Parties that have properly located, recorded, and maintained mining claims on the public domain under the 1872 mining law (and who) have a possessory right against the U.S. and third parties.		
<b>PATENT HOLDER:</b>	A mining claimant who has met the statutory requirements of the 1872 mining law and has been issued a patent.		
<b>HOLDER:</b>	Any applicant who has received a special use authorization (for the use of National Forest land) from 36 CFR 251.51.		

# EPA GOCO POLICY IN THE FEDERAL FACILITIES COMPLIANCE STRATEGY

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- **Initial Enforcement Response influenced by:**
  - Statutory language re: owner/operator;
  - Party or parties holding permit;
  - Contractual arrangements;
  - Nature and type of violation(s);
  - Other factors.
- **Focus is on EPA's "Initial" Enforcement Response**
  - Additional information may affect which party any further action should be taken against.

# EPA GOCO POLICY IN THE FEDERAL FACILITIES COMPLIANCE STRATEGY

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" . . . pursue full range of its enforcement authorities vs. contractor operators of government owned facilities. . . "

AND

" . . . also may take enforcement actions against Federal agencies . . . "

OR

" . . . it may pursue enforcement action against both. . . "



***FEDERAL FACILITIES***  
***MULTI • MEDIA ENVIRONMENTAL***  
***COMPLIANCE CONFERENCE***

***MARCH 27 - 28, 1990***

***ATLANTA, GEORGIA***





# **ECAMP**

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**ENVIRONMENTAL**

**COMPLIANCE**

**ASSESSMENT**

**AND**

**MANAGEMENT**

**PROGRAM**



# **HISTORY OF THE AIR FORCE ECAMP**

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<b>Feb 1984</b>	<b>HQ AFESC awarded a contract to Weston Inc. to develop a guidance package.</b>
<b>Sep - Nov 1984</b>	<b>Test Audits conducted at six bases with Air Force and Weston personnel.</b>
<b>May 1985</b>	<b>Weston developed a draft guidance package and held a training course for selected Air Force personnel.</b>
<b>Jun - Aug 1985</b>	<b>Weston and Air Force personnel tested guidance manual at eight bases.</b>
<b>Nov 8 1985</b>	<b>EPA Environmental Auditing Policy Statement (Federal Register).</b>
<b>Jan 1986</b>	<b>DOD Policy Guidance / Air Force Tiger Team.</b>
<b>Nov 1987</b>	<b>Draft ECAMP Policy coordinated Air Force Wide.</b>  <b>Training Classes were scheduled for all Air Force environmental personnel.</b>
<b>Jun 14 1988</b>	<b>AF ECAMP Policy issued requiring all major and minor installations to complete audit by 31 Jan 90.</b>



# **AIR FORCE ECAMP POLICY**

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## **Evaluation Frequency**

**Each major and minor installation has an  
External ECAMP once every three years.**

**Each major installation has an Internal ECAMP  
every year except the year of the external ECAMP.**



# **AIR FORCE ECAMP POLICY**

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## **Public Release of ECAMP Documents**

**All ECAMP materials are internal working documents  
"For Official Use Only"  
until the Final Environmental Report is released.**

**As a matter of policy, Final Environmental Report will  
be made available for public release,  
upon request, as soon as it is executed.**

**Freedom of Information Act (FOIA) Requests will be  
considered on a case-by-case basis under the  
rules of Air Force Regulation 12-30.**



# ECAMP TEAM COMPOSITION

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## Typical External Evaluation Team:

1	Team Chief	MAJCOM
2 to 4	Team Members	MAJCOM, Other bases AFRCE, OEHL
<u>2 to 4</u>	Team Members	Contractor
<u>5 to 9</u>	Total	

Air Force members can come from DE, SG, JA, MA, LES, & LGT.



# **AIR FORCE ECAMP POLICY**

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## **MAJCOM OPTIONS**

**Major Commands are responsible for insuring  
ECAMPs are completed at each of their installations.**

### **Options for External Audits:**

**All consultants.**

**Combination Air Force and consultant team.**

**All Air Force team.**

**MAJCOMs can do external ECAMPs more often.**



# **PRE-EVALUATION ACTIVITIES**

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**Pre-visit Questionnaire.**

**Define Evaluation Scope and Team.**

**Review Relevant Regulations.**

**Review Evaluation Protocols.**

**Develop Evaluation Schedule.**





# **AIR FORCE ECAMP POLICY**

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## **ECAMP PROTOCOLS**

**Air Emissions**  
**Wastewater Discharges**  
**Solid Waste Management**  
**Hazardous Waste Management**  
**Pesticides Management**  
**Polychlorinated Biphenyls**  
**Drinking Water**  
**Fuels, Oils, & Lubricants**  
**Hazardous Materials**  
**Natural Resources**  
**Noise**  
**Underground Storage Tanks**



# **ECAMP REPORT FORMAT**

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**Executive Summary**

**Background and Scope**

**Environmental Compliance Status**

**Observations and Comments**

**Action Plan**

**Distribution**



# COMPLIANCE SUMMARY SYSTEM

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Blue	No deficiencies.
Green	Minor deficiencies.
Yellow	Major and minor deficiencies.
Red	At least one significant deficiency.

## Definitions:

Significant Deficiencies - Immediate threat to humans or the environment or the mission.

Major Deficiencies - Requires action but not immediate.

Minor Deficiencies - Mostly Administrative in nature.



# **ECAMP COSTS**

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**Contractor ECAMPs - \$35,000 to \$60,000 per base**

**Combined Air Force and Contractor Teams -  
\$30,000 per base**

**All Air Force Team - \$10,000**

**The above data represents compiled information from  
five MAJCOMs representing about 40 ECAMPs.**

TENNESSEE VALLEY AUTHORITY

ENVIRONMENTAL AUDITING PROGRAM

Presented by

Madonna E. Martin, Project Manager/Lead Auditor

## HISTORY

- o 1981 - TVA ENVIRONMENTAL QUALITY POLICY ISSUED
- o 1981 - FIRST AUDIT CONDUCTED
- o 1985 - FORMAL AUDIT PROGRAM ESTABLISHED
- o 1988 - AUDIT DEPARTMENT ESTABLISHED

## OBJECTIVE

- o FACILITY COMPLIANCE PROGRAMS ADEQUATE AND MEET REGULATORY REQUIREMENTS
- o APPROPRIATE RECORDS PREPARED AND AVAILABLE
- o PERSONNEL TRAINED AND QUALIFIED
- o QUALITY ASSURANCE PROGRAMS AND CONTROLS IN PLACE

## FOCUS

- o FACILITIES WHERE THERE IS RISK FOR:
  - SIGNIFICANT ENVIRONMENTAL IMPACT
  - DANGER TO PUBLIC HEALTH
  - CIVIL OR FINANCIAL PENALTY
  - ADVERSE IMPACT TO TVA'S IMAGE WITH PUBLIC  
AND/OR RELATIONS WITH REGULATORS



## SCOPE

- o MAJOR AND MINOR FACILITIES
- o 30 FACILITIES PER YEAR
- o MULTI MEDIA
- o MANAGEMENT AUDITS
- o SERVICE

## STAFFING

- o DEPARTMENT HEAD, 3 FULL-TIME LEAD AUDITORS,  
1 PART-TIME AUDITOR, SECRETARY
- o AUDITORS ASSIGNED MEDIA SPECIALTIES
- o CROSS-TRAINING
- o USE OF OTHER TVA/EXTERNAL STAFF
- o \$350,000 ANNUAL BUDGET

## AUDIT PHASES

- o PRE-AUDIT
  - SCHEDULE & NOTIFY FACILITY
  - DETERMINE SCOPE
  - SELECT AUDIT TEAM
  - DETAILED PREPARATION
- o ONSITE AUDIT
  - ENTRANCE MEETING
  - SITE ORIENTATION TOUR
  - DOCUMENT REVIEW
  - FACILITY/OPERATIONS INSPECTION
  - INTERVIEW STAFF
  - ORGANIZE AUDIT RESULTS
  - EXIT MEETING

## AUDIT PHASES (CONT'D)

### o AUDIT REPORT

- STATUS OF OVERALL COMPLIANCE SUMMARY
- FINDINGS AND OBSERVATIONS
- SENT TO CORPORATE AND FACILITY MANAGEMENT
- ISSUED IN 30 WORKING DAYS

### o FOLLOWUP

- RESPONSE INDICATES CORRECTIVE ACTIONS TAKEN/  
SCHEDULED ON NONCONFORMANCES
- RESPONSE IN 30 WORKING DAYS
- CORRECTIVE ACTIONS TRACKED BY COMPLIANCE  
DEPARTMENT UNTIL CLOSURE
- FINDINGS/OBSERVATIONS CLOSED WITH AUDITOR  
CONCURRENCE



# **DOD ENVIRONMENTAL PROGRAM**

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**STATUS. . . AND CHALLENGES**



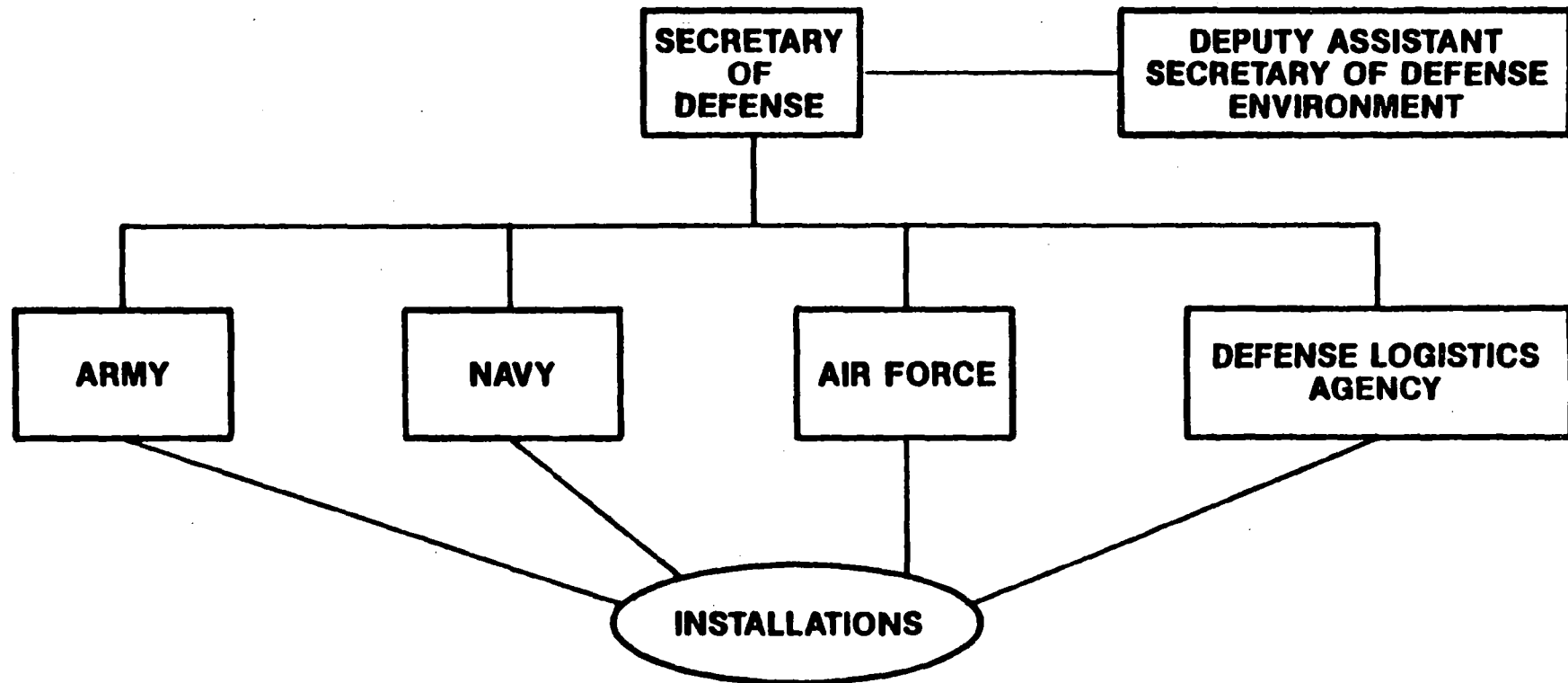
# OVERVIEW

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- **ORGANIZATIONAL STRUCTURE**
- **POLICY**
- **OPERATIONS**
- **THE CHALLENGE**
- **PROGRAMS**
- **FUNDING**
- **SUMMARY**



# ORGANIZATIONAL STRUCTURE



**INSTALLATION COMMANDERS HAVE COMPLIANCE RESPONSIBILITY**



## **DOD POLICY**

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- **COMPLY WITH ENVIRONMENTAL LAW & REGULATIONS**
- **ANALYZE ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTIONS**
- **ACCOMPLISH THE MISSION IN A MANNER WHICH MINIMIZES ENVIRONMENTAL IMPACTS**
- **BE GOOD STEWARDS OF HISTORICAL & NATIONAL RESOURCES**
- **COOPERATE WITH ENVIRONMENTAL REGULATORY AGENCIES**





## **DOD OPERATIONS**

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- **5,000,000 PEOPLE**
- **1,200 WORLDWIDE INSTALLATIONS**
- **27 MILLION ACRES**
- **435,000 BUILDINGS ENCLOSING 2.7 BILLION SQUARE FEET**
- **INSTALLATIONS ARE SMALL CITIES**
  - **AIRPORTS & SEAPORTS**
  - **INDUSTRIAL & MAINTENANCE ACTIVITIES**
  - **ADMINISTRATIVE & MEDICAL FACILITIES**
  - **SHOPPING & RECREATIONAL FACILITIES**
  - **FAMILY HOUSING**



# MAJOR MILITARY INSTALLATIONS

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# **THE COMPLIANCE CHALLENGE**

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- **VARIETY & SCOPE OF OUR OPERATIONS**
- **VARIETY & SCOPE OF ENVIRONMENTAL LAW**
  - **STATESIDE & OVERSEAS**
  - **SOMETIMES DUPLICATIVE & OVERLAPPING**
- **GROWTH OF REGULATIONS**
- **NATIONAL IMPLEMENTATION & ENFORCEMENT STRATEGY**
- **DOD CONSTRAINTS**
  - **FEDERAL BUDGETING: LIMITS & PROCESS**
  - **OUR INSTALLATIONS ARE DIFFERENT . . .**
- **INCREASING PUBLIC CONCERN & ANXIETY**



## **ENVIRONMENTAL LAW**

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**NATIONAL ENVIRONMENTAL POLICY ACT**

**CLEAN WATER ACT**

**CLEAN AIR ACT**

**SAFE DRINKING WATER ACT**

**COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND  
LIABILITY ACT (CERCLA) W/SUPERFUND AMENDMENTS AND  
REAUTHORIZATION ACT OF 1986 (SARA) — SUPERFUND**

**RESOURCE CONSERVATION & RECOVERY ACT (RCRA) — HAZARDOUS  
WASTE MANAGEMENT**

**TOXIC SUBSTANCES CONTROL ACT**

**NOISE CONTROL ACT**

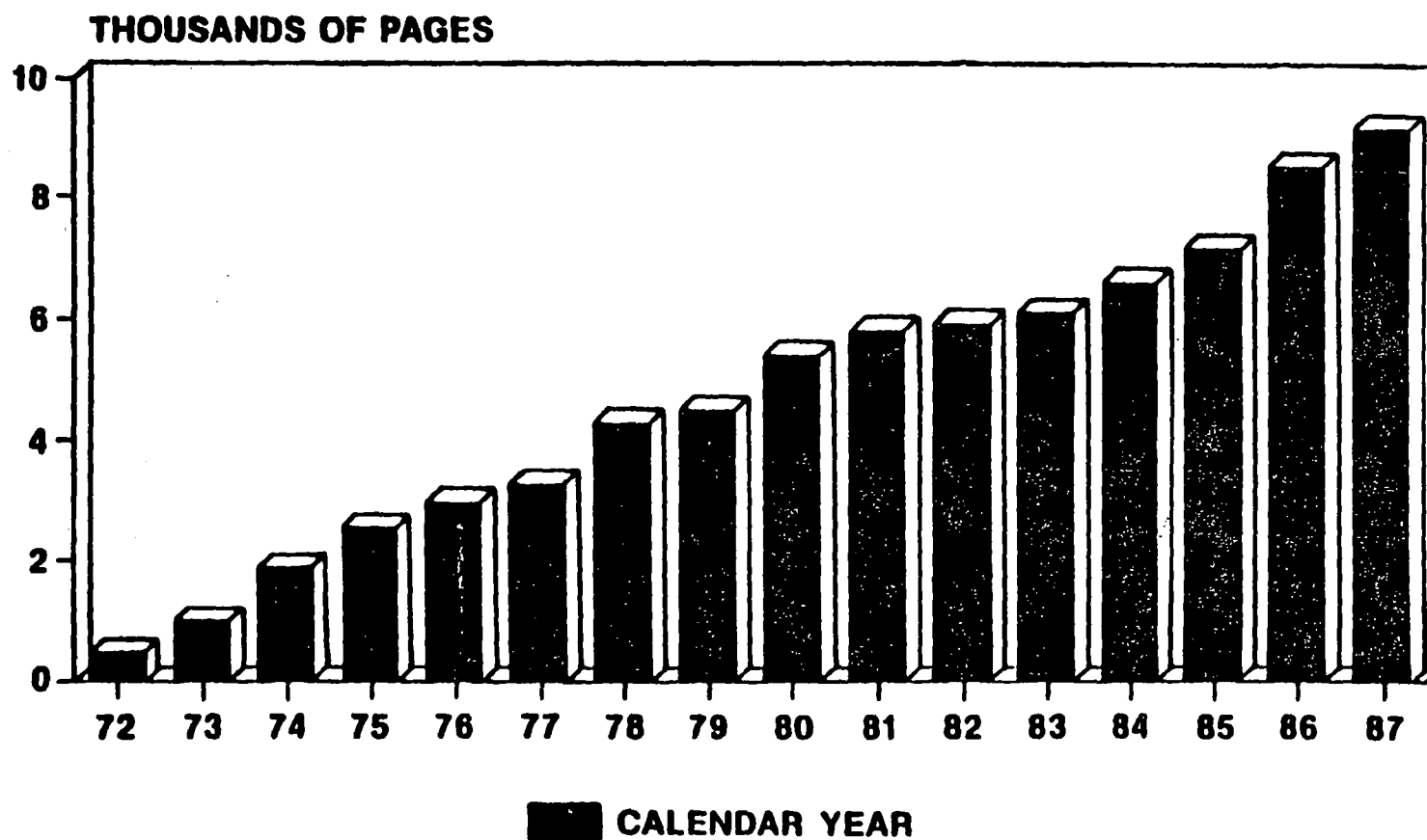
**ENDANGERED SPECIES ACT**

**FEDERAL INSECTICIDE, FUNGICIDE & RODENTICIDE ACT**

**PLUS OVER 25 OTHERS**



# ENVIRONMENTAL REGULATIONS CODE OF FEDERAL REGULATIONS





## **DOD ENVIRONMENTAL PROGRAMS**

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- **HAZARDOUS MATERIAL & WASTES**
  - **MANAGEMENT OF CURRENT ACTIVITIES**
  - **CLEANUP OF "PAST CONTAMINATION" SITES**
- **POLLUTION ABATEMENT**
- **ENVIRONMENTAL IMPACT ANALYSIS**
- **NATURAL & HISTORICAL RESOURCES**
- **SPECIAL PROGRAMS**



## **SPECIAL PROGRAMS**

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- **CHESAPEAKE BAY & OTHER ESTUARIES**
- **RADON**
- **CFC & HALON USE REDUCTION**
- **ARMED FORCES PEST MANAGEMENT BOARD**
- **RESEARCH & DEVELOPMENT**
- **WEAPONS REDUCTION**



## **NATURAL & HISTORICAL RESOURCES**

---

- **2.3 MILLION ACRES OF FORESTS ON 200 INSTALLATIONS**
  - **40% OF PROFITS GO TO STATES**
- **194 BASES MANAGE ENDANGERED SPECIES HABITAT**
- **200 BASES PROTECT HISTORIC FACILITIES & ARCHEOLOGIC SITES**
- **OVER 200 BASES WITH WILDLIFE MANAGEMENT PLANS**
- **APPROXIMATELY \$40 MILLION ANNUAL PROTECTION & ENHANCEMENT PROGRAM**





# **ENVIRONMENTAL IMPACT ANALYSIS**

---

- **DRIVEN BY NEPA**
- **BROAD APPLICABILITY**
  - **DEVELOPMENT/DEPLOYMENT OF NEW WEAPONS SYSTEMS**
  - **REALIGNMENTS/OPERATIONAL CHANGES TO EXISTING FORCE STRUCTURE**
  - **BASE CLOSURES**
  - **TRAINING ACTIVITIES**
- **CURRENT/LONG-TERM CONCERNS: OPERATIONAL NOISE**
  - **LOW LEVEL FLIGHT TRAINING (EUROPE & STATESIDE)**
  - **TRAINING RANGES (ARTILLERY & AIR DELIVERED ORDNANCE)**



## **HAZARDOUS MATERIALS & WASTES**

---

- **TODAY'S BIGGEST ENVIRONMENTAL CHALLENGE**
- **MANAGEMENT OF CURRENT ACTIVITIES**
  - **RCRA "CRADLE TO GRAVE" APPROACH**
    - **MANAGEMENT INTENSIVE; COMPLICATED RULES**
  - **WASTE MINIMIZATION IS THE KEY**
    - **DRMS REUSE & RECYCLING SINCE 1980**
    - **MAINTENANCE DEPOTS & WEAPONS PRODUCTION FACILITIES ARE MAJOR PLAYERS**
    - **EMPHASIZING R&D/TECHNOLOGY TRANSFER**
    - **TOTAL QUALITY MANAGEMENT IN SYSTEMS ACQUISITION**
  - **BASE LEVEL RCRA REGULATORY COMPLIANCE NEEDS IMPROVEMENT**
    - **FEDERAL FACILITY COMPLIANCE AGREEMENTS**



## **POLLUTION ABATEMENT PROGRAMS**

---

- **CLEAN AIR — CURRENT CONCERNS**
  - **INDUSTRIAL ACTIVITIES IN METROPOLITAN AREAS**
  - **MILITARY SPECIFICATIONS & ENVIRONMENTAL REQUIREMENTS**
  - **FUELS/ENERGY RELATIONSHIP**
  - **IMPACTS OF PENDING LEGISLATION**
- **CLEAN WATER & SAFE DRINKING WATER ISSUES**
  - **RECENT AMENDMENTS, NEW REQUIREMENTS**
  - **MORE SAMPLING & MONITORING**
  - **STORMWATER DISCHARGE PERMITS**
  - **PRE-TREATMENT REQUIREMENTS (TOXICS)**
  - **LEAD BAN IN DRINKING WATER**
- **UNDERGROUND TANKS**
  - **MONITORING/MODIFICATION/REPLACEMENT**
- **ASBESTOS — HIGHER FACILITY REPAIR COSTS**



# **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

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## **HAZARDOUS MATERIALS & WASTE**

- **CLEANS UP OLD SITES**
- **INITIATED LATE 70'S BY MILITARY SERVICES**
- **CERCLA (SUPERFUND) ENACTED 1980**
- **DERA (FY 84) — CENTRALIZED FUNDING**
- **SARA (1986) — ESTABLISHED DERP**
- **DERP SCOPE**
  - **ACTIVE INSTALLATIONS**
  - **FORMERLY USED/OWNED PROPERTY**
  - **"THIRD PARTY" SITES**
  - **SITE TYPES BROADER THAN EPA PROGRAM**



# **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

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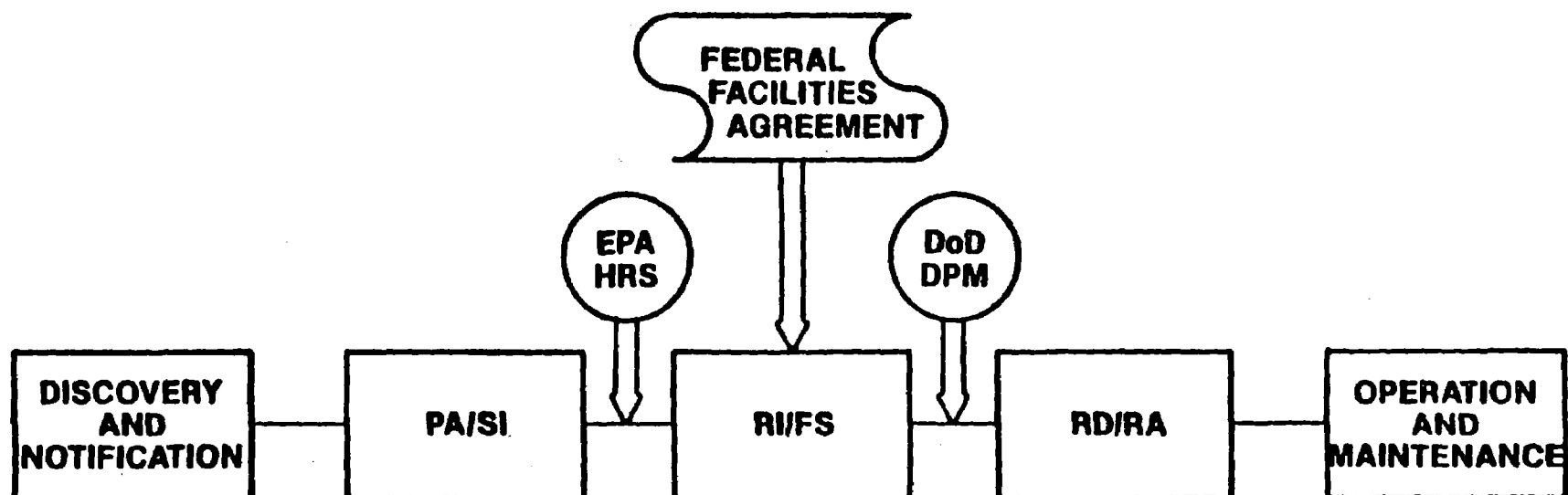
## **PROGRAM ELEMENTS**

- **INSTALLATION RESTORATION PROGRAM**
- **OTHER HAZARDOUS WASTE OPERATIONS**
- **BUILDING DEMOLITION/DEBRIS REMOVAL**



# DEFENSE ENVIRONMENTAL RESTORATION PROGRAM

## NPL SITE CLEANUP PROCEDURE



**REMOVAL ACTION (IF NECESSARY)**

NPL = NATIONAL PRIORITIES LIST  
DPM = DEFENSE PRIORITY MODEL  
PA/SI = PRELIMINARY ASSESSMENT/SITE INVESTIGATION  
RI/FS = REMEDIAL INVESTIGATION/FEASIBILITY STUDY  
RD/RA = REMEDIAL DESIGN/REMEDIAL ACTION



# **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

---

## **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

**PROGRAM STATUS: SEPTEMBER 1988**

**897 INSTALLATIONS (49 ON OR PROPOSED FOR NPL)**

**8139 SITES**

**7711 PRELIMINARY ASSESSMENTS/SITE INSPECTIONS**

**1485 REMEDIAL INVESTIGATIONS/FEASIBILITY STUDIES**

**216 REMEDIAL ACTIONS**



## **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

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### **FORMERLY USED PROPERTIES — COE EXECUTIVE AGENT FOR DOD**

- POTENTIAL PROPERTIES      7118**
- SCREENING SURVEYS INITIATED      2815**
- SURVEYS COMPLETED      849**
- PROJECTS COMPLETED OR UNDERWAY:**
  - IRP      76**
  - BD/DR      94**
  - UXO      4**





# **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

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## **CURRENT PROGRAM STATUS**

- **ALL MAJOR INSTALLATIONS ASSESSED TO IDENTIFY SITES**
- **MOST SITES UNDERGOING STUDY**
- **EXPECT REMEDIAL ACTIONS TO PEAK IN MID-1990'S**



# **DEFENSE ENVIRONMENTAL RESTORATION PROGRAM**

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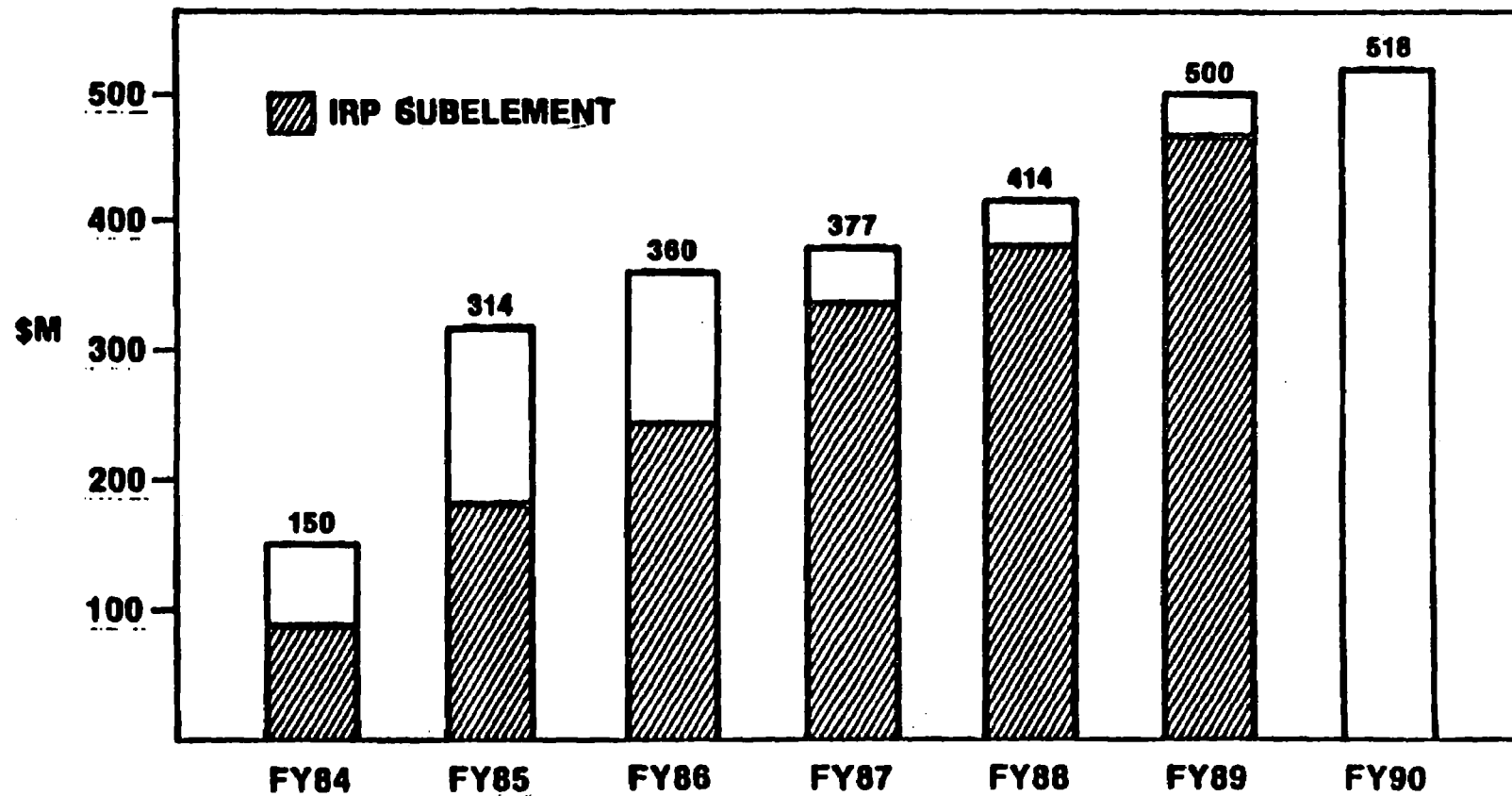
## **CURRENT EMPHASIS & CONCERNS**

- **INTERAGENCY AGREEMENTS (IAGs)**
  - **EPA & STATES FOR NPL SITES**
- **DOD-STATE MEMORANDUMS OF AGREEMENT**
- **PRIORITIZATION OF CLEANUPS**
  - **"WORST FIRST"**
- **REGULATORY GRIDLOCK**
  - **RCRA/CERCLA CONFUSION**
  - **STATE/FEDERAL JURISDICTION**
- **PERCEPTION OF RECALCITRANCE**



# DEFENSE ENVIRONMENTAL RESTORATION PROGRAM

## FUNDING PROFILE



**TOTAL PROGRAM ESTIMATE: \$10-15 BILLION THROUGH 2010**



## **FUNDING ENVIRONMENTAL REQUIREMENTS**

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- **REQUIREMENTS CUT ACROSS ALL APPROPRIATIONS**
- **MAJOR COMPLIANCE FUND SOURCES**
  - **MILITARY CONSTRUCTION**
  - **OPERATIONS & MAINTENANCE (REAL PROPERTY MAINTENANCE ACCOUNT)**
  - **DERA**
- **CURRENT ANNUAL INVESTMENTS — OVER \$1 BILLION**

— <b>DERA</b>	<b>\$500M</b>
— <b>MILCON</b>	<b>\$100M</b>
— <b>O&amp;M FACILITY PROJECTS</b>	<b>\$110M</b>
— <b>R&amp;D</b>	<b>\$ 30M</b>
— <b>NATURAL RESOURCES</b>	<b>\$ 35M</b>
— <b>ENVIRONMENTAL PERSONNEL SALARIES</b>	<b>\$200M</b>
— <b>HAZARDOUS WASTE DISPOSAL</b>	<b>\$100M</b>
- **INSTALLATION COMMANDERS NEED FLEXIBILITY OF O&M FUNDING**
  - **ENVIRONMENTAL PORTION NEEDS MORE VISIBILITY**



## **SUMMARY**

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- **PROGRAM GETTING BIGGER & MORE COMPLEX**
- **INCREASING EMPHASIS & VISIBILITY**
- **REQUIRING MORE RESOURCES & MANAGEMENT EFFORT**
- **MISSION IMPACTS**
  - **REGULATORS CAN SHUTDOWN OPERATIONS**
  - **PUBLIC SUPPORT AT RISK**
  - **TRAINING OPERATIONS & WEAPONS SYSTEMS BED-DOWNS (GROWING CONCERN IN EUROPE TOO)**
- **OUR STRATEGY**
  - **COMMUNICATE & COORDINATE**
  - **BE SMART ON THE REQUIREMENTS AND BE SMART MANAGERS**
  - **INTEGRATE ENVIRONMENTAL REQUIREMENTS INTO ALL ASPECTS OF OUR ACTIVITIES**
  - **PROVIDE FLEXIBILITY TO OUR FIELD COMMANDERS**

ACID DEPOSITION CONTROL

- o EXISTING UNITS ALLOWANCE PROGRAM
  - 1) ALLOWANCE IS A FEDERAL AUTHORIZATION TO EMIT A TON OF SO<sub>2</sub> OR NO<sub>x</sub> IN A YEAR
  - 2) COVERED FACILITIES ARE PROHIBITED FROM EMITTING SO<sub>2</sub> OR NO<sub>x</sub> UNLESS THE FACILITY HOLDS AN EQUIVALENT NUMBER OF ALLOWANCES
- o PHASE I ALLOWANCES
  - 1) CAN BE TRANSFERRED WITHIN A STATE
  - 2) OR WITHIN AN INTERSTATE UTILITY COMPANY
- o PHASE II ALLOWANCES
  - 1) CAN BE TRANSFERRED AMONG SOURCES WITHIN TWO MULTISTATE REGIONS
  - 2) NEW UNITS CAN TRADE WITH ANY ALLOWANCE HOLDER
- o ALLOWANCES MAY BE TRANSFERRED AND BANKED IN BOTH PHASES
- o NO<sub>x</sub> MAY BE TRADED FOR SO<sub>2</sub> AND VICE VERSA (EXCHANGE RATE 1.5 lbs NO<sub>x</sub> FOR 1 lb SO<sub>2</sub>)
- o SHUTDOWN - CAN TRANSFER ALLOWANCES

TITLE IV-PERMITS

- o EACH SOURCE WILL HAVE A COMPREHENSIVE PERMIT INDICATING ITS EMISSION LIMITS, AND OTHER REQUIREMENTS
- o PROVIDES FOR STATES OR INTERSTATE AGENCIES TO SUBMIT TO ADMINISTRATOR A COMPREHENSIVE PROGRAM UNDER STATE LAW OR INTERSTATE COMPACT TO APPLY TO:
  - 1) STATE IMPLEMENTATION PLAN REQUIREMENTS
  - 2) NEW SOURCE PERFORMANCE STANDARDS
  - 3) EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS
  - 4) PSD AND NON-ATTAINMENT NEW SOURCE REVIEW
  - 5) ACID DEPOSITION
- o PATTERNED AFTER CLEAN WATER ACT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM
- o EPA PROMULGATES REGULATIONS GOVERNING THE PROGRAM INCLUDING PERMIT FEES, PERMIT APPLICATIONS, EMISSIONS AND COMPLIANCE MONITORING REPORTS AND PUBLIC PARTICIPATION
- o PERMIT FEES TO COVER PROGRAM COSTS
- o STATE REQUIRED TO SUBMIT APPROVABLE PROGRAM NOT LATER THAN 3 YEARS AFTER ENACTMENT
- o EPA TO ACT ON PROGRAM THROUGH THE SIP PROCESS
- o IF STATE DOES NOT SUBMIT AN APPROVABLE PROGRAM - ADMINISTRATOR MAY APPLY SANCTIONS OR PROMULGATE FEDERAL PROGRAM
- o PROVIDES FOR PARTIAL APPROVAL OR INTERIM APPROVAL (NOT TO EXCEED 2 YEARS)
- o PROVIDES FOR GENERAL PERMITS WITHIN GEOGRAPHICAL AREA.

**TITLE V ACID DEPOSITION CONTROL**

- o GOAL OF 10 MILLION TONS SO<sub>2</sub> AND 2 MILLION TONS NO<sub>x</sub> BY YEAR 2000
- o A WORKABLE TRADING PROGRAM TO REDUCE COSTS AND ALLOW ECONOMIC GROWTH WHILE MAINTAINING THE EMISSION REDUCTIONS ACHIEVED
- o S02-PHASE I
  - 1) LISTED SOURCES MUST MEET ANNUAL LIMIT AFTER DECEMBER 31, 1995
  - 2) EXISTING UNITS - 100 MWE LIMITED TO TONNAGE EQUIVALENT OF 2.5 lbs/MMBTU EMISSION RATE ON AN ANNUAL AVERAGE - DECEMBER 31, 1995
  - 3) COMPLIANCE PLANS DUE 27 MONTHS AFTER ENACTMENT
  - 4) 5 MILLION TONS
- o S02-PHASE II
  - 1) LISTED SOURCES MUST MEET PHASE II ANNUAL TONNAGE AFTER DECEMBER 31, 2000
  - 2) UNITS - 75 MWE WITH EMISSION RATES - 1.2 lbs/MMBTU - RECEIVE ALLOWANCES EQUAL TO THE PRODUCT OF 1.2 lbs/MMBTU TIMES ANNUAL AVERAGE FUEL CONSUMPTION
  - 3) UNITS - 1.2 lbs/MMBTU, 75MWE REQUIRED TO EMIT AT RATE NO HIGHER THAN 1985 ACTUAL
  - 4) COMPLIANCE PLANS DUE JANUARY 1, 1995
  - 5) AN ADDITIONAL 5 MILLION TON REDUCTION
  - 6) TOTAL EMISSION REDUCTIONS ACHIEVED ARE MAINTAINED
- o NO<sub>x</sub>
  - 1) ADMINISTRATOR WILL ESTABLISH EMISSION STANDARD SUFFICIENT TO REDUCE NO<sub>x</sub> EMISSIONS BY 2 MILLION TONS BELOW PROJECTED YEAR 2000 EMISSIONS
- o CLEAN COAL TECHNOLOGY
  - 1) EXTENSION TO DECEMBER 31, 2003
- o EXCESS EMISSIONS REPORT
  - 1) EXCESS EMISSIONS FEE OF \$2,000 PER EXCESS TON
  - 2) CONTINUOUS EMISSION MONITORS (CEM) REQUIRED
  - 3) EACH EXCESS TON A VIOLATION



## **TRANSFORMER FIRES RULE**

**ALL TRANSFORMERS WITHIN 30 METERS OF COMMERCIAL BUILDINGS MUST MEET ~~SOME~~ CERTAIN CRITERIA OR BE REMOVED FROM SERVICE BY OCT. 1, 1990.**

### **NETWORK PCB TRANSFORMERS**

**WITH HIGHER SECONDARY VOLATAGES**

**(=> 480/277 VOLTS)**

**ARE PROHIBITED AFTER OCT. 1, 1990**

## **RADIAL PCB TRANSFORMERS**

**REMOVED BY OCT. 1, 1990, OR EQUIPPED  
WITH FAULT PROTECTION DEVICES TO DEENERGIZE  
THE TRANSFORMER CAUSED BY HIGH CURRENT FAULTS**

**RADIAL PCB TRANSFORMERS WITH >480/277 VOLTS ALSO  
REQUIRE PROTECTION TO AVOID SUSTAINED LOW  
CURRENT FAULTS**

**NETWORK PCB TRANSFORMERS WITH  
<480/277 VOLTS NOT IN  
SIDEWALK VAULTS**

**MUST BE EQUIPPED WITH ELECTRICAL PROTECTION, OR  
REMOVED FROM SERVICE BY OCT. 1, 1993**

**TRANSFORMERS NOT PROTECTED MUST BE REGISTERED WITH  
THE EPA REGIONAL ADMINISTRATOR BY OCT. 1, 1990: i.e.**

**1. SPECIFIC LOCATION**

**2. ADDRESS OF BUILDING AND PHYSICAL LOCATION**

**3. TRANSFORMER SERIAL NUMBER PROVIDED**

NETWORK PCB TRANSFORMERS  
< 480 VOLTS LOCATED IN  
**SIDEWALK VAULTS**  
MUST BE REMOVED FROM SERVICE  
**BY OCTOBER 1, 1990**

# **PCB MANIFESTING & NOTIFICATION RULE**

**EFFECTIVE DATE: FEB 5, 1990**

**ALL PCBS SHIPPED FOR DISPOSAL REQUIRE MANIFESTS  
INCLUDES WASTE < 50 PPM AS A RESULT OF DILUTION  
ONE TIME SHIPPERS, OR SHIPPERS WITHOUT PCB STORAGE  
FACILITIES MAY USE "40 CFR PART 781" IN  
LIEU OF A PCB ID NUMBER**

**(PCB ID NUMBER WILL = RCRA ID NUMBER AFTER VERIFICATION)  
NOTIFICATION FORM 7710-68 MUST BE SUBMITTED FOR INITIAL  
NUMBER, OR VERIFICATION OF EXISTING RCRA NUMBER BY**

**APRIL 4, 1990**

# **MANIFEST FORMS AVAILABLE FROM STATE AGENCIES**

**MANIFEST INFORMATION MUST INCLUDE:**

**DATES PCBs, PCB ARTICLES, PCB ITEMS, CONTAINERS, ETC.  
REMOVED FROM SERVICE, PLACED INTO STORAGE IF IN BULK,  
WEIGHT (KGS) OF PCBs, CONTAINERS, ARTICLES, ETC.  
UNIQUE NUMBER OR SERIAL NO.s OF ARTICLES AND/OR  
PCB ARTICLE CONTAINERS, AND  
DATE PLACED IN TRANSIT FOR DISPOSAL**

**COPIES OF THE MANIFEST  
MUST BE GIVEN TO:**

- GENERATOR'S COPY
- INITIAL TRANSPORTER
- EACH SUBSEQUENT TRANSPORTER
- OWNER/OPERATOR OF A COMMERCIAL STORAGE  
FACILITY, OR DISPOSAL FACILITY

ONE ADDITIONAL COPY TO BE RETURNED TO THE GENERATOR  
FROM THE FIRST COMMERCIAL STORAGE FACILITY OR DISPOSER

**THE GENERATOR MUST CONFIRM  
RECEIPT OF PCB WASTE BY  
CLOSE OF BUSINESS THE DAY  
AFTER HE RECEIVES THE SIGNED  
RETURNED MANIFEST FROM  
THE DISPOSER**



**A MANIFEST IS NOT REQUIRED FOR  
PCBs <50 PPM (NOT AS A RESULT OF DILUTION)  
THE PCB WASTE IS BEING TRANSPORTED TO A STORAGE OR  
DISPOSAL FACILITY OWNED OR OPERATED BY THE GENERATOR  
OR  
SHIPMENT OF PCB ITEMS AND ARTICLES STILL IN SERVICE**

**MAINFEST DISCREPANCIES MUST BE REPORTED TO EPA  
BY COMMERCIAL STORES AND DISPOSERS**

**ONLY COMMERCIAL STORERS AND DISPOSERS ARE REQUIRED  
TO SUBMIT ANNUAL DOCUMENT INFORMATION TO THE  
REGIONAL ADMINISTRATOR**

**COMMERCIAL STORERS MUST OBTAIN PERMITS INCLUDING  
CLOSURE PLANS AND FINANCIAL RESPONSIBILITY W/I 180 DAYS  
OF THE EFFECTIVE DATE OF THE RULE**

**HAULERS MUST MEET THE SAME REQUIREMENTS AS STORERS  
IF PCBs ARE HELD AT TRANSPORTATION POINTS  
OVER 10 DAYS**

FACTSHEET  
FINAL NOTIFICATION AND MANIFESTING RULE FOR PCB WASTES

BACKGROUND

There has been increasing concern on the part of Congressional oversight committees about certain aspects of EPA's disposal program for polychlorinated biphenyl (PCB) wastes. In particular, the most frequently cited concerns are: (1) the lack of an effective tracking system that would track PCB wastes in a "cradle-to-grave" fashion; and (2) the lack of sufficient oversight of the activities and qualifications of the PCB waste brokers and other intermediate storers who may store the PCB wastes owned by others.

SUMMARY OF THE FINAL RULE

This rule amends EPA's existing TSCA regulations for the storage and disposal of PCBs. The first storage and disposal regulations for PCBs were published in the FEDERAL REGISTER of February 17, 1978 (43 FR 7150), and amended in part in a rule which EPA published in the May 31, 1979 FEDERAL REGISTER (44 FR 31514). The amendments in this rule add to the TSCA disposal regulations a PCB waste tracking system based on the RCRA model for the tracking of hazardous wastes. At the heart of the tracking system are the requirements that PCB waste handlers (disposers, commercial storers, transporters, and generators with PCB storage areas) notify EPA of their PCB waste activities, and use the RCRA Uniform Manifest in connection with their shipments of regulated PCB wastes.

Second, this rule adds to the existing PCB storage facility standards a requirement that commercial storers of PCB wastes obtain written approvals from the EPA Regional Administrators. The issuance of these commercial storer approvals would be conditioned on an evaluation of the applicant's qualifications to engage in the business of PCB waste storage, and the submission of closure plans and proof of financial responsibility for proper closure of PCB storage areas. Environmental compliance histories will also be included in the evaluation.

In addition, the rule includes additional recordkeeping and reporting requirements that will complete the PCB waste tracking function, as well as facilitate EPA's enforcement of the PCB disposal regulations.

For further information contact the TSCA Hotline at 202-554-1404.

## NOTES

1. California - Regulates <50 ppm/PCB for handling down to 5 ppm.
2. Connecticut - Manifest not required but is recommended.
3. Delaware - Can issue temporary numbers, if required.
4. Florida - Can issue temporary numbers, if required.  
- Requires notification from TSDF & annual reports.
5. Georgia - Requires transporter have ID #.
6. Idaho - Transporters of PCB wastes must purchase a trip permit.
7. Illinois - PCBs are a special waste, not RCRA hazardous. Requires out of state generators to get an Illinois Gen. ID# if shipping into Illinois & TSDF's out of state if receiving Illinois waste.
8. Maine - May transport PCB waste without a manifest if you are transporting the waste to a facility with an approved PCB plan owned by the generator of the waste. <500 ppm transformers are treated as PCB waste and require the use of a manifest when shipping for disposal unless triple rinsed.
9. Missouri - State Waste Code Listing:
  - M001 Mineral oil dielectric fluid containing equal to or greater than 50 ppm PCBs but less than 500 ppm PCBs.
  - M002 PCB contaminated electrical equipment with dielectric fluid.
  - M003 PCB contaminated electrical equipment that has been drained of all free-flowing liquids.
  - M004 Dielectric fluid containing greater than 500 ppm PCBs.
  - M005 PCB Transformers with dielectric fluid.
  - M006 PCB Transformers that have been drained of all free-flowing liquids.
  - M007 PCB Transformers that have been flushed with solvent as prescribed in 40 CFR 761.60(b)(1)(i)(B) is hereby incorporated by reference.
  - M008 Capacitors contaminated with PCBs.
  - M009 Soil, solids, sludges, dredge materials, clothing, rags or other debris contaminated with PCBs.
  - M010 PCB contaminated solvent. (note: Any PCB contaminated solvent that meets the definition of hazardous waste shall further be identified by the appropriate EPA identification number).
  - M011 Other PCB material.
  - M012 Other PCB units.

<500 transformers are treated as PCB waste, requires the use of a manifest and the 18-hour soak with a solvent.
10. Nevada - State Waste Codes Listing:
  - B001 Oil contaminated with 500 ppm or greater of PCBs from transformers, capacitors or other electrical equipment
  - B002 Petroleum oil contaminated with 50 ppm or greater of PCBs, but less than 500 ppm PCBs.
  - B003 Petroleum oil contaminated with 500 ppm or greater of PCBs.
  - B004 Soil contaminated by PCBs.
  - B005 Solids and sludges contaminated by PCB.
  - B006 Clothing or rags contaminated by PCB.
  - B007 Capacitors contaminated by PCB.
  - B008 Dredge material contaminated by PCB.
  - B009 Other wastes contaminated by PCB.
  - B010 Electrical equipment containing 50 ppm or greater to PCB but less than 500 ppm as defined in 40 CFR 761, section 761.3.
  - B011 Electrical equipment containing 500 ppm or greater of PCB, as defined in 40 CFR 761, section 761.3.
  - State Gen. ID # required.
  - Notification required.

11. New Jersey - State Waste Code Listing:

- X727 Waste oil from the draining, cleaning or disposal of electric transformers.
- X750 PCB contaminated liquids containing 50 ppm or more by weight of PCBs.
- X751 PCB contaminated solids containing 50 ppm or more of PCBs by weight.
- X752 Drained electrical, hydraulic, or other equipment which contained liquids with 50 ppm or more of PCBs by weight.
- X753 Undrained electrical, hydraulic or other equipment containing liquids with 50 ppm or more of PCBs by weight.
- X754 PCB contaminated sludge or dredge material with 50 ppm or more of PCBs by weight.

- No small quantity generation.

12. New York - State Waste Code Listing:

- B001 PCB Oil (concentrated) from transformers, capacitors, etc.
- B002 Petroleum oil or other liquid containing 50 ppm or greater of PCB, but less than 500 ppm PCBs. This includes oil from electrical equipment whose PCB concentration is unknown, except for circuit breakers, reclosers, and cable.
- B003 Petroleum oil or other liquid containing 500 ppm or greater of PCBs.
- B004 PCB Articles containing 50 ppm or greater of PCBs, but less than 500 ppm PCBs, excluding small capacitors. This includes oil-filled electrical equipment whose PCB concentration is unknown, except for circuit breakers, reclosers, and cable.
- B005 PCB Articles, other than transformers, that contain 500 ppm or greater of PCBs, excluding small capacitors.
- B006 PCB Transformers. "PCB Transformers" means any transformer that contains 500 ppm PCB or greater.
- B007 Other PCB Wastes including contaminated soil, solids, sludges, clothing, rags, and dredge material.

13. Pennsylvania - Proposing regulating <50 ppm.

14. Texas - Regulates PCBs below 50 ppm.  
- Class I or Class II waste code

15. Vermont - Can issue temporary Gen. ID #'s if required.

16. Virginia - Requires notification of all waste facilities.

17. Washington - Regulates PCBs at less than 50 ppm only, >50 ppm the Federal Regulations take effect.  
- <50 ppm waste handled as >50 waste is not regulated by the state.  
- <50 ppm transformers not regulated, if rinsed.  
- Waste Code DW, Dangerous Waste.

18. Wisconsin - PCBs require a special tracking form, not a manifest.  
- PCBs are regulated from 5-10 ppm range & up, as a special waste.

19. Wyoming - Is writing PCB regulations due out Spring 1990.

20. Alabama - Uniform manifest supplied by TSDP.

STATE PCB REQUIREMENTS (continued)

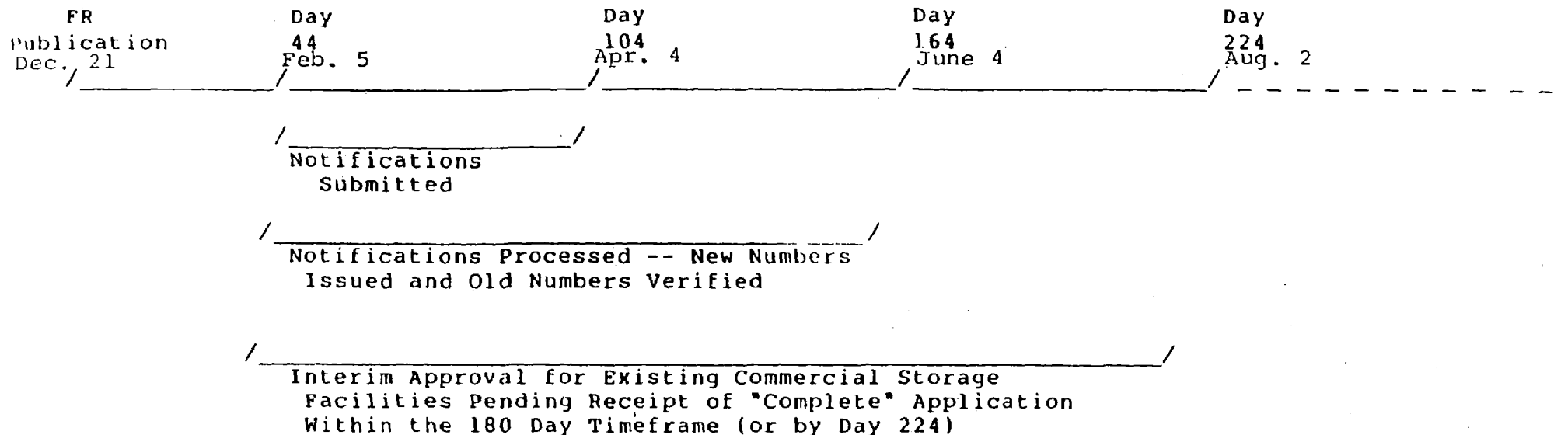
State	Are PCBs a State Waste?	Does State Have a Manifest?	Is a Manifest Required?	Federal or State Generator ID#	State Waste Codes?	Requirements For Processes or Facilities?	Notes
South Dakota	Regulations on PCB due out in December, 1989.						
Tennessee	No	No	No	No	No	No	
Texas	No	Yes	Yes	Yes	Yes	Yes	014
Utah	No	No	No	No	No	No	
Vermont	Yes	Yes	Yes	Yes	VT01	Yes	015
Virginia	No	No	No	No	No	Yes	016
Washington	Yes	No	Yes	Yes	DW	Yes	017
West Virginia	No	No	No	No	No	No	
Wisconsin	No	Yes	No	No	No	Yes	018
Wyoming	Yes	No	No	Yes	No	Yes	019
District of Columbia	No	No	No	No	No	No	

# STATE PCB REQUIREMENTS

State	Are PCBs a State Waste?	Does State Have a Manifest?	Is a Manifest Required?	Federal or State Generator ID#	State Waste Codes?	Requirements For Processes or Facilities?	Notes
Alabama	No	No	No	No	No	No	#20
Alaska	No	No	No	No	No	No	
Arizona	No	No	No	No	No	Yes	
Arkansas	Yes	Yes	Yes	Yes	PCBs	No	
California	Yes	Yes	Yes	Yes	261-S & 731-L	Yes	#1
Colorado	No	No	No	No	No	No	
Connecticut	Yes	No	No/Recommended	No	B004	No	#2
Delaware	No	Yes	No	No	No	No	#3
Florida	Yes	No	Yes	No	No	Yes	#4
Georgia	No	No	Yes	No	No	No	#5
Hawaii	No	No	No	No	No	No	
Idaho	No	No	No	No	No	No	#6
Illinois	No	Yes	Yes	Yes	No	No	#7
Indiana	No	Yes	No	No	No	Yes	
Iowa	No	No	No	No	No	No	
Kansas	No	No	No	No	No	Yes	
Kentucky	No	No	No	No	No	No	
Louisiana	No	Yes	No	No	No	No	
Maine	Yes	Yes	Yes	Yes	M002	Yes	#8
Maryland	Yes	Yes	Yes	Yes	M001	Yes	
Massachusetts	Yes	Yes	Yes	Yes	MA02	No	
Michigan	No	Yes	Yes	No	026L	No	
Minnesota	Yes	Yes	Yes	Yes	MN03	Yes	
Mississippi	No	No	No	No	No	No	
Missouri	Yes	Yes	Yes	Yes	Yes	Yes	#9
Montana	No	No	No	No	No	No	
Nebraska	No	No	No	No	No	No	
Nevada	Yes	No	Yes	Yes	Yes	Yes	#10
New Hampshire	No	Yes	No	No	No	No	
New Jersey	Yes	Yes	Yes	Yes	Yes	Yes	#11
New Mexico	No	No	No	No	No	No	
New York	Yes	Yes	Yes	Yes	Yes	Yes	#12
North Carolina	No	Yes	No	No	No	No	
North Dakota	No	No	No	No	No	No	
Ohio	No	No	No	No	No	Yes	
Oklahoma	No	No	No	No	No	No	
Oregon	No	No	No	No	X002	Yes	
Pennsylvania	No	Yes	No	No	No	Yes	#13
Rhode Island	Yes	Yes	Yes	Yes	R007	Yes	
South Carolina	No	Yes	No	No	No	No	

PCB NOTIFICATION AND MANIFESTING RULE

TIMELINE FOR SUBMITTING NOTIFICATIONS AND COMMERCIAL STORAGE APPLICATIONS



Also

Review is Initiated of Any Applications Received  
During this Timeframe

/ 

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 /  
Interim Approval Continued for  
Commercial Storers who Sub-  
mitted Complete Applications;  
Approval Continues Until  
Region "Approves" or "Denies"  
Application

LEGEND:

- Day 44 = Effective Date of Rule  
Day 104 = End of 60 Day Timeframe for  
Submission of Notifications  
Day 164 = End of 120 Day Timeframe for  
EPA to Process Notifications  
Day 224 = End of 180 Day Timeframe for  
Submission of Storage Applications



REMOVAL OF PCB TRANSFORMERS  
BY OCTOBER 1, 1990

The July 1, 1990 publication of the 40 C.F.R. §761 addresses the removal of PCB Transformers by October 1, 1990. This publication is very specific concerning the location of the PCB Transformers to be removed.

In 40 C.F.R. §761.3 the following definitions are found:

1. "In or Near Commercial Buildings" means within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 meters of a non-industrial non-substation building. Commercial buildings are typically accessible to the members of the general public and employees, and include: (1) public assembly properties, (2) educational properties, (3) institutional properties, (4) residential properties, (5) stores, (6) office buildings, and (7) transportation centers (e.g., airport terminal buildings, subway stations, bus stations, or train stations).
2. "Industrial building" means a building directly used in manufacturing or technically productive enterprises. Industrial buildings are not generally or typically accessible to other than workers. Industrial buildings include buildings used directly in the production of power, the manufacture of products, the mining of raw materials, and the storage of textiles, petroleum products, wood and paper products, chemicals, plastics, and metals.

These definitions should be used in determining the classification of a facility. For an industrial classification, the October 1, 1990 deadline for the removal of PCB Transformers does not apply. However, if the facility is classified as commercial, then the following gives a brief synopsis of the requirements. For complete information, refer to 40 CFR §761.

1. Radial PCB Transformers - By October 1, 1990, those in use in or near commercial buildings must be equipped with electrical protection to avoid transformer ruptures caused by high current faults, and utilize current-limiting fuses or other equivalent technology to detect sustained high current faults and provide for complete deenergization of the transformer.

2. Lower Secondary Voltage Network PCB Transformers - (secondary voltages below 480 volts) - By October 1, 1990, those not located in sidewalk vaults in or near commercial buildings must be equipped with electrical protection to avoid transformer ruptures caused by high current faults, and utilize current-limiting fuses or other equivalent technology to detect sustained high current faults and provide for complete deenergization of the transformer. By October 1, 1990, those transformers that have not been protected as described above, must be registered with the EPA Regional Administrator in the appropriate region. These must be removed from service by October 1, 1993. The information provided by the owner of the transformers, prior to October 1, 1990, must include: (1) the specific location of the PCB Transformer(s); (2) the address(es) of the building(s) and the physical location of the PCB Transformer(s) on the building site(s); (3) the identification number(s) of the PCB Transformer(s).
3. Lower Secondary Voltage Network PCB Transformers - (secondary voltages below 480 volts) - By October 1, 1993, those located in sidewalk vaults in use in or near commercial buildings must be removed from service.
4. Radial PCB Transformers with Higher Secondary Voltages - (secondary voltages of 480 volts and above, including 480/277 volt systems) - By October 1, 1990, those in use in or near commercial buildings must be equipped with electrical protection to avoid transformer ruptures caused by sustained low current faults, and utilize current-limiting fuses or other equivalent technology to detect sustained high current faults and provide for complete deenergization of the transformer.
5. Network PCB Transformers with Higher Secondary Voltages - (secondary voltages equal to or greater than 480 volts, including 480/277 volt systems) - By October 1, 1990, those in use in or near commercial buildings is prohibited. Network PCB Transformers with higher secondary voltages which are removed from service in accordance with this requirement must either be reclassified to PCB Contaminated or non PCB status, placed into storage for disposal, or disposed.

REGION IV - State Contacts  
Underground Storage Tank Program

Ms. Sonja Massey, Chief (202) 271-7832  
Ground-Water Section  
AL Dept. of Environmental Management  
1751 Congressman William Dickerson Dr.  
Montgomery, Alabama 36130

Mr. Marshall Mott-Smith (904) 488-0300  
Environmental Administrator  
Storage Tank Regulation Section  
FL Dept. of Environmental Regulation  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Mr. Randy Williams (404) 669-3927  
Program Manager  
Industrial Waste Management Program  
Environmental Protection Division  
3420 Norman Berry Drive  
Hapeville, Georgia 30354

Ms. Joan Cullen-Lollis (502) 564-6716  
Chief, UST Section  
Hazardous Waste Branch  
KY Dept. of Environmental Protection  
Fort Boone Plaza, Building #2  
18 Reilly Road  
Frankfort, Kentucky 40601

John Harper, UST Coordinator (601) 961-5142  
MS Dept. of Environmental Quality  
Bureau of Pollution Control  
P. O. Box 10385  
Jackson, Mississippi 39209

Ms. Ann Borden, Chief  
Pollution Control Branch  
Groundwater Section  
Division of Environmental Management  
NC Dept. of Environment, Health and  
Natural Resources  
P. O. Box 27687  
Raleigh, North Carolina 27611

(919) 733-8486

Mr. Raymond Knox, Director  
Ground-Water Protection Division  
SC Dept. of Health and Environmental Control  
2600 Bull Street  
Columbia, South Carolina 29201

(803) 734-5332

Mr. Chuck Head, Manager  
Underground Storage Tank Program  
TN Dept. of Health and Environment  
Division of Superfund  
Cordell Hull Bldg., Third Floor  
Nashville, Tennessee 37219

(615) 741-4081



# UPDATE

## on ordering underground storage tank documents, audiovisual programs, and computer software

Because of the overwhelming demand for **Musts for USTs** and **Dollars and Sense** (EPA's plain-English overviews of the final Federal regulations), we've identified an improved method of supplying these two publications. They are now available through the U.S. Government Printing Office. Ordering information is as follows:

### **Musts for USTs**

*A Summary of the New Regulations for Underground  
Storage Tank Systems*

Stock No. 055-000-00294-1

\$2.50 each (includes postage and handling)

### **Dollars and Sense**

*A Summary of the Financial Responsibility Regulations  
for Underground Storage Tank Systems*

Stock No. 055-000-00293-2

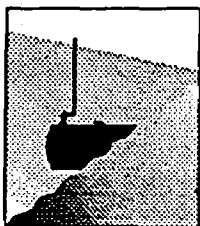
\$1.25 each (includes postage and handling)

### **Address to:**

Superintendent of Documents  
U.S. Government Printing Office  
Washington, D.C. 20402  
(202) 783-3238

### **Methods of Payment:**

Visa or MasterCard by phone or mail (Include account no. and expiration date)  
Prepay by check or money order



Inside on page 2 we provide ordering information for Publications, Audiovisual Programs, and Computer Software which are available from sources other than EPA. On page 3 we include a publications list and order form for those documents which are available from EPA's Office of Underground Storage Tanks.

# AVAILABLE FROM SOURCES OTHER THAN EPA

## Publications

**Cleanup of Releases from Petroleum USTs: Selected Technologies**  
Stock No. 055-000-00272-0 \$7.50

**Processes Affecting Subsurface Transport of Leaking Underground Tank Fluids**  
Stock No. 055-000-00269-0 \$3.25

**Survey of Vendors of External Petroleum Leak Monitoring Devices for Use with USTs**  
Stock No. 055-000-00277-1 \$4.25

**Petroleum Tank Releases Under Control: A Compendium of Current Practices for State UST Inspectors**  
Stock No. 055-000-00295-9 \$8.50

**Order From:** Superintendent of Documents  
U.S. Government Printing Office  
Washington, D.C. 20402  
(202) 783-3238

**Soil Gas Sensing for Detection and Mapping of Volatile Organics**  
Catalog No. 49 \$38.00/member; \$46.75/non-member

**Order From:** National Water Well Association  
P.O. Box 182039, Dept. 017  
Columbus, OH 43218  
(614) 761-1711

**Evaluation of Volumetric Leak Detection Methods for Underground Fuel Storage Tanks**  
Volume 1. No. PB89-124333 \$39.95  
Volume 2. No. PB89-124341 \$76.95

**Order From:** National Technical Information Service  
5285 Port Royal Road  
Springfield, VA 22161  
(703) 487-4600

## Audiovisual Programs

**"Tank Closure Without Tears: An Inspector's Safety Guide"**

**Purchase:** Video and booklet \$25.00 prepaid  
Booklet only \$ 5.00 prepaid  
**Order From:** New England Interstate Water Pollution  
Control Commission  
Attn: VIDEOS  
85 Merimac Street  
Boston, MA 02114

**Loan:** Video and booklet \$5.00 prepaid  
**Order From:** New England Regional  
Wastewater Institute  
2 Fort Road  
South Portland, ME 04106

**"Doing It Right" (Proper installation of underground tanks and piping for installation crews.)**

**Purchase:** Video \$16.00 prepaid  
**Order From:** American Petroleum Institute  
1220 L Street, N.W.  
Washington, D.C. 20005  
or (next column)

Petroleum Equipment Institute  
Box 2380  
Tulsa, OK 74101

**"A Question of When: Tank Installation for Inspectors" (Tank and pipe installation with a checklist for inspectors.)**

**"In Your Own Backyard" (What tank owners should require from installation contractors.)**

**Purchase:** Videos \$22.85 each prepaid  
**Order From:** National Fire Protection Association  
Attn: Jim Smalley  
Batterymarch Park  
Quincy, MA 02269

**"Managing Underground Storage Tanks" (An Action Plan)**

**Purchase:** 185 Slide Presentation \$120.00  
**Order From:** National Audiovisual Center  
Customer Services Section/WD  
8700 Edgeworth Drive  
Capitol Heights, MD 20743-3701  
(301) 763-1891

## Computer Software

**Reg-In-A-Box** personal computer (PC) software is an aid to understanding and working with the Federal UST regulations. Easy to use and available for PC-compatibles or Macintosh computers with hard disk drives. Not copy protected.

**Order PC-Compatibles From:**  
Public Brand Software  
\$5.00 plus shipping and handling  
1-800-426-3475 (24 hours a day)  
(317) 856-7571 (in Indiana)  
Visa and MasterCard accepted

ENTERGARD Computer Bulletin  
Board (203) 366-5698 (modem)

EcoNet (subscription telecomputing)  
(415) 923-0900

**Order Apple Macintosh From:**  
Budgetbytes Software  
\$3.50 plus shipping and handling  
1-800-356-3551 (8 a.m. to 6 p.m., CST)  
Visa and MasterCard accepted

EcoNet (subscription telecomputing)  
(415) 923-0900

# AVAILABLE FROM EPA'S OFFICE OF UNDERGROUND STORAGE TANKS

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## Order Form

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Street: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: (     ) \_\_\_\_\_

Please return this order form to:

U.S. Environmental Protection Agency  
Office of Underground Storage Tanks  
P.O. Box 6044  
Rockville, MD 20850

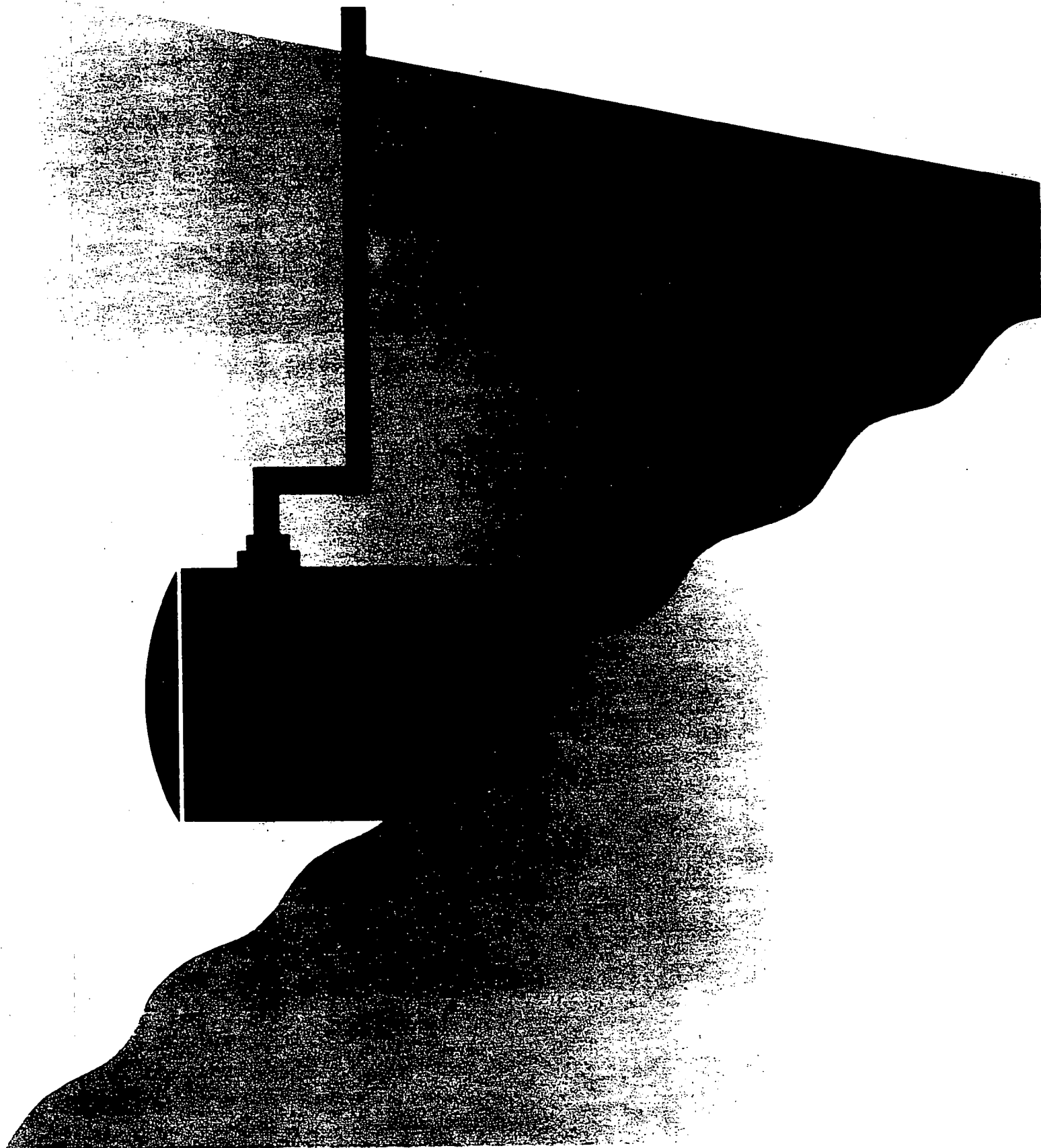
☐ Please put my name on your mailing list;  
I don't need any publications at this time.

☐ Please put my name on your mailing list and  
send me the following publications:

3	4A	4B	5	7	10	17	21	25	32
34B	35	36	40	42	73	74	84	88	92



# Musts for USTs





## ORGANIZATIONS TO CONTACT FOR TANK INFORMATION

ACT -- Association for Composite Tanks  
108 North State Street  
Suite 720  
Chicago, IL 60602  
(301) 355-1307 (for information requests)

API -- American Petroleum Institute  
1220 L Street, N.W.  
Washington, DC 20005  
(202) 682-8000

Fiberglass Petroleum Tank and  
Pipe Institute  
One SeaGate, Suite 1001  
Toledo, OH 43604  
(419) 247-5412

NACE -- National Association of Corrosion  
Engineers  
Box 218340  
Houston, TX 77218  
(713) 492-0535

NFPA -- National Fire Protection Association  
Batterymarch Park  
Quincy, MA 02269  
(617) 770-3000

NLPA -- National Leak Prevention Association  
P.O. Box 29809  
Cincinnati, OH 45229  
(513) 281-7693  
1-(800)-543-1838

PEI -- Petroleum Equipment Institute  
Box 2380  
Tulsa, OK 74101  
(918) 743-9941

Steel Tank Institute  
P.O. Box 4020  
Northbrook, IL 60065  
(312) 498-1980

**REGULATIONS FOR ESTABLISHING  
AN ADMINISTRATIVE  
RECORD UNDER SECTION 113(k) OF CERCLA  
REMEDIAL ACTIONS**

# **General Requirement**

- **Lead agency must establish an administrative record that contains the documents that form the basis for the selection of a response action,**
- **Documents considered or relied on by decision maker**
- **For all response actions taken under Section 104 of CERCLA, or ordered administratively or judicially under Section 106 of CERCLA**

# **Purpose of an Administrative Record**

## **1. Judicial review of issues concerning the adequacy or the response action is limited to the administrative record**

- show, based on administrative record, that the Agency was not arbitrary and capricious or otherwise not in accordance with administrative law
- vast improvement over pre-SARA questions of scope of judicial review

## **2. Vehicle for public participation in the selection of the response action**

- statute requires that the Agency promulgate regulations establishing procedures for appropriate participation of interested persons in the development of the administrative record
- early availability of the record file ensures this public participation

## **Sections of Regulations**

- 300.800      Establishment of an administrative record**
- 300.805      Location of the administrative record**
- 300.810      Contents of the administrative record**
- 300.815      Administrative record for a remedial action**
- 300.820      Administrative record for a removal action**
- 300.825      Record requirements after decision document is signed**

# **Contents of the Administrative Record:**

## **Remedials**

- **Factual information/data**

- Preliminary assessment (PA) report
- Site investigation (SI) report
- Approved remedial investigation/feasibility study (RI/FS) work plan
- Amendments to final work plan
- Sampling and analysis plan (SAP): consisting of a quality assurance project plan (QAPP) and a field sampling plan (FSP)
- Validated sampling and analysis data
- Chain-of-custody forms
- Inspection forms
- Summary of remedial action alternatives (used in conjunction with early special notice letters)
- Data summary sheets
- Technical studies
- Endangerment assessment/risk assessment
- RI/FS
- Data submitted by the public, including PRPs

- **Policy and Guidance**

- Memoranda on policy decisions (site-specific, issue-specific)
- Guidance documents
- Technical literature

- **Public Participation**

- Community relations plan
- Proposed plan
- Public notices (concerning response action selection)
- Documentation of public meetings
- Public comments
- Transcripts of public meetings
- Responses to significant comments
- Responses to State and other federal agency comments

- **Enforcement Documents**

(Relevant to the response selection)

- Administrative orders
- Consent decrees
- Affidavits containing relevant factual information
- Notice letters to PRPs
- Responses to notice letters
- Section 104(e) information request letters and subpoenas
- Responses to Section 104(e) requests

- **Other Information**

- Record file index
- Documentation of State involvement
- ATSDR health assessments
- Natural resource trustee findings of fact and assessment reports
- Bridge documents

- **Decision Documents**

- Record of decision (ROD), including responsiveness summary
- Explanations of significant differences
- Amended ROD



**COMPENDIUM OF CERCLA  
RESPONSE SELECTION  
GUIDANCE DOCUMENTS FOR  
ADMINISTRATIVE RECORDS**

# **Definition of Compendium**

- **Guidance documents relied upon in selecting a response action**
- **Contains only guidance documents frequently used in selecting response action**
- **Available to the public at central location**

# **Purpose of Compendium**

- 1. For development of administrative records -**
  - Reduces burden of copying and storage
  - Allows for easy access by the public and EPA staff
- 2. As information source/reference library for selection of response action -**
  - Centralizes the core policy and guidance documents relied upon most often during remedial or removal action selection

# **Compendium Subject Categories**

- **Pre-remedial**
- **Removal Action**
- **Remedial Investigation/Feasibility Study**
- **Applicable or Relevant and Appropriate Requirements (ARARs)**
- **Water Quality**
- **Risk Assessment**
- **Cost Analysis**
- **Community Relations**
- **Enforcement**
- **Selection of Remedy/Decision Documents**

# **Special Concerns**

## **Public Availability: Remedials**

- **Publish a notice of availability of the record file when available, when the remedial investigation begins**
- **Record file available at a central regional location and at or near the site**
- **Publish a notice of public comment period on proposed plan and record when RI/FS and proposed plan are completed**
- **Provide a formal 30-day comment period on the RI/FS proposed plan and record**
- **Provide opportunity for public meetings and keep transcripts**
- **Prepare a discussion of any significant changes and a response to all significant comments**
- **Publish a notice of availability of the ROD**

# **Special Concerns**

## **Public Comments**

- **Administrative record must document opportunities for public involvement in the selection of a response action**
- **Record file must contain relevant information brought to the Agency's attention by the public**
- **Responses to early comments - optional**
- **Comments received during the formal public comment period must be addressed in the responsiveness summary**
- **Responsiveness summary must be responsive**
- **Responses to late comments**

# **Special Concerns**

## **Challenges to Record**

- **Evidence of imminent and substantial endangerment**
- **Ignored important information -- record not complete**
  - Include submissions by PRPs, public, other agencies
  - Include responses to comments
- **Insufficient opportunity to participate in development of record**
  - Evidence of public participation
- **Decision arbitrary and capricious**
  - Evidence that the decision is not inconsistent with the NCP
  - Bridge documents explaining differences of opinion or contradictory data
- **State challenges**
  - Evidence of State participation
  - Documentation of ARAR determinations

# **NCP Issues**

- **Contents of the record**
- **Availability of the record file at the start of the remedial investigation**
- **Application of Subpart I regulations to state-lead sites**
- **Location of the record**
- **Exemption of documents from at or near the site location**
- **Public participation requirements**
- **Supplementing the record**
- **Scope of judicial review**
  - §106 injunctive actions
  - endangerment assessments
  - cost expenditures



## **Other Records**

- **De Minimis settlements**
- **Record for cost expenditures-cost recovery**
- **Record for § 106(b) petitions**

EPA/540/G-88/002  
OSWER Directive 9230.0-3B  
June 1988

**Community Relations in Superfund:**  
**A Handbook**  
**Interim Version**

Office of Emergency and Remedial Response  
U.S. Environmental Protection Agency  
Washington, DC 20460

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## WHAT IS A HAZARDOUS WASTE?

TWO MECHANISMS BY WHICH WASTES BECOME HAZARDOUS

1. LISTED BY SPECIFIC NAME OR PROCESS GENERATING THE WASTE
2. HAZARDOUS BY CHARACTERISTIC
  - ° IGNITABLE (FLASH  $\leq 140^{\circ}$  F)
  - ° REACTIVE (EXPLOSIVE OR REACTS VIOLENTLY WITH AIR/WATER)
  - ° CORROSIVE ( $2 \leq \text{pH} \leq 12.5$ )
  - ° EP TOXIC (LEACHATE EXTRACTION  $\geq$  SET HEAVY METALS & PESTICIDES)

SEVERAL MECHANISMS TO EXEMPT

- ° DELISTING
- ° WASTE WATER/NPDES EXEMPTION
- ° POTW/DOMESTIC SEWAGE EXEMPTION

## WHAT IS RCRA?

- ° RESOURCE CONSERVATION AND RECOVERY ACT (1976)
  - CRADLE TO GRAVE MANAGEMENT OF HAZARDOUS WASTE
  - INTERIM AND PERMIT STANDARDS FOR TREATMENT, STORAGE, AND DISPOSAL FACILITIES (TSDs)
  - MARKING, MANIFESTING, AND RECORD KEEPING STANDARDS FOR GENERATORS AND TRANSPORTERS OF HAZARDOUS WASTE
- ° HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984 (HSWA)
  - ESTABLISHED CORRECTIVE ACTION REQUIREMENTS FOR SOLID WASTE MANAGEMENT UNITS (SWMUs)
  - ESTABLISHED THE LAND DISPOSAL RESTRICTIONS
  - ESTABLISHED THE UNDERGROUND STORAGE TANK (UST) PROGRAM
  - SET DEADLINES FOR ISSUING TSD PERMITS

### RCRA ADMINISTRATION

- BASE RCRA SUBSTANTIALLY DELEGATED TO THE STATES TO ADMINISTER
- FEW STATES DELEGATED HSWA AUTHORITY
- RESULTS IN TWO REGULATORY ENTITIES MANAGING RCRA PROGRAM

### STATE ROLE

- BASIC RCRA PROGRAM
- ANNUAL INSPECTION OF ALL FEDERALLY OWNED OR OPERATED TSD FACILITIES
- ISSUANCE OF ENFORCEMENT ACTIONS TO COMPEL COMPLIANCE - PENALTIES STILL A QUESTION
- MAY PENALIZE GOVERNMENT CONTRACTORS
- ISSUANCE OF BASIC RCRA PERMIT TO OPERATE
- TECHNICAL ASSISTANCE AS APPROPRIATE
- INPUT TO A-106 PROCESS

### EPA ROLE

- OVERSEE STATES TO ASSURE TIMELY AND APPROPRIATE ENFORCEMENT/ CORRECTION OF VIOLATIONS
- INITIATE ENFORCEMENT ACTIONS WHERE STATE HAS BEEN UNABLE OR UNWILLING TO ACT OR LACKS AUTHORITY
- MAY PENALIZE GOVERNMENT CONTRACTORS
- OVERSEE STATE PERMITS TO FEDERAL TSDs
- ISSUE CORRECTIVE ACTION PORTION OF PERMIT WHERE APPROPRIATE
- ISSUE CORRECTIVE ACTION ORDERS TO FEDERAL TSDs WHERE APPROPRIATE
- PROVIDE INPUT TO A-106 PROCESS
- PROVIDE TECHNICAL ASSISTANCE WHERE APPROPRIATE

### KEY ENFORCEMENT PRIORITIES

- ° BASIC COMPLIANCE WITH STANDARDS TO MINIMIZE RELEASES OR MIS-HANDLING OF WASTE
- ° COMPLIANCE WITH LAND BAN
- ° IMPLEMENTING CORRECTIVE ACTION FOR PAST RELEASES
- ° ENCOURAGING WASTE MINIMIZATION

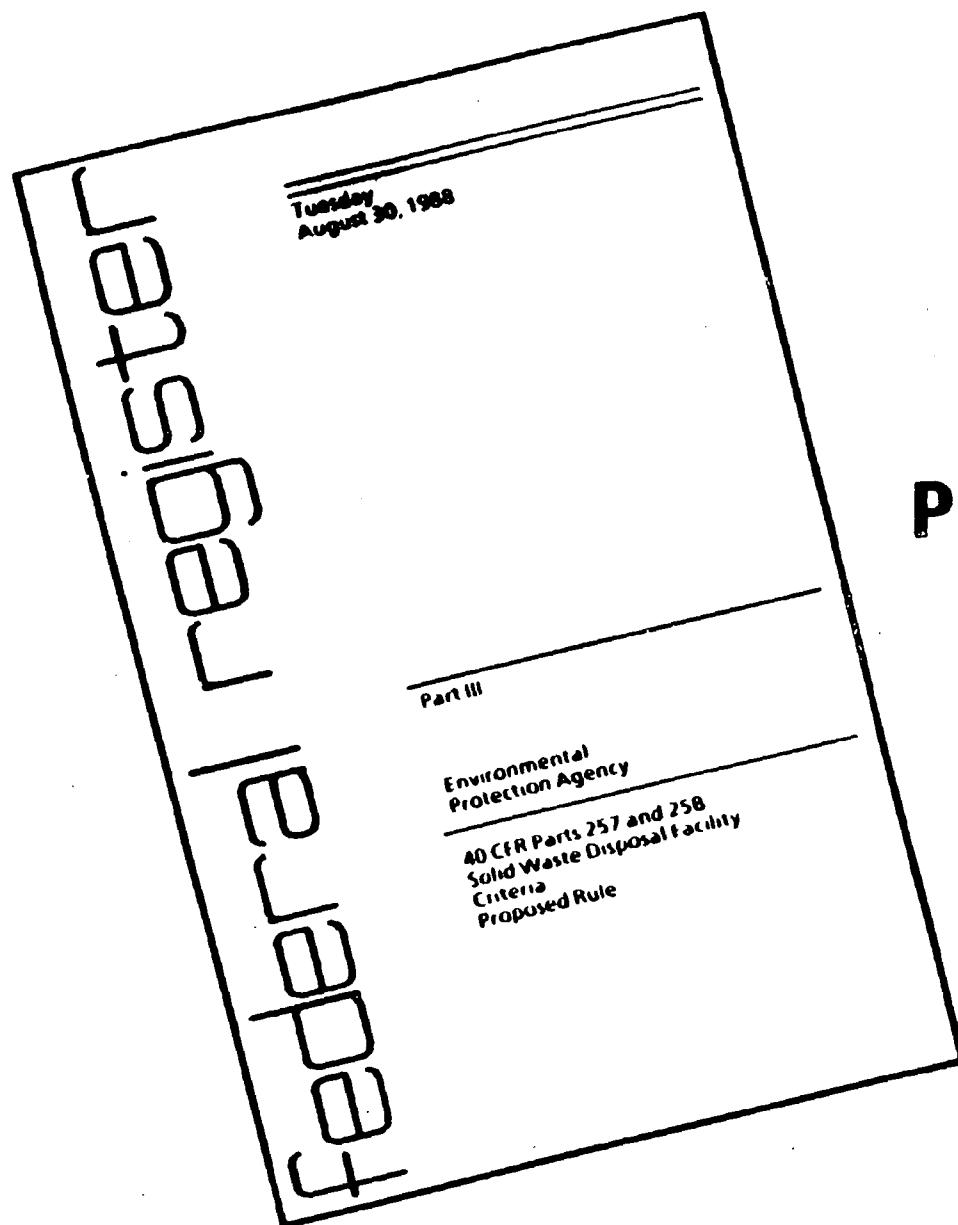
### EPA ENFORCEMENT ACTION

- ° FOLLOWS "YELLOW BOOK" STRATEGY
- ° INFORMAL NOTICES OF VIOLATION FOR MINOR INFRACTIONS (NOV)
- ° FORMAL ACTION BEGINS WITH A NOTICE OF NON-COMPLIANCE (NON) WHICH
  - IDENTIFIES THE VIOLATION
  - EXPLAINS HOW THE VIOLATION WAS DETECTED
  - WHAT NEEDS TO BE CORRECTED (NOT HOW)
  - REQUIREMENT FOR A WRITTEN RESPONSE AND DATE FOR A SETTLEMENT CONFERENCE
  - CONTAINS ENFORCEMENT LANGUAGE OR CITIZEN SUITS, PRESIDENTIAL EXEMPTIONS, INDIVIDUAL CIVIL/CRIMINAL LIABILITIES
- ° SECOND PHASE OF FORMAL ACTION IS FEDERAL FACILITY COMPLIANCE AGREEMENT (FFCA)
- ° ESSENTIALLY A CONSENT AGREEMENT ON FIXES, SCHEDULES, DISPUTE RESOLUTIONS, ENFORCEABILITY CLAUSES
- ° MUST BE NEGOTIATED AND SIGNED WITHIN 120 DAYS OF ISSUANCE OF THE NON OR ELEVATED TO HQ
- ° ELEVATION NORMALLY REQUIRES A PRESS RELEASE



EPA TECHNICAL ASSISTANCE

- ° RCRA HOTLINE (800) 424-9346 OR (202) 382-3000
- ° A-106 SUBMISSIONS
- ° REGIONAL OFFICE OF FEDERAL ACTIVITIES (OFA) (REGION IV - ART LINTON)  
AT (404) 347-3776
- ° FEDERAL FACILITIES SECTION  
BEVERLY SPAGG - (404) 347-3016 (AFTER 3/1/90) - CURRENTLY  
(404) 347-5059
- ° WASTE ENGINEERING SECTION (RCRA PERMITS)  
DOUG McCURRY (404) 347-3433
- ° WASTE COMPLIANCE SECTION  
(404) 347-7603



# **SOLID WASTE DISPOSAL FACILITY CRITERIA: PROPOSED REVISIONS**

**MANDATE:**

**HAZARDOUS AND SOLID WASTE**

**AMENDMENTS OF 1984**

**(HSWA)**

**EPA must REVISE EXISTING CRITERIA for facilities that receive household or small quantity generator hazardous waste**

- **At minimum, revisions must include:**
  - **Location criteria**
  - **Ground-water monitoring**
  - **Corrective action, as appropriate**
- **Consider “practicable capability” of facilities**

**States must:**

- **ESTABLISH PERMIT PROGRAM for existing Criteria by November 1987**
- **ESTABLISH REVISED PERMIT PROGRAM within 18 months after revised Criteria are final**

## **OPERATING CRITERIA**

- **Procedures for excluding hazardous waste**
- **Daily cover**
- **Disease vector control**
- **Explosive gases**
- **Air criteria**
- **Access control**
- **Run-on and run-off control**
- **Surface water requirements**
- **Liquids management**
- **Recordkeeping**

## **PROCEDURES FOR EXCLUDING** **HAZARDOUS WASTE**

**Requires a program to detect the receipt of regulated quantities of hazardous waste:**

- Random inspection of incoming loads,**
- Inspection of suspicious loads,**
- Recordkeeping,**
- Training, and**
- Procedures to notify authorities**

- New requirement**

## **DAILY COVER**

- **Requires cover at the end of each operating day or more frequently to control:**
  - **Disease vectors,**
  - **Fires,**
  - **Odors,**
  - **Blowing litter, and**
  - **Scavenging**
- **Allows temporary waivers for extreme seasonal climatic conditions**
- **Modifies existing Part 257 Criteria**



## **DISEASE VECTORS**

- **Requires other measures as necessary to control disease vectors**
- **Same as existing Part 257 Criteria**

## **EXPLOSIVE GASES**

- **Requires that explosive gases do not exceed 25% LEL in on-site structures or LEL at property boundary**
- **Requires routine monitoring**
- **Requires remedial measures when performance standard is exceeded**

## **AIR CRITERIA**

- **Bans open burning**
- **Allows infrequent burning of specific wastes**
- **Requires compliance with State Implementation Plans**
- **Same as existing Part 257 Criteria**

## **ACCESS CONTROL**

- **Requires access control to:**
  - **Protect human health and environment,**
  - **Prevent unauthorized vehicular traffic, and**
  - **Prevent illegal dumping of waste**
- **New requirement**

## **RUN-ON/RUN-OFF CONTROLS**

- **Requires that run-on onto active portion of unit during peak discharge from 25-year storm be prevented**
- **Requires collection and control of run-off from active portion of unit resulting from a 24-hour, 25-year storm**
- **New requirement**

## **SURFACE WATER REQUIREMENTS**

- **Prohibits discharges to surface waters in violation of the CWA including:**
  - **Non-point sources discharges (Section 208), and**
  - **Point source discharges (Section 402).**
- **Same as existing Part 257 Criteria**

## **LIQUIDS RESTRICTIONS**

- **Prohibits disposal of:**
  - **Bulk or non-containerized liquids, and**
  - **Containerized liquids**
- **Allows leachate and gas condensate recirculation if MSWLF equipped with composite liner and leachate collection system (LCS)**
- **New requirement**

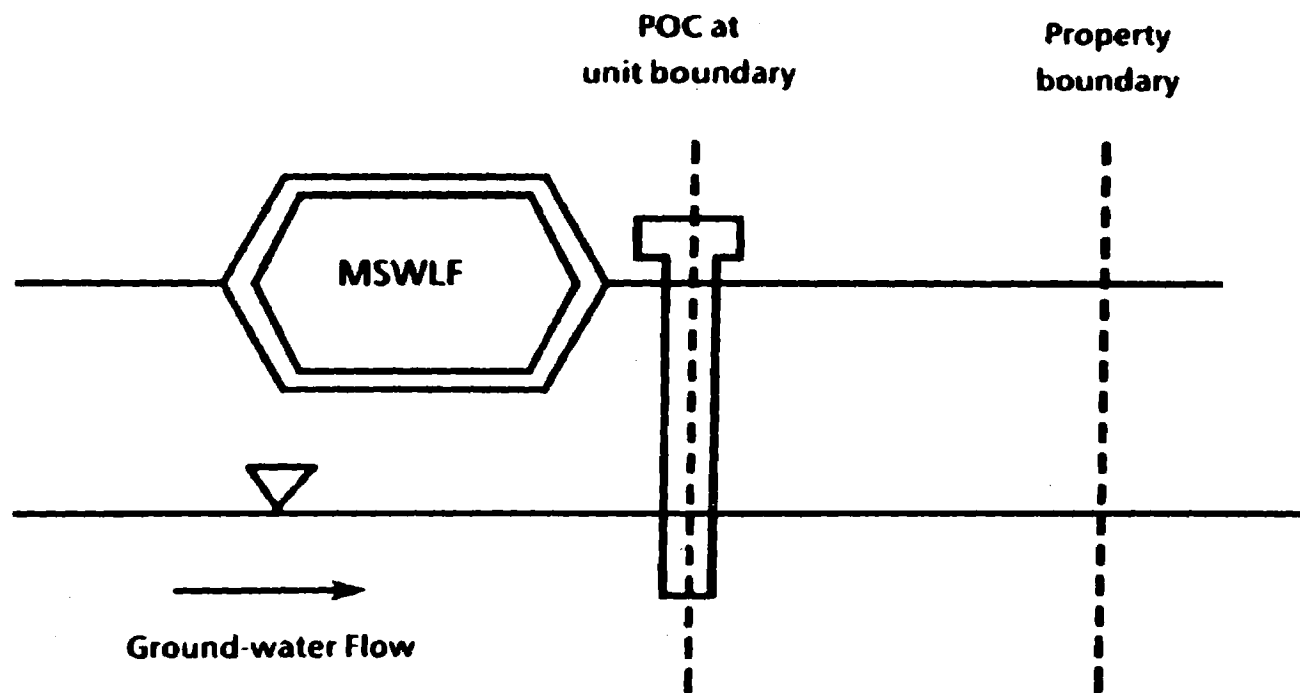
## **RECORDKEEPING**

- **Requires records to be kept of:**
  - **Ground-water monitoring,**
  - **Gas monitoring results,**
  - **Procedures for excluding hazardous waste, and**
  - **Closure and post-closure plans.**
- **State specifies reporting format**
- **New requirement**



## **DESIGN CRITERIA FOR NEW** **MSWLF UNITS**

- **States establish design goal within a carcinogenic risk range of  $1 \times 10^{-4}$  to  $1 \times 10^{-7}$**
- **Requires liners, LCSs, and final covers as necessary to meet design goal at a specified Point of Compliance (POC)**
- **POC must be:**
  - **Waste management unit boundary, or**
  - **Alternative boundary not exceeding 150 meters from unit boundary and on property of owner/operator**



## **DESIGN CRITERIA FOR EXISTING** **MSWLF UNITS**

**Requires installation of final cover that prevents infiltration after closure**

**Does not require retrofitting with liners and LCSs**

# **GROUND-WATER MONITORING** **PROGRAM**

- **Requires monitoring to be conducted in two phases:**
  - **Phase I: To detect changes in ground-water chemistry**
  - **Phase II: To identify hazardous constituents (HC) released and monitor HC detected**

## **PHASE I MONITORING**

- **Limited number of parameters**
- **Minimum semiannual frequency**

## **PHASE II MONITORING**

- **Phase II is initiated when Phase I indicates possible release**
- **Requires monitoring for all hazardous constituents in Appendix II**
- **Corrective action program is initiated if Appendix II constituents exceed "trigger levels"**

## **CORRECTIVE ACTION PROGRAM**

- **Assessment of corrective measures**
- **Selection of remedy and ground-water protection standard (GWPS)**
- **Implementation of corrective action program**

## **ASSESSMENT OF CORRECTIVE MEASURES**

**Requires assessment when Appendix II constituents exceed pre-established “trigger levels”**

**Scope of assessment established by State**



## **CORRECTIVE ACTION PROGRAM** **IMPLEMENTATION**

- **Requires clean-up to be initiated when GWPS is exceeded**
- **Owner or operator must:**
  - **Establish corrective action ground-water monitoring program,**
  - **Implement selected remedy,**
  - **Notify affected property owners, and**
  - **Take interim measures specified by State**
- **State determines when remedy complete**

## **CLOSURE CRITERIA**

- **Requires closure in a manner that:**
  - **Minimizes post-closure release of leachate and explosive gases**
  - **Minimizes need for further maintenance, and**
  - **Ensures protection of HHE**

## **CLOSURE PLAN**

- **Closure plan must include:**
  - **Description of closure activities,**
  - **Description of final cover,**
  - **Schedule for completing closure, and**
  - **Other information needed for financial assurance**

## **POST-CLOSURE CARE REQUIREMENTS**

- **Requires two phase post-closure care period**
- **First phase must last at least 30 years and must include:**
  - **Maintenance of the final cover and containment systems,**
  - **Leachate collection,**
  - **Ground-water monitoring, and**
  - **Gas monitoring**

## **POST-CLOSURE CARE REQUIREMENTS**

### **(Cont'd.)**

- **Second phase begins after initial 30 years**
- **Second phase must include ground-water monitoring and gas monitoring**
- **State establishes length of second phase**

## **FINANCIAL ASSURANCE**

- **Applies to all entities, except States and the Federal Government**
- **Requesting comment on:**
  - **Special tests for local governments, and**
  - **Approach to Indian Tribes**

## **Notification Requirement**

- **Requires notification by Industrial Solid Waste Disposal Facilities including:**
  - **Landfills,**
  - **Surface Impoundments,**
  - **Land Application Units,**
  - **Waste Piles, and**
  - **Construction/Demolition Waste Landfills**

## **Notification Requirement (Cont'd.)**

- **Form to be submitted to State and EPA within 6 months of promulgation date of rule**
- **One-time requirement, not applicable to facilities that open after the effective date of rule**
- **Required information includes:**
  - **Number and type of units**
  - **Waste types**
  - **Total annual amount of waste disposed**
  - **Number of households within one mile**
  - **Number of wells**



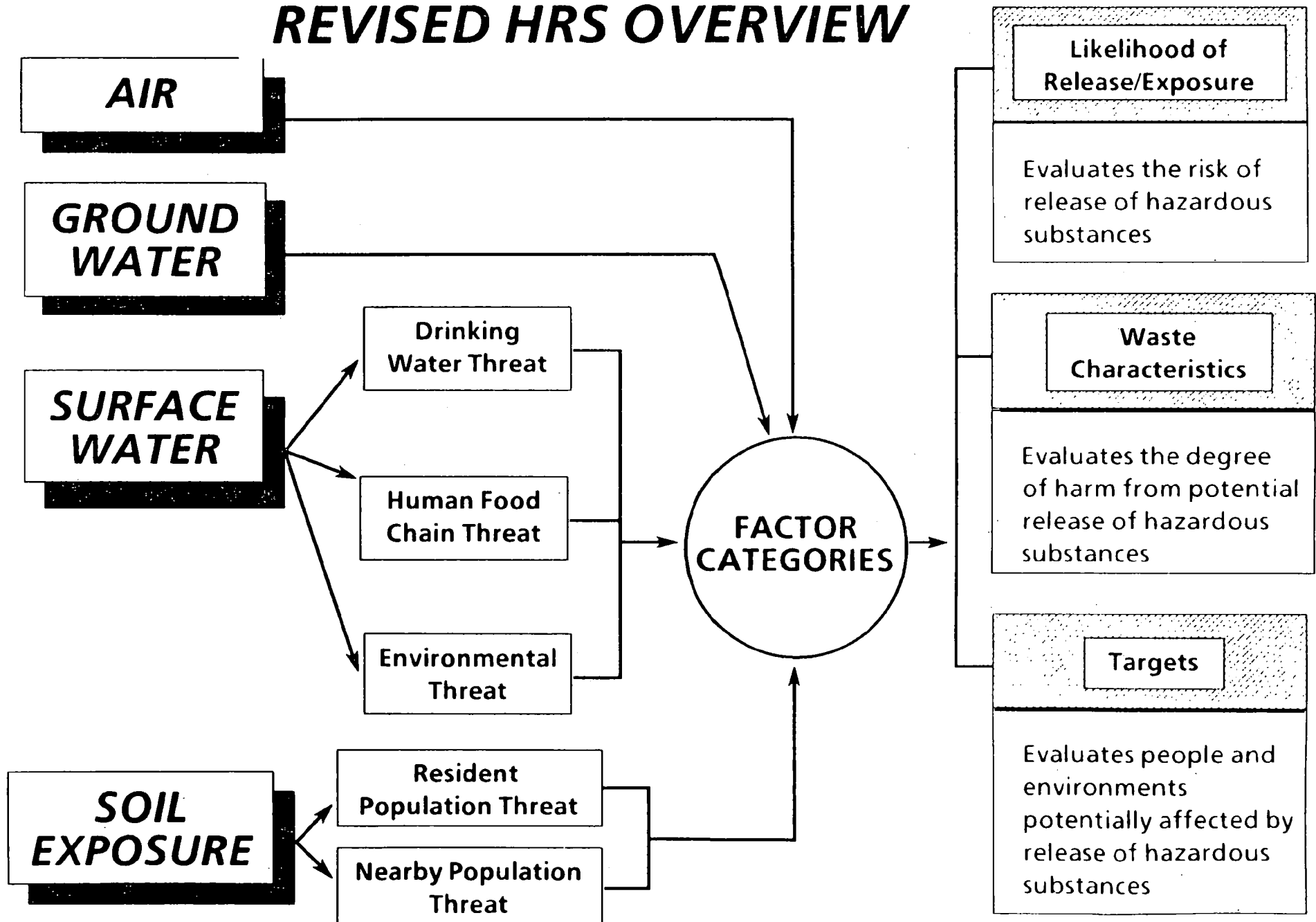
## **IMPLEMENTATION**

- **Revised Criteria to be implemented by State Solid Waste Programs**
- **EPA is developing strategy to determine actions necessary for implementing programs**

## **ENFORCEMENT**

- **Revised criteria can be enforced by:**
  - **States that have adopted the revised Criteria,**
  - **Through Citizen Suits, or**
  - **By EPA in States that have not adopted an adequate program**

# REVISED HRS OVERVIEW



In 1986, the Superfund Amendments and Reauthorization Act (SARA) required that the HRS be revised to “assure, to the maximum extent feasible, that the hazard ranking system accurately assess the relative degree of risk to human health and the environment posed by sites and facilities subject to review”.

### SARA Requirements

- Accurately assess relative risk to the maximum extent feasible
- Emphasize drinking water contamination
- Consider:
  - Potential contamination of ambient air
  - Human food chain exposure
  - Human recreational exposure
- Balance costs of data collection vs. improvements in accuracy

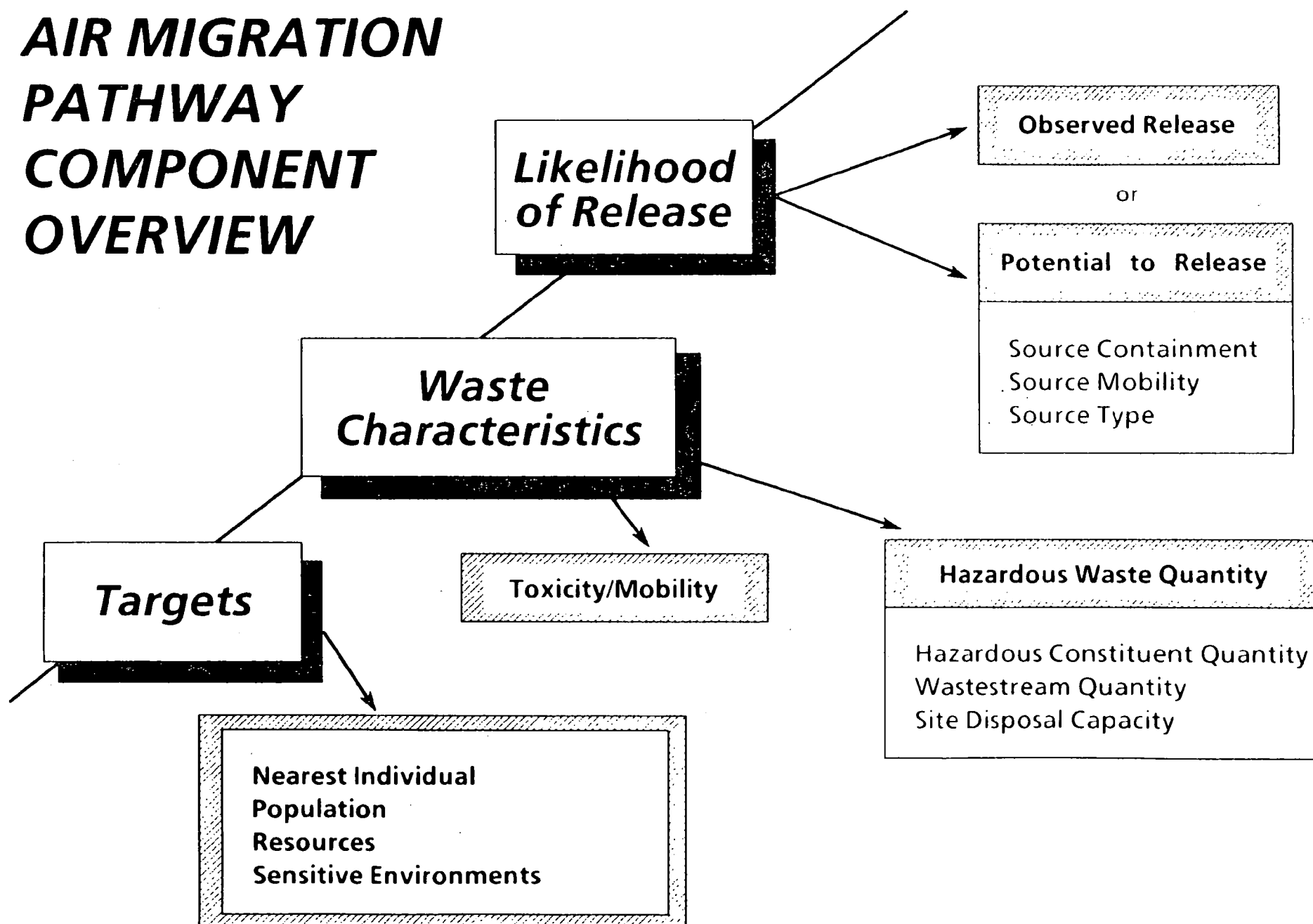
## General Revisions

- Toxicity assessed based on acute toxicity, chronic noncarcinogenic toxicity, and carcinogenicity
- Hazardous Waste Quantity calculation considers all types of quantity information; e.g., constituent amount, wastestream, source volume, and source area
- Soil Exposure Pathway has been added
- All four pathways now evaluate targets based on exposure above health-based benchmarks and background, and potentially exposed targets; targets exposed above health-based benchmarks are weighted more heavily
- Targets weighted by distance from the source for groundwater, air, and soil exposure pathways; targets for surface water are weighted by dilution, e.g., flow of water body
- The nearest individual is considered in the assessment of risks in all four pathways
- Population served by "blended water" systems is apportioned
- Containment criteria and list of sensitive environments expanded

# DATA COLLECTION IMPACTS

- I. Addressed through standard reference sources e.g., maps in the rule, "lookup tables", automated chemical database, GEMS database, etc.
- II. Addressed through increased level of effort
  - source characterization
  - exact target data to apply distance/dilution weighting, apportionment, etc.
  - specific information on levels of remediation (e.g., time frame, oversight, extent of removal)

# ***AIR MIGRATION PATHWAY COMPONENT OVERVIEW***



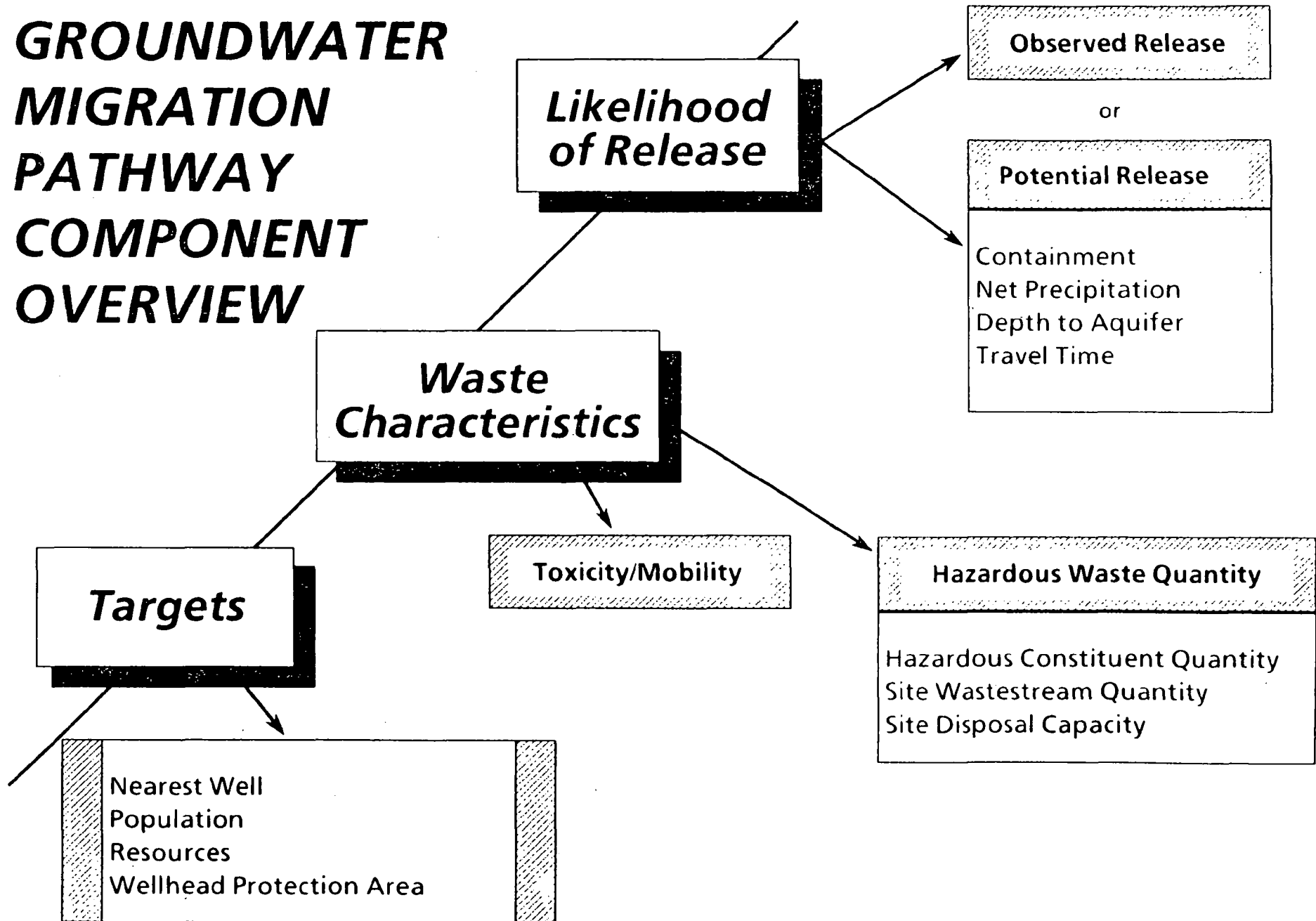
## Specific Pathway Revisions

### **Air Migration Pathway**

- Potential for release to the atmosphere is now considered
- Mobility of particulates and gases is now considered
- Does not address:
  - Intermedia transfer; e.g., deposition of air contaminants onto surface water bodies and eventual ingestion through drinking water
  - Food chain
  - Indoor air contamination (except in special circumstances)



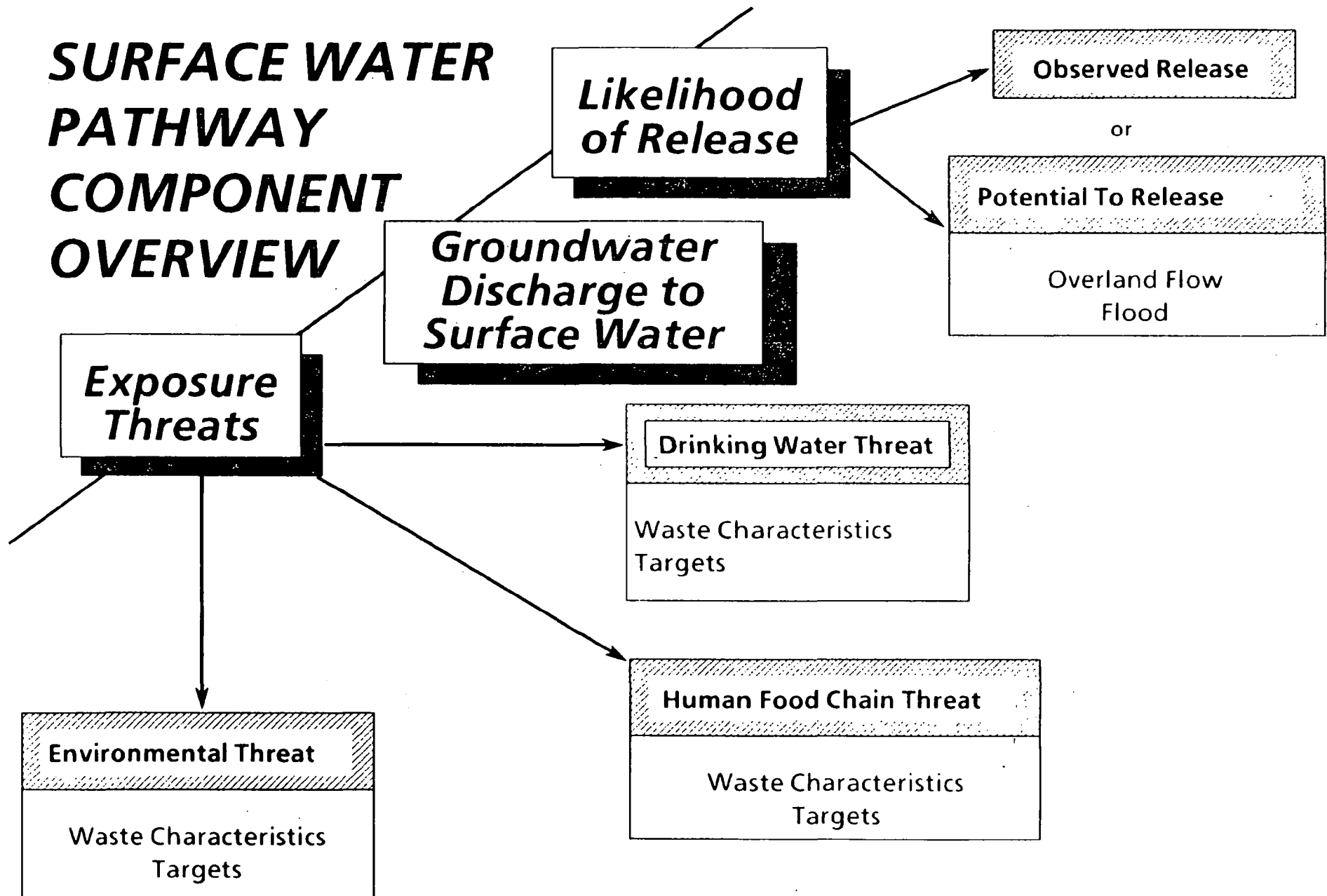
# GROUNDWATER MIGRATION PATHWAY COMPONENT OVERVIEW



## **Groundwater Migration Pathway**

- Target distance limit for potentially exposed targets expanded to a 4-mile radius
- Aquifers associated with karst topography are given special consideration under Groundwater Release Potential and Targets
- Wellhead Protection Areas receive special consideration
- Mobility (i.e., solubility) of contaminants is considered in assessing Potential to Release

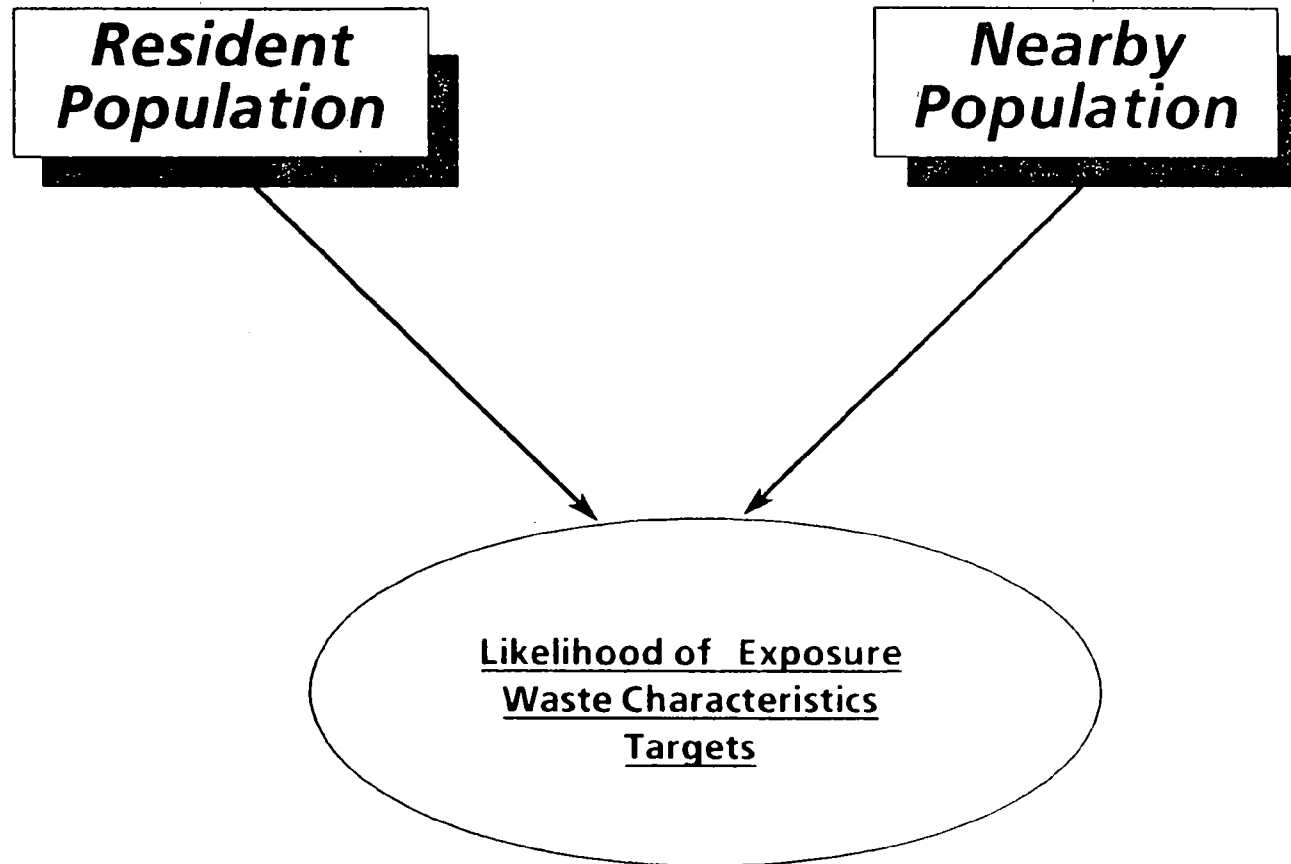
# ***SURFACE WATER PATHWAY COMPONENT OVERVIEW***



## Surface Water Migration Pathway

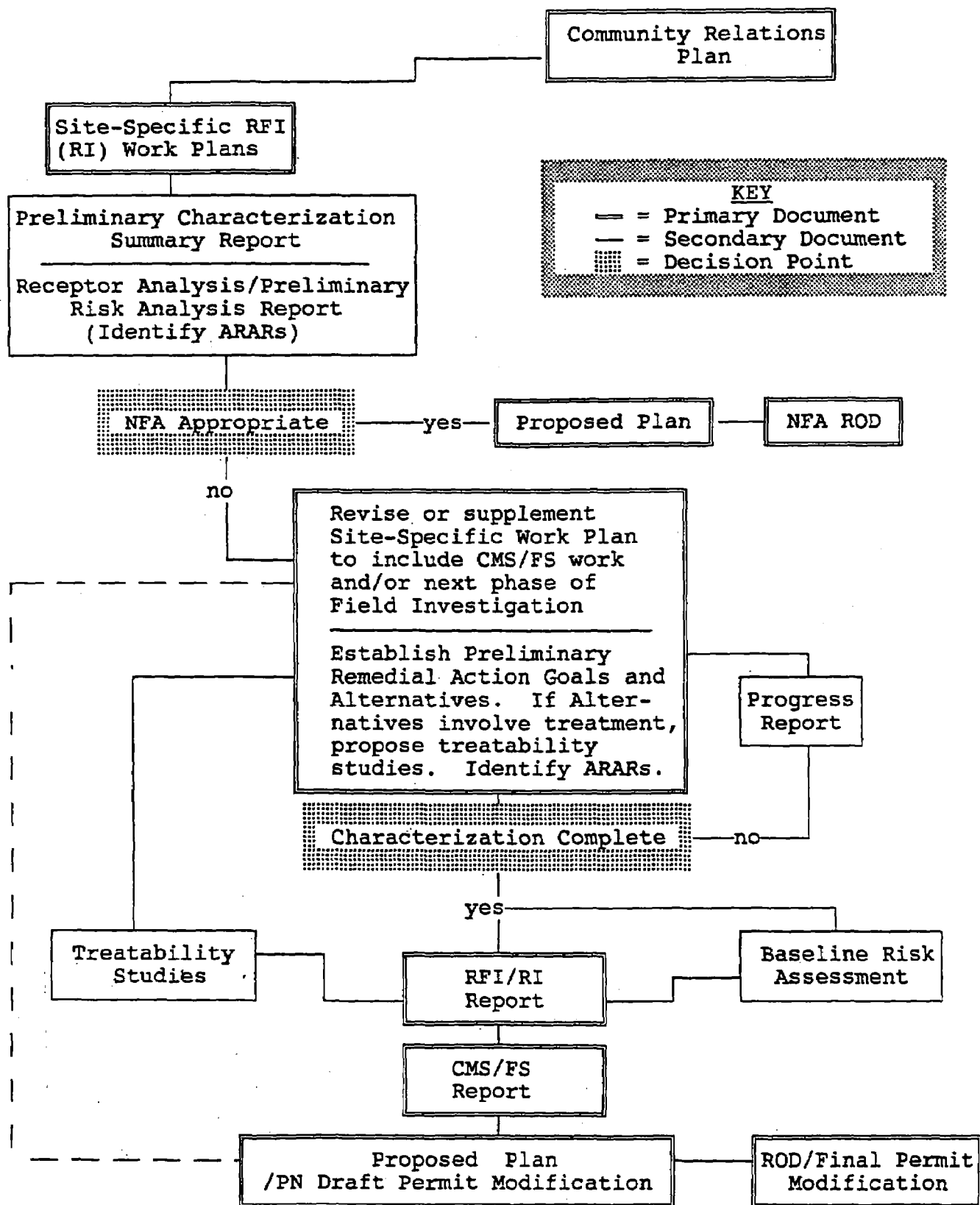
- The Surface Water Pathway is divided into three subpathways based on the threat of exposure
  - Drinking Water Threat evaluates the human population exposed through the consumption of contaminated or potentially contaminated drinking water
  - Human Food Chain Threat considers bioaccumulation as well as toxicity/persistence and evaluates human exposure based on the production of fisheries
  - Environmental Threat considers ecotoxicity and bioaccumulation in evaluating the risk to a wide range of sensitive environments
- Target distance limits for potentially exposed targets extended to 15 stream miles
- Flooding now considered in assessing the Likelihood of Release to surface water
- Runoff of particulates and dissolved materials is considered in assessing the Likelihood of Release by Overland Flow
- Persistence in surface water, formerly based on biodegradation, now based on a half-life calculation
- Evaluation of potential for groundwater discharge to surface water has been added

# ***SOIL EXPOSURE PATHWAY COMPONENT OVERVIEW***



## **Soil Exposure Pathway**

- Pathway added to consider risks from direct contact, ingestion, and inhalation of contaminated soils or waste
- Considers sites where people or wildlife are routinely exposed to onsite hazardous substances (Resident Population Threat)
- Considers sites where people may travel to locations where hazardous substances are present (Nearby Population Threat)



INTEGRATED RCRA/CERCLA PROCESS FOR OPERABLE UNITS

Remedial AlternativesDocumentation

1	▼ β Γ π Σ σ γ ϕ Ω ∞ € =	Preliminary Characterization Summary Report
2	▼ π Σ σ γ ϕ Ω ∞ =	
3	▼ Σ γ ϕ Ω =	Remedial Investigation Report
4	▼ Σ γ Ω	Feasibility Study Report
5	Ω	Proposed Plan
6	Ω	Record of Decision

Explanation: ▼ No Action

DISCUSSION

1. Potential Alternatives Identification: Combine general response actions and the process representing technology types for each specific media to form alternatives.
2. Initial Screening of Alternatives: Screen technologies on the basis of technical implementability according to existing information and preliminary characterization data.
3. Refine Potential Alternatives: Further refine alternatives under consideration on the basis of effectiveness, implementability and cost, and the results of the Remedial Investigation.
4. Detailed Analysis of Alternatives: Conduct individual assessments of alternatives according to the nine criteria. Also, conduct comparative analysis to assess the relative performance of alternatives.
5. Propose Preferred Alternative(s): Select the preferred alternative(s) and propose remedial action(s) to the public.
6. Finalize Remedial Action(s) Selection: Document final remedial action(s).



## THE NINE CRITERIA

### PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

- EXISTING AND POTENTIAL RISKS ADEQUATELY ELIMINATED, REDUCED, OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS (e.g., CONTAINMENT), AND/OR INSTITUTIONAL CONTROLS

### COMPLIANCE WITH ARARs

- ATTAINMENT OF CHEMICAL, LOCATION, AND ACTION-SPECIFIC REQUIREMENTS
- GROUNDS FOR INVOKING A WAIVER

### LONG-TERM EFFECTIVENESS

- MAGNITUDE OF TOTAL RESIDUAL RISK (UNTREATED WASTE & TREATMENT RESIDUALS)
- ADEQUACY AND SUITABILITY OF CONTROLS (ENGINEERING & INSTITUTIONAL) USED TO MANAGE UNTREATED WASTE AND TREATMENT RESIDUALS
- RELIABILITY OF CONTROLS OVER TIME, INCLUDING POTENTIAL NEED FOR REPLACEMENT

### REDUCTION OF TMV

- TREATMENT PROCESS AND AMOUNT OF MATERIAL TO BE TREATED
- AMOUNT OF HAZARDOUS MATERIALS THAT WILL BE DESTROYED OR REDUCED, INCLUDING HOW PRINCIPAL THREAT IS ADDRESSED THROUGH TREATMENT
- DEGREE OF EXPECTED TMV REDUCTION (e.g., % OF TOTAL, ORDER OF MAGNITUDE)
- DEGREE TO WHICH TREATMENT IS IRREVERSIBLE
- TYPE AND QUANTITY OF RESIDUALS RESULTING FROM TREATMENT PROCESS

### SHORT-TERM EFFECTIVENESS

- POTENTIAL IMPACTS ON COMMUNITY DURING RA IMPLEMENTATION
- POTENTIAL IMPACTS ON WORKERS DURING RA AND THE EFFECTIVENESS AND RELIABILITY OF PROTECTIVE MEASURES
- POTENTIAL ENVIRONMENTAL IMPACTS OF RA AND THE EFFECTIVENESS AND RELIABILITY OF MITIGATIVE MEASURES
- TIME UNTIL PROTECTION IS ACHIEVED

### IMPLEMENTABILITY

- TECHNICAL FEASIBILITY:
  - DIFFICULTIES AND UNKNOWN ASSOCIATED W/ TECHNOLOGY
  - RELIABILITY OF TECHNOLOGY
  - EASE OF UNDERTAKING ADDITIONAL ACTION, IF REQUIRED
- ADMINISTRATIVE FEASIBILITY:
  - ABILITY AND TIME REQUIRED TO OBTAIN REQUIRED APPROVALS/ PERMITS
  - STEPS REQUIRED TO COORDINATE WITH OTHER AGENCIES AND ASSOCIATED TIME REQUIREMENTS
- AVAILABILITY OF SERVICES AND MATERIALS
  - TREATMENT, STORAGE OR DISPOSAL CAPACITY
  - EXISTENCE OF MULTIPLE VENDORS
  - AVAILABILITY OF NEEDED EQUIPMENT AND SPECIALISTS
  - TIMING OF TECHNOLOGY AVAILABILITY

### COST

- CAPITAL
- OPERATION AND MAINTENANCE
- PRESENT WORTH

### STATE ACCEPTANCE

### COMMUNITY ACCEPTANCE

PRIMARY/SECONDARY DOCUMENTS  
REQUIRED UNDER A REGION IV FEDERAL FACILITY AGREEMENT

The Primary Documents for the remedial process shall be as specified in the Federal Facility Agreement and shall include at a minimum the following:

- "Site Management Plan";
- "Remedial Investigation Work Plan(s)";
- "Remedial Investigation Report(s)";
- "Baseline Risk Assessment Report(s)";
- "Feasibility Study Report(s)";
- "Proposed Plan(s)";
- "Record(s) of Decision";
- "Remedial Design Implementation Work Plan(s)";
- "Remedial Design Report(s)";
- "Remedial Action Work Plan(s)";
- "Final Remediation Report(s)"; and
- "Site NPL Closeout Report".

I. GENERAL DOCUMENTS

A. Site Management Plan:

The purpose for the Site Management Plan is to document project scoping and provide a general plan and associated schedule (i.e., timelines) for work to be completed at the Site. The Site Scope of Work shall include at a minimum the following:

1. Actions necessary to mitigate immediate threats to human health or the environment.
2. A list of Operable Units subject to the Agreement.
3. A prioritization and rationale for the Operable Units at the Site.
4. Activities and schedules for work planned for the current or next Fiscal Year, as appropriate.
5. Work projections for subsequent Fiscal Years.

B. Site Community Relations Plan (CRP):

The purpose for the Site Community Relations Plan (CRP) is to provide guidelines for community relations activities at the Site to keep the concerned public informed of the Site response action activities. The Site CRP must incorporate at a minimum the following:

1. Specific community relations activities to be implemented.
2. The concerns expressed during interviews with people from the local community.
3. Indication of how the public will contribute to Site response action decisions.
4. A forum where conflict can be constructively resolved.
5. Coordination with RCRA or other related (e.g., NEPA) community relations activities, as appropriate.

C. Site Administrative Record (SAR):

The purpose for the SAR is to document the basis for selected response action(s) at the Site. The SAR shall incorporate at a minimum the following:

1. Record of public participation in the selection of Site response action(s).
2. Documentation necessary for judicial review of the decision process used to select response action(s) at the Site.
3. Guidance documents and technical literature.

II. REMEDIAL INVESTIGATION AND FEASIBILITY STUDY DOCUMENTS

The following is a brief description of the Primary and Secondary documents and information necessary to document the RI/FS process, initiated with the establishment of the Site Administrative Record and concluded through the Site Record(s) of Decision.

A. Remedial Investigation (RI) Statement(s) of Work (SOW):

The purpose for the RI SOW(s) is to provide the basis for the development of Site/Operable Unit RI Work Plan(s). The RI SOW(s) shall include at a minimum the following:

1. Summary of Site/Operable Unit existing information.
2. General purpose and objectives of the RI/FS.
3. Brief description of tasks to obtain objectives.

B. Remedial Investigation Work Plan(s):

The purpose for RI Work Plan(s) is to provide details of planned RI/FS field work and laboratory analysis. The Work Plan(s) should include at a minimum the following:

1. Rationale and expected results or goals of RI/FS.
2. Detailed history of Site/Operable Unit, including physical setting and all existing information.
3. Description of the potential migration and exposure pathways.
4. Documentation of potential human exposure and environmental concerns.
5. Documentation of data required for the Risk Assessment and the alternatives evaluation.
6. Explanation of how planned work activities will provide the required data.
7. Details of the following tasks:
  - a. project planning, including but not limited to the following:

- Site/Operable Unit reconnaissance and limited field investigations;
  - identification of preliminary remedial action objectives and potential remedial alternatives;
  - identification of necessary treatability studies;
  - preliminary identification of applicable, or relevant and appropriate requirements (ARARs); and
  - initiation of coordination with analytical laboratories,
- b. implementation of the Site CRP,
  - c. field investigation(s),
  - d. sample analysis and validation,
  - e. data evaluation, and
  - f. initial screening and detailed analysis of alternatives.

C. Site Sampling and Analysis Plan (SAP):

The purpose for the Site SAP is to assure sample collection and laboratory analysis quality control. The Site SAP should include at a minimum the following:

1. Field Sampling Plan (FSP) providing for all field procedures by defining in detail the sampling objectives and methods, and decontamination procedures to be used.
2. Quality Assurance Project Plan (QAPP) describing the policy, organization, functional activities, quality assurance and quality control protocols, and analytical procedures necessary to achieve the data quality objectives (DQOs) dictated by the scope and objectives of the RI/FS.

D. Site Health and Safety Plan (HSP):

The purpose for the Site Health and Safety Plan (HSP) is to provide a contingency plan which satisfies OSHA requirements through detailed Site standard operating procedures. The Site HSP shall at a minimum provide for the following:

1. Identification of key Site health and safety personnel and document the necessary Site measures to control the risk associated with existing Site conditions.
2. Details of a contingency plan and Site standard operating procedures.
3. Identification potential problems and special Site requirements ensuring safe field activity.
4. Site safety briefings before implementation of the Site SAP and inspections during field activity.

E. Site Quarterly Progress Report(s):

The purpose for Site Quarterly Progress Report(s) is to document Site response action progress and problems. The Quarterly Report(s) shall at a minimum provide the following:

1. Documentation of completed work and delays in schedule.
2. Discussion of planned activities scheduled for the next quarter.
3. Information on Operation and Maintenance (O&M), and a summary environmental monitoring results.

F. Preliminary Characterization Summary Report(s):

The purpose for Preliminary Characterization Summary Report(s) is to provide supportive information for the Preliminary Risk Analysis Report(s). The Characterization Report(s) shall include at a minimum the following:

1. Summary of data from initial sampling and analysis activity.
2. Documentation of the development of potential remedial alternatives.
3. Documentation of potential ARARs.
4. The necessary information to form the basis for the Site Health Assessment conducted by the Agency for Toxic Substances and Disease Registry (ATSDR).

G. Preliminary Risk Analysis Report(s):

The purpose for Preliminary Risk Analysis Report(s) is to provide an evaluation of the potential risk to human health or welfare, and the environment in the absence of any remedial action. Preliminary Risk Analysis Report(s) must include at a minimum the following:

1. Summary of existing response actions and their effectiveness.
2. Documentation of Site/Operable Unit imminent and substantial endangerment.
3. The necessary information to form the basis for Baseline Risk Assessment Report(s).
4. Determination of indicator chemicals, estimation of exposure point concentrations of indicator chemicals and chemical intakes, and an assessment of toxicity.

H. Treatability Study Report(s):

The purpose for Treatability Study Report(s) is to report on the feasibility of a treatment technology or process. Treatability Study Report(s) must include at a minimum the following:

1. Sufficient data to allow treatment alternatives to be fully developed and evaluated during the detailed analysis and to support the remedial design of the selected alternative.
2. Documentation of performance uncertainties and operating parameters.

I. Remedial Investigation Report(s):

The purpose for Remedial Investigation Report(s) is to report on the results of field characterization studies and laboratory analysis. RI Report(s) shall include at a minimum the following:

1. Presentation of the physical characteristics of the Site/Operable Unit.
2. Definition of the source(s) of contamination at the Site/Operable Unit.
3. Characterization of the nature and extent of Site/Operable Unit contamination for all media.
4. Presentation of the results from the initial screening of alternatives.
5. The data necessary to support the Feasibility Study.

J. Baseline Risk Assessment Report(s):

The purpose for Baseline Risk Assessment Report(s) is to expand on the Preliminary Risk Analysis Report(s) and, to the degree possible, to determine the actual risk to human health or welfare, and the environment associated with a Site/Operable Unit. Baseline Risk Assessment Report(s) shall at a minimum include the following:

1. Characterization of the risk and uncertainties concerning noncarcinogenic and potential carcinogenic effects associated with Site/Operable Unit contamination.
2. Development of performance goals and risk analysis for potential remedial alternatives based on Site/Operable Unit ARARs.
3. The information necessary to support Feasibility Study Report(s).

K. Feasibility Study Report(s):

The purpose for Feasibility Study Report(s) is to present the results of the detailed analysis of alternatives. Feasibility Study Report(s) shall provide the necessary information to support the Site/Operable Unit Proposed Plan(s) and Record(s) of Decision.

L. Proposed Plan(s):

The purpose for Proposed Plan(s) is to provide a brief analysis of remedial alternatives under consideration for the Site/Operable Unit and propose the preferred alternative(s). The Parties shall publish a notice of the availability of the Proposed Plan, RI and FS Report(s), and the SAR in a major local newspaper of general circulation. At a minimum, the Proposed Plan(s) shall:

1. Highlight the RI and FS Report(s).
2. Provide the public with all necessary information and an opportunity to participate in the remedy selection process.

M. Record(s) of Decision:

The purpose for Record(s) of Decision (RODs) is to document the final remedial action decisions for the Site/Operable Unit. At a minimum the ROD(s) must:

1. Summarize the problems affecting implementation of the selected remedy for the Site/Operable Unit and provide an analysis of the alternative ways to address those problems.
2. Provide a Decision Summary addressing public comment expressed concerning the Proposed Plan, RI and FS Report(s), and other information made available in the SAR.

III. REMEDIAL DESIGN AND REMEDIAL ACTION PROCESS

The following is a brief description of the Primary and Secondary documents and information necessary to document the RD/RA process, initiated with Remedial Design Implementation Plan(s) and completed through the Site NPL Closeout Report.

A. Remedial Design Implementation Work Plan(s):

The purpose for Remedial Design Implementation Work Plan(s) is to describe how the design will meet the scope and goals of the approved remedial action plan for the Site/Operable Unit. At a minimum, the Remedial Design Implementation Work Plan(s) shall:

1. Provide the Schedules for the submission of the Remedial Pre-Design and Design Reports and related activities, and the Remedial Action Work Plan(s).
2. Describe how, prior to the initiation of design, the Parties will initiate and/or revise the CRP to address community concerns anticipated during the RD/RA process or indicate how they are addressed by the CRP.

B. Remedial Pre-Design Report(s):

The purpose for Remedial Pre-Design Report(s) is to provide a summary of the factors of the selected remedy that will affect the design, construction and completion of the remedial action. At a minimum, the Remedial Pre-Design Report(s) shall:

1. Provide Site/Operable Unit description(s) including a topographic map and preliminary layout of remedial activities.
2. Briefly describe the following:
  - description of remedy;
  - scope and goals of remedy;
  - preliminary design criteria and rationale;
  - general operation and maintenance requirements;
  - short and long term environmental monitoring requirements;
  - specific factors from RI/FS affecting remedy;
  - results and impacts of applicable tests or studies; and
  - description of additional tests or studies needed to design or implement RA.
3. Provide special Design/Implementation Considerations including:
  - special technical considerations;
  - additional engineering/Site data required;
  - permit and/or regulatory requirements (ARARs);
  - access, easements, right-of-way needs; and
  - specific health and safety considerations.

C. Remedial Design Report(s):

The purpose for Remedial Design Report(s) is to expand on the Remedial Pre-Design Report(s) and to document final design criterion. The Remedial Design Report(s) shall:

1. Describe how the design will implement and accomplish the goals of the approved remedial action plan.
2. Provide the schedules for completion of various components of the preliminary and final designs listed below and implementation/completion of work ( e.g., Site selection, Site preparation, construction, testing, start-up, etc.).



3. Provide Design Plans and Specifications, including:
  - a. preliminary design addressing not less than 30% of the total design based on the information in the Remedial Design Report,
  - b. pre-final design at 90% completion which shall include all functional details, specifications and drawings, and
  - c. final design at 100% completion with final construction drawings and specifications.

D. Remedial Action Work Plan(s):

The purpose for Remedial Action Work Plan(s) is to provide a plan which will explain in detail how the approved remedial action will be implemented. Remedial Action Work Plan(s) shall include the following:

1. A Health and Safety Plan developed specifically for the RA.
2. A Sampling and Analysis Plan developed specifically for the RA.
3. A Permitting Plan to provide for satisfaction of all permitting requirements, both administrative and technical including ARARs and actions exempt from permitting.
4. An Environmental Monitoring Plan to address all potentially affected media as appropriate.
5. A schedule for the construction and operation of the approved remedy and remedial design and submission of the Final Remediation Report(s).

E. Remedial Action Post-Construction Report(s):

The purpose for Remedial Action Post-Construction Report(s) is to provide a close-out report that includes but is not limited to:

1. A final construction inspection report.
2. A brief description of any outstanding construction and/or testing items.
3. Certification by a registered professional engineer that the remedy is fully operational and functional as designed and planned.
4. Explanation of any changes in design, installation or operation from that described in previously submitted reports or plans.
5. As-built design and specifications and drawings and Final Operation and Maintenance Plan(s).

F. Final Remediation Report(s):

The purpose for Final Remediation Report(s) is to document the completion of remedial action. Upon completion of the remediation of the Site/Operable Unit the following information will be provided at a minimum:

1. How the Remediation has met the goals of the approved remedial action plan.
2. A summary of Site/Operable Unit conditions including monitoring results and a detailed description of any remaining contamination or releases.
3. A description of any O&M requirements and assurances of applicable institutional controls that will be necessary.
4. Any recommendations for further action or monitoring at the Site/Operable Unit.

G. Site NPL Closeout Report:

The purpose for the Site NPL Closeout Report is to begin the process for delisting of a Site from the National Priorities List. The Report shall contain all information required and the deletion process shall be carried out in accordance with applicable EPA guidance and directives. As appropriate, the Parties shall publish a "Notice of Intent to Delete" when the Site is intended to be delisted from the National Priorities List (NPL).

REFERENCES

1. "Interim Guidance on Administrative Records for Selection of CERCLA Response Actions", OSWER Directive 9833.3A, March 1989.
2. "Administrative Record for Federal Facilities", EPA Region IV, 1989.
3. Interim Version "Community Relations in Superfund", OSWER Directive 9230.0-3B, June 1988.
4. Interim Final "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, OSWER Directive 9355.3-01, October 1988.
5. Interim Final "Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual", OSWER Directive 9285.7-01a, September 1989.
6. Interim Final "Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual", OSWER Directive 9285.7-02, March 1989.
7. "Superfund Exposure Assessment Manual", OSWER Directive 9285.5-1, April 1988.
8. "Superfund Remedial Design and Remedial Action Guidance", OSWER Directive 9355.0-4A, June 1986.
9. "Procedures for Completion and Deletion of NPL Sites", OSWER Directive 9320.2-3A, April 1989.
10. "National Oil and Hazardous Substances Pollution Contingency Plan", 40 CFR 300, Proposed Rule (53 Federal Register 12-21-88).

**SUBPART E -- HAZARDOUS SUBSTANCE RESPONSE**

**§ 300.400 General.**

(a) This subpart establishes methods and criteria for determining the appropriate extent of response authorized by CERCLA:

(1) When there is a release of a hazardous substance into the environment; or

(2) When there is a release into the environment of any pollutant or contaminant that may present an imminent and substantial danger to the public health or welfare.

(b) Limitations on response. Unless the lead agency determines that a release constitutes a public health or environmental emergency and no other person with the authority and capability to respond will do so in a timely manner, a removal or remedial action under section 104 of CERCLA shall not be undertaken in response to a release:

(1) Of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found;

(2) From products that are part of the structure of, and result in exposure within, residential buildings or business or community structures; or

(3) Into public or private drinking water supplies due to deterioration of the system through ordinary use.

(c) Fund-financed action. In determining the need for and in planning or undertaking Fund-financed action, the lead agency shall, to the extent practicable:

(1) Engage in prompt response;

(2) Provide for state participation in response actions, as described in Subpart F of this Part;

(3) Conserve Fund monies by encouraging private party response;

(4) Be sensitive to local community concerns;

(5) Consider using treatment technologies;

(6) Involve the Regional Response Team (RRT) in both removal

and remedial response actions at appropriate decision-making stages;

(7) Encourage the involvement and sharing of technology by industry and other experts; and

(8) Encourage the involvement of organizations to coordinate responsible party actions, foster site response, and provide technical advice to the public, federal and state governments, and industry.

(d) Entry and access. (1) For purposes of determining the need for response, or choosing or taking a response action, or otherwise enforcing the provisions of CERCLA, EPA, or the appropriate federal agency, and a state or political subdivision operating pursuant to a contract or cooperative agreement under CERCLA section 104(d)(1), has the authority to enter any vessel, facility, establishment or other place, property, or location described in paragraph (d)(2) below and conduct, complete, operate, and maintain any response actions authorized by CERCLA or these regulations.

(2)(i) Under the authorities described in paragraph (d)(1) above, EPA, or the appropriate federal agency, and a state or political subdivision operating pursuant to a contract or cooperative agreement under CERCLA section 104(d)(1), may enter:

(A) Any vessel, facility, establishment, or other place or property where any hazardous substance or pollutant or contaminant may be or has been generated, stored, treated, disposed of, or transported from;

(B) Any vessel, facility, establishment, or other place or property from which, or to which, a hazardous substance or pollutant or contaminant has been, or may have been, released or where such release is or may be threatened;

(C) Any vessel, facility, establishment, or other place or property where entry is necessary to determine the need for response or the appropriate response or to effectuate a response action; or

(D) Any vessel, facility, establishment, or other place, property, or location adjacent to those vessels, facilities, establishments, places or properties described in paragraphs (d)(2)(i)(A), (B), or (C) of this section.

(ii) Once a determination has been made that there is a reasonable basis to believe that there has been or may be a release, EPA, or the appropriate federal agency, and a state or political subdivision operating pursuant to a contract or cooperative agreement under CERCLA section 104(d)(1), is

authorized to enter all vessels, facilities, establishments, places, properties, or locations specified in paragraph (d)(2)(i) of this section, at which the release is believed to be, and all other vessels, facilities, establishments, places, properties or locations identified in paragraph (d)(2)(i) above that are related to the response or are necessary to enter in responding to that release.

(3) The lead agency may designate as its representative solely for the purpose of access, among others, one or more potentially responsible parties, including representatives, employees, agents and contractors of such parties. EPA, or the appropriate federal agency, may exercise the authority contained in section 104(e) of CERCLA to obtain access for its designated representative. A potentially responsible party may only be designated as a representative of the lead agency where that potentially responsible party has agreed to conduct response activities pursuant to an administrative order or consent decree.

(4)(i) If consent is not granted under the authorities described in paragraph (d)(1) of this section, or if consent is conditioned in any manner, EPA, or the appropriate federal agency, may issue an order pursuant to section 104(e)(5) of CERCLA directing compliance with the request for access made under § 300.400(d)(1). EPA or the appropriate federal agency may ask the Attorney General to commence a civil action to compel compliance with either a request for access or an order directing compliance.

(ii) EPA reserves the right to proceed, where appropriate, under applicable authority other than CERCLA section 104(e).

(iii) The administrative order may direct compliance with a request to enter or inspect any vessel, facility, establishment, place, property, or location described in paragraph (d)(2) of this section.

(iv) Each order shall contain:

(A) A determination by EPA, or the appropriate federal agency, that it is reasonable to believe that there may be or has been a release or threat of a release of a hazardous substance or pollutant or contaminant and a statement of the facts upon which the determination is based;

(B) A description, in light of CERCLA response authorities, of the purpose and estimated scope and duration of the entry, including a description of the specific anticipated activities to be conducted pursuant to the order;

(C) A provision advising the person who failed to consent that an officer or employee of the agency that issued the order

will be available to confer with respondent prior to effective date of the order; and

(D) A provision advising the person who failed to consent that a court may impose a penalty of up to \$25,000 per day for unreasonable failure to comply with the order.

(v) Orders shall be served upon the person or responsible party who failed to consent prior to their effective date. Force shall not be used to compel compliance with an order.

(vi) Orders may not be issued for any criminal investigations.

(e) Permit requirements. (1) No federal, state, or local permits are required for on-site response actions conducted pursuant to CERCLA sections 104, 106, 120, 121 or 122. The term "on-site" means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action.

(2) Permits, if required, shall be obtained for all response activities conducted off-site.

(f) Health assessments. Health assessments shall be performed by ATSDR at facilities on or proposed to be listed on the NPL and may be performed at other releases or facilities in response to petitions made to ATSDR. Where available, these health assessments may be used by the lead agency to assist in determining whether response actions should be taken and/or to identify the need for additional studies to assist in the assessment of potential human health effects associated with releases or potential releases of hazardous substances.

(g) Identification of applicable or relevant and appropriate requirements. (1) The lead and support agencies shall identify requirements applicable to the release or remedial action contemplated based upon an objective determination of whether the requirement specifically addresses a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site.

(2) If, based upon paragraph (g)(1) of this section, it is determined that a requirement is not applicable to a specific release, the requirement may still be relevant and appropriate to the circumstances of the release. In evaluating relevance and appropriateness, the factors in paragraphs (g)(2)(i) through (viii) shall be examined, where pertinent, to determine whether a requirement addresses problems or situations sufficiently similar to the circumstances of the release or remedial action contemplated, and whether the requirement is well-suited to the site, and therefore is both relevant and appropriate. The

pertinence of each of the following factors will depend, in part, on whether a requirement addresses a chemical, location, or action. The following comparisons shall be made, where pertinent, to determine relevance and appropriateness:

(i) The purpose of the requirement and the purpose of the CERCLA action;

(ii) The medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site;

(iii) The substances regulated by the requirement and the substances found at the CERCLA site;

(iv) The actions or activities regulated by the requirement and the remedial action contemplated at the CERCLA site;

(v) Any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site;

(vi) The type of place regulated and the type of place affected by the release or CERCLA action;

(vii) The type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action;

(viii) Any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resource at the CERCLA site.

(3) In addition to applicable or relevant and appropriate requirements, the lead and support agencies may, as appropriate, identify other advisories, criteria, or guidance to be considered for a particular release. The "to be considered" (TBC) category consists of advisories, criteria, or guidance that were developed by EPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

(4) Only those state standards that are promulgated, are identified by the state in a timely manner and are more stringent than federal requirements may be applicable or relevant and appropriate. For purposes of identification and notification of promulgated state standards, the term "promulgated" means that the standards are of general applicability and are legally enforceable.

(5) The lead agency and support agency shall identify their specific requirements that are applicable or relevant and appropriate for a particular site. These agencies shall notify each other, in a timely manner as described in § 300.515(d), of the requirements they have determined to be applicable or



relevant and appropriate. When identifying a requirement as an ARAR, the lead agency and support agency shall include a citation to the statute or regulation from which the requirement is derived.

(6) Notification of ARARs shall be according to procedures and timeframes specified in §§ 300.515(d)(2) and (h)(2).

(h) Oversight. The lead agency may provide oversight for actions taken by potentially responsible parties to ensure that a response is conducted consistent with this Part. The lead agency may also monitor the actions of third parties preauthorized under Subpart H of this Part. EPA will provide oversight when the response is pursuant to an EPA order or federal consent decree.

(i) Other. (1) This subpart does not establish any preconditions to enforcement action by either the federal or state governments to compel response actions by potentially responsible parties.

(2) While much of this subpart is oriented toward federally funded response actions, this subpart may be used as guidance concerning methods and criteria for response actions by other parties under other funding mechanisms. Except as provided in Subpart H of this Part, nothing in this part is intended to limit the rights of any person to seek recovery of response costs from responsible parties pursuant to CERCLA section 107.

(3) Activities by the federal and state governments in implementing this subpart are discretionary governmental functions. This subpart does not create in any private party a right to federal response or enforcement action. This subpart does not create any duty of the federal government to take any response action at any particular time.

§ 300.405 Discovery or notification.

(a) A release may be discovered through:

(1) A report submitted in accordance with section 103(a) of CERCLA, i.e., reportable quantities codified at 40 CFR Part 302;

(2) A report submitted to EPA in accordance with section 103(c) of CERCLA;

(3) Investigation by government authorities conducted in accordance with section 104(e) of CERCLA or other statutory authority;

(4) Notification of a release by a federal or state permit holder when required by its permit;

(5) Inventory or survey efforts or random or incidental observation reported by government agencies or the public;

(6) Submission of a citizen petition to EPA or the appropriate federal facility requesting a preliminary assessment, in accordance with section 105(d) of CERCLA; and

(7) Other sources.

(b) Any person in charge of a vessel or a facility shall report releases as described in paragraph (a)(1) of this section to the National Response Center (NRC). If direct reporting to the NRC is not practicable, reports may be made to the United States Coast Guard (USCG) on-scene coordinator (OSC) for the geographic area where the release occurs. The EPA predesignated OSC may also be contacted through the regional 24-hour emergency response telephone number. All such reports shall be promptly relayed to the NRC. If it is not possible to notify the NRC or predesignated OSC immediately, reports may be made immediately to the nearest USCG unit. In any event, such person in charge of the vessel or facility shall notify the NRC as soon as possible.

(c) All other reports of releases described under paragraph (a) of this section, except releases reported under paragraphs (a)(2) and (6) of this section, shall, as appropriate, be made to the NRC.

(d) The NRC will generally need information that will help to characterize the release. This will include, but not be limited to: location of the release; type(s) of material(s) released; an estimate of the quantity of material released; possible source of the release; date and time of the release. Reporting under paragraphs (b) and (c) of this section shall not be delayed due to incomplete notification information.

(e) Upon receipt of a notification of a release, the NRC shall promptly notify the appropriate OSC. The OSC shall notify the Governor, or designee, of the state affected by the release.

(f)(1) When the OSC is notified of a release that may require response pursuant to § 300.415(b), a removal site evaluation shall, as appropriate, be promptly undertaken pursuant to § 300.410.

(2) When notification indicates that removal action pursuant to § 300.415(b) is not required, a remedial site evaluation shall, if appropriate, be undertaken by the lead agency pursuant to § 300.420, if one has not already been performed.

(3) If radioactive substances are present in a release, the EPA Radiological Response Coordinator should be notified for

evaluation and assistance, consistent with §§ 300.130(f) and 300.145(f).

(g) Release notification made to the NRC under this section does not relieve the owner/operator of a facility from any obligations to which it is subject under SARA Title III or state law. In particular, it does not relieve the owner/operator from the requirements of section 304 of SARA Title III and 40 CFR Part 355 and § 300.215(f) of this Part for notifying the community emergency coordinator for the appropriate local emergency planning committee of all affected areas and the state emergency response commission of any state affected that there has been a release. Federal agencies are not legally obligated to comply with the requirements of Title III of SARA.

§ 300.410 Removal site evaluation.

(a) A removal site evaluation includes a removal preliminary assessment and, if warranted, a removal site inspection.

(b) A removal site evaluation of a release identified for possible CERCLA response pursuant to § 300.415 shall, as appropriate, be undertaken by the lead agency as promptly as possible. The lead agency may perform a removal preliminary assessment in response to petitions submitted by a person who is, or may be, affected by a release of a hazardous substance, pollutant or contaminant pursuant to § 300.420(b)(5).

(c)(1) The lead agency shall, as appropriate, base the removal preliminary assessment on readily available information. A removal preliminary assessment may include, but is not limited to:

(i) Identification of the source and nature of the release or threat of release;

(ii) Evaluation by ATSDR or by other sources, for example, state public health agencies, of the threat to public health;

(iii) Evaluation of the magnitude of the threat;

(iv) Evaluation of factors necessary to make the determination of whether a removal is necessary; and

(v) Determination of whether a nonfederal party is undertaking proper response.

(2) A removal preliminary assessment of releases from hazardous waste management facilities may include collection or review of data such as site management practices, information from generators, photographs, analysis of historical photographs,

literature searches, and personal interviews conducted as appropriate.

(d) A removal site inspection may be performed if more information is needed. Such inspection may include a perimeter (off-site) or on-site inspection, taking into consideration whether such inspection can be performed safely.

(e) A removal site evaluation shall be terminated when the OSC or lead agency determines:

(1) There is no release;

(2) The source is neither a vessel nor a facility as defined in § 300.5 of the NCP;

(3) The release involves neither a hazardous substance, nor a pollutant or contaminant that may present an imminent and substantial danger to public health or welfare;

(4) The release consists of a situation specified in § 300.400(b)(1) through (3) subject to limitations on response;

(5) The amount, quantity, or concentration released does not warrant federal response;

(6) A party responsible for the release, or any other person, is providing appropriate response, and on-scene monitoring by the government is not required; or

(7) The removal site evaluation is completed.

(f) The results of the removal site evaluation shall be documented.

(g) If natural resources are or may be injured by the release, the OSC or lead agency shall ensure that state and federal trustees of the affected natural resources are promptly notified in order that the trustees may initiate appropriate actions, including those identified in Subpart G of this Part. The OSC or lead agency shall seek to coordinate necessary assessments, evaluations, investigations, and planning with such state and federal trustees.

(h) If the removal site evaluation indicates that removal action under § 300.415 is not required, but that remedial action under § 300.430 may be necessary, the lead agency shall, as appropriate, initiate a remedial site evaluation pursuant to § 300.420.

§ 300.415 Removal action.

(a)(1) In determining the appropriate extent of action to be taken in response to a given release, the lead agency shall first review the removal site evaluation, any information produced through a remedial site evaluation, if any has been done previously, and the current site conditions, to determine if removal action is appropriate.

(2) Where the responsible parties are known, an effort initially shall be made, to the extent practicable, to determine whether they can and will perform the necessary removal action promptly and properly.

(3) This section does not apply to removal actions taken pursuant to section 104(b) of CERCLA. The criteria for such actions are set forth in section 104(b) of CERCLA.

(b)(1) At any release, regardless of whether the site is included on the National Priorities List, where the lead agency makes the determination, based on the factors in paragraph (b)(2) of this section, that there is a threat to public health or welfare or the environment, the lead agency may take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release.

(2) The following factors shall be considered in determining the appropriateness of a removal action pursuant to this section:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

(iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

(vi) Threat of fire or explosion;

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release; and

(viii) Other situations or factors that may pose threats to public health or welfare or the environment.

(3) If the lead agency determines that a removal action is appropriate, actions shall, as appropriate, begin as soon as possible to abate, prevent, minimize, stabilize, mitigate, or eliminate the threat to public health or welfare or the environment. The lead agency shall, at the earliest possible time, also make any necessary determinations pursuant to paragraph (b)(4) of this section.

(4) Whenever a planning period of at least six months exists before on-site activities must be initiated, and the lead agency determines, based on a site evaluation, that a removal action is appropriate:

(i) The lead agency shall conduct an engineering evaluation/cost analysis (EE/CA) or its equivalent. The EE/CA is an analysis of removal alternatives for a site.

(ii) If environmental samples are to be collected, the lead agency shall develop sampling and analysis plans that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs. Sampling and analysis plans shall be reviewed and approved by EPA. The sampling and analysis plans shall consist of two parts:

(A) The field sampling plan, which describes the number, type, and location of samples and the type of analyses; and

(B) The quality assurance project plan, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in planning and documenting the removal action.

(5) Fund-financed removal actions, other than those authorized under section 104(b) of CERCLA, shall be terminated after \$2 million has been obligated for the action or twelve months have elapsed from the date that removal activities begin on-site, unless the lead agency determines that:

(i) There is an immediate risk to public health or welfare or the environment; continued response actions are immediately required to prevent, limit, or mitigate an emergency; and such assistance will not otherwise be provided on a timely basis; or

(ii) Continued response action is otherwise appropriate and consistent with the remedial action to be taken.

(c) Removal actions shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned.

(d) The following removal actions are, as a general rule, appropriate in the types of situations shown; however, this list is not exhaustive and is not intended to prevent the lead agency from taking any other actions deemed necessary under CERCLA or other appropriate federal or state enforcement or response authorities, and the list does not create a duty on the lead agency to take action at any particular time:

(1) Fences, warning signs, or other security or site control precautions -- where humans or animals have access to the release;

(2) Drainage controls, for example, run-off or run-on diversion -- where needed to reduce migration of hazardous substances or pollutants or contaminants off-site or to prevent precipitation or run-off from other sources, for example, flooding, from entering the release area from other areas;

(3) Stabilization of berms, dikes, or impoundments or drainage or closing of lagoons -- where needed to maintain the integrity of the structures;

(4) Capping of contaminated soils or sludges -- where needed to reduce migration of hazardous substances or pollutants or contaminants into soil, ground or surface water, or air;

(5) Using chemicals and other materials to retard the spread of the release or to mitigate its effects -- where the use of such chemicals will reduce the spread of the release;

(6) Excavation, consolidation, or removal of highly contaminated soils from drainage or other areas -- where such actions will reduce the spread of, or direct contact with, the contamination;

(7) Removal of drums, barrels, tanks, or other bulk containers that contain or may contain hazardous substances or pollutants or contaminants -- where it will reduce the likelihood of spillage; leakage; exposure to humans, animals, or food chain; or fire or explosion;

(8) Containment, treatment, disposal, or incineration of hazardous materials -- where needed to reduce the likelihood of human, animal, or food chain exposure; or

(9) Provision of alternative water supply -- where necessary immediately to reduce exposure to contaminated household water and continuing until such time as local authorities can satisfy the need for a permanent remedy.

(e) Where necessary to protect public health or welfare, the

lead agency shall request that FEMA conduct a temporary relocation or that state/local officials conduct an evacuation.

(f) If the lead agency determines that the removal action will not fully address the threat posed by the release and the release may require remedial action, the lead agency shall ensure an orderly transition from removal to remedial response activities.

(g) Removal actions conducted by states under cooperative agreements, described in Subpart F of this Part, shall comply with all requirements of this section.

(h) Facilities operated by a state or political subdivision at the time of disposal require a state cost share of at least 50 percent of Fund-financed response costs if a Fund-financed remedial action is conducted.

(i) Fund-financed removal actions under CERCLA section 104 and removal actions pursuant to CERCLA section 106 shall, to the extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws. Waivers described in § 300.430(f)(1)(ii)(C) may be used for removal actions. Other federal and state advisories, criteria or guidance may, as appropriate, be considered in formulating the removal action (see § 300.400(g)(3)). In determining whether compliance with ARARs is practicable, the lead agency may consider appropriate factors, including:

(A) The urgency of the situation; and

(B) The scope of the removal action to be conducted.

(j) Removal actions pursuant to section 106 or 122 of CERCLA are not subject to the following requirements of this section:

(1) Section 300.415(a)(2) requirement to locate responsible parties and have them undertake the response;

(2) Section 300.415(b)(2)(vii) requirement to consider the availability of other appropriate federal or state response and enforcement mechanisms to respond to the release;

(3) Section 300.415(b)(5) requirement to terminate response after \$2 million has been obligated or twelve months have elapsed from the date of the initial response; and

(4) Section 300.415(f) requirement to assure an orderly transition from removal to remedial action.



(k) To the extent practicable, provision for post-removal site control following a fund-financed removal action at both NPL and non-NPL sites is encouraged to be made prior to the initiation of the removal action. Such post-removal site control includes actions necessary to ensure the effectiveness and integrity of the removal action after the completion of the on-site removal action or after the \$2 million or 12 month statutory limits are reached for sites that do not meet the exemption criteria in paragraph (b)(5) of this section. Post-removal site control may be conducted by:

(1) The affected state or political subdivision thereof or local units of government for any removal;

(2) Potentially responsible parties; or

(3) EPA's remedial program for some federal-lead Fund-financed responses at NPL sites.

(1) OSCs/RPMs conducting removal actions shall submit OSC reports to the RRT as required by § 300.165.

(m) Community relations in removal actions. (1) In the case of all removal actions taken pursuant to § 300.415 or CERCLA enforcement actions to compel removal response, a spokesperson shall be designated by the lead agency. The spokesperson shall inform the community of actions taken, respond to inquiries, and provide information concerning the release. All news releases or statements made by participating agencies shall be coordinated with the OSC/RPM. The spokesperson shall notify, at a minimum, immediately affected citizens, state and local officials and, when appropriate, civil defense or emergency management agencies.

(2) For actions where, based on the site evaluation, the lead agency determines that a removal is appropriate, and that less than six months exists before on-site removal activity must begin, the lead agency shall:

(i) Publish a notice of availability of the administrative record file established pursuant to § 300.820 in a major local newspaper of general circulation within 60 days of initiation of on-site removal activity;

(ii) Provide a public comment period, as appropriate, of not less than 30 days from the time the administrative record file is made available for public inspection, pursuant to § 300.820(b)(2); and

(iii) Prepare a written response to significant comments pursuant to § 300.820(b)(3).

(3) For removal actions where on-site action is expected to extend beyond 120 days from the initiation of on-site removal activities, the lead agency shall by the end of the 120-day period:

(i) Conduct interviews with local officials, community residents, public interest groups, or other interested or affected parties, as appropriate, to solicit their concerns, information needs, and how or when citizens would like to be involved in the Superfund process;

(ii) Prepare a formal community relations plan (CRP) based on the community interviews and other relevant information, specifying the community relations activities that the lead agency expects to undertake during the response; and

(iii) Establish at least one local information repository at or near the location of the response action. The information repository should contain items made available for public information. Further, an administrative record file established pursuant to Subpart I for all removal actions shall be available for public inspection in at least one of the repositories. The lead agency shall inform the public of the establishment of the information repository and provide notice of availability of the administrative record file for public review. All items in the repository shall be available for public inspection and copying.

(4) Where, based on the site evaluation, the lead agency determines that a removal action is appropriate and that a planning period of at least six months exists prior to initiation of the on-site removal activities, the lead agency shall at a minimum:

(i) Comply with the requirements set forth in paragraphs (m)(3)(i), (ii), and (iii) of this section, prior to the completion of the engineering evaluation/cost analysis (EE/CA), or its equivalent, except that the information repository and the administrative record file will be established no later than when the EE/CA approval memorandum is signed;

(ii) Publish a notice of availability and brief description of the EE/CA in a major local newspaper of general circulation pursuant to § 300.820;

(iii) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments after completion of the EE/CA pursuant to § 300.820(a). Upon timely request, the lead agency will extend the public comment period by a minimum of 15 days; and

(iv) Prepare a written response to significant comments pursuant to § 300.820(a).

§ 300.420 Remedial site evaluation.

(a) General. The purpose of this section is to describe the methods, procedures, and criteria the lead agency shall use to collect data, as required, and evaluate releases of hazardous substances, pollutants, or contaminants. The evaluation may consist of two steps: a remedial preliminary assessment (PA) and a remedial site inspection (SI).

(b) Remedial preliminary assessment. (1) The lead agency shall perform a remedial PA on all sites in CERCLIS as defined in § 300.5 to:

(i) Eliminate from further consideration those sites that pose no threat to public health or the environment;

(ii) Determine if there is any potential need for removal action;

(iii) Set priorities for site inspections; and

(iv) Gather existing data to facilitate later evaluation of the release pursuant to the Hazard Ranking System (HRS) if warranted.

(2) A remedial PA shall consist of a review of existing information about a release such as information on the pathways of exposure, exposure targets, and source and nature of release. A remedial PA shall also include an off-site reconnaissance as appropriate. A remedial PA may include an on-site reconnaissance where appropriate.

(3) If the remedial PA indicates that a removal action may be warranted, the lead agency shall initiate removal evaluation pursuant to § 300.410.

(4) In performing a remedial PA, the lead agency may complete the EPA Preliminary Assessment form, available from EPA regional offices, or its equivalent, and shall prepare a PA report, which shall include:

(i) A description of the release;

(ii) A description of the probable nature of the release;  
and

(iii) A recommendation on whether further action is warranted, which lead agency should conduct further action, and whether an SI or removal action or both should be undertaken.

(5) Any person may petition the lead federal agency (EPA or the appropriate federal agency in the case of a release or

suspected release from a federal facility), to perform a PA of a release when such person is, or may be, affected by a release of a hazardous substance, pollutant, or contaminant. Such petitions shall be addressed to the EPA Regional Administrator for the region in which the release is located, except that petitions for PAs involving federal facilities should be addressed to the head of the appropriate federal agency.

(i) Petitions shall be signed by the petitioner and shall contain the following:

(A) The full name, address, and phone number of petitioner;

(B) A description, as precisely as possible, of the location of the release; and

(C) How the petitioner is or may be affected by the release.

(ii) Petitions should also contain the following information to the extent available:

(A) What type of substances were or may be released;

(B) The nature of activities that have occurred where the release is located; and

(C) Whether local and state authorities have been contacted about the release.

(iii) The lead federal agency shall complete a remedial or removal PA within one year of the date of receipt of a complete petition pursuant to paragraph (b)(5) of this section, if one has not been performed previously, unless the lead federal agency determines that a PA is not appropriate. Where such a determination is made, the lead federal agency shall notify the petitioner and will provide a reason for the determination.

(iv) When determining if performance of a PA is appropriate, the lead federal agency shall take into consideration:

(A) Whether there is information indicating that a release has occurred or there is a threat of a release of a hazardous substance, pollutant, or contaminant; and

(B) Whether the release is eligible for response under CERCLA.

(c) Remedial site inspection. (1) The lead agency shall perform a remedial SI as appropriate to:

(i) Eliminate from further consideration those releases that pose no significant threat to public health or the environment;

(ii) Determine the potential need for removal action;

(iii) Collect or develop additional data, as appropriate, to evaluate the release pursuant to the HRS; and

(iv) Collect data in addition to that required to score the release pursuant to the HRS, as appropriate, to better characterize the release for more effective and rapid initiation of the RI/FS or response under other authorities.

(2) The remedial SI shall build upon the information collected in the remedial PA. The remedial SI shall involve, as appropriate, both on- and off-site field investigatory efforts, and sampling.

(3) If the remedial SI indicates that removal action may be appropriate, the lead agency shall initiate removal site evaluation pursuant to § 300.410.

(4) Prior to conducting field sampling as part of site inspections, the lead agency shall develop sampling and analysis plans that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs. The sampling and analysis plans shall consist of two parts:

(i) The field sampling plan, which describes the number, type and location of samples and the type of analyses, and

(ii) The quality assurance project plan (QAPP), which describes policy, organization and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in site evaluation and hazard ranking system activities.

(5) Upon completion of a remedial SI, the lead agency shall prepare a report that includes the following:

(i) A description/history/nature of waste handling;

(ii) A description of known contaminants;

(iii) A description of pathways of migration of contaminants;

(iv) An identification and description of human and environmental targets; and

(v) A recommendation on whether further action is warranted.

§ 300.425 Establishing remedial priorities.

(a) General. The purpose of this section is to identify the criteria as well as the methods and procedures EPA uses to establish its priorities for remedial actions.

(b) National Priorities List. The NPL is the list of priority releases for long-term remedial evaluation and response.

(1) Only those releases included on the NPL shall be considered eligible for Fund-financed remedial action. Removal actions (including remedial planning activities, RI/FSS, and other actions taken pursuant to CERCLA section 104(b)) are not limited to NPL sites.

(2) Inclusion of a release on the NPL does not imply that monies will be expended, nor does the rank of a release on the NPL establish the precise priorities for the allocation of Fund resources. EPA may also pursue other appropriate authorities to remedy the release, including enforcement actions under CERCLA and other laws. A site's rank on the NPL serves, along with other factors, including enforcement actions, as a basis to guide the allocation of Fund resources among releases.

(3) Federal facilities that meet the criteria identified in paragraph (c) of this section are eligible for inclusion on the NPL. Except as provided by CERCLA sections 111(e)(3) and 111(c), federal facilities are not eligible for Fund-financed remedial actions.

(4) Inclusion on the NPL is not a precondition to action by the lead agency under CERCLA sections 106 or 122 or to action under CERCLA section 107 for recovery of non-Fund-financed costs or Fund-financed costs other than Fund-financed remedial construction costs.

(c) Methods for determining eligibility for NPL. A release may be included on the NPL if the release meets one of the following criteria:

(1) The release scores sufficiently high pursuant to the Hazard Ranking System described in Appendix A to this Part.

(2) A state (not including Indian tribes) has designated a release as its highest priority. States may make only one such designation; or

(3) The release satisfies all of the following criteria:

(i) The Agency for Toxic Substances and Disease Registry has issued a health advisory that recommends dissociation of individuals from the release;

(ii) EPA determines that the release poses a significant threat to public health; and

(iii) EPA anticipates that it will be more cost-effective to use its remedial authority than to use removal authority to respond to the release.

(d) Procedures for placing sites on the NPL. Lead agencies may submit candidates to EPA by scoring the release using the HRS and providing the appropriate backup documentation.

(1) Lead agencies may submit HRS scoring packages to EPA anytime throughout the year.

(2) EPA shall review lead agencies' HRS scoring packages and revise them as appropriate. EPA shall develop any additional HRS scoring packages on releases known to EPA.

(3) EPA shall compile the NPL based on the methods identified in paragraph (c) of this section.

(4) EPA shall update the NPL at least once a year.

(5) To ensure public involvement during the proposal to add a release to the NPL, EPA shall:

(i) Publish the proposed rule in the FEDERAL REGISTER and solicit comments through a public comment period; and

(ii) Publish the final rule in the FEDERAL REGISTER, and make available a response to each significant comment and any significant new data submitted during the comment period.

(6) Releases may be categorized on the NPL when deemed appropriate by EPA.

(e) Deletion from the NPL. Releases may be deleted from or recategorized on the NPL where no further response is appropriate.

(1) EPA shall consult with the state on proposed deletions from the NPL prior to developing the notice of intent to delete. In making a determination to delete a release from the NPL, EPA shall consider, in consultation with the state, whether any of the following criteria has been met:

(i) Responsible parties or other persons have implemented all appropriate response actions required;

(ii) All appropriate Fund-financed response under CERCLA has been implemented, and no further response action by responsible parties is appropriate; or

(iii) The remedial investigation has shown that the release poses no significant threat to public health or the environment and, therefore, taking of remedial measures is not appropriate.

(2) Releases shall not be deleted from the NPL until the state in which the release was located has concurred on the proposed deletion. EPA shall provide the state 30 working days for review of the deletion notice prior to its publication in the FEDERAL REGISTER.

(3) All releases deleted from the NPL are eligible for further Fund-financed remedial actions should future conditions warrant such action. Whenever there is a significant release from a site deleted from the NPL, the site shall be restored to the NPL without application of the HRS.

(4) To ensure public involvement during the proposal to delete a release from the NPL, EPA shall:

(i) Publish a notice of intent to delete in the FEDERAL REGISTER and solicit comment through a public comment period of a minimum of 30 calendar days;

(ii) In a major local newspaper of general circulation at or near the release that is proposed for deletion, publish a notice of availability of the notice of intent to delete;

(iii) Place copies of information supporting the proposed deletion in the information repository, described in § 300.430(c)(2)(iii), at or near the release proposed for deletion. These items shall be available for public inspection and copying; and

(iv) Respond to each significant comment and any significant new data submitted during the comment period and include this response document in the final deletion package.

(5) EPA shall place the final deletion package in the local information repository once the notice of final deletion has been published in the FEDERAL REGISTER.



§ 300.430 Remedial investigation/feasibility study and selection of remedy.

(a) General -- (1) Introduction. The purpose of the remedy selection process is to implement remedies that eliminate, reduce or control risks to human health and the environment. Remedial actions are to be implemented as soon as site data and information make it possible to do so. Accordingly, EPA has established the following program goal, expectations and program management principles to assist in the identification and implementation of appropriate remedial actions.

(i) Program goal. The national goal of the remedy selection process is to select remedies that are protective of human health and the environment, that maintain protection over time and that minimize untreated waste.

(ii) Program management principles. EPA generally shall consider the following general principles of program management during the remedial process:

(A) Sites should generally be remediated in operable units when early actions are necessary or appropriate to achieve significant risk reduction quickly, when phased analysis and response is necessary or appropriate given the size or complexity of the site, or to expedite the completion of total site cleanup.

(B) Operable units, including interim action operable units, should not be inconsistent with nor preclude implementation of the expected final remedy.

(C) Site-specific data needs, the evaluation of alternatives, and the documentation of the selected remedy should reflect the scope and complexity of the site problems being addressed.

(iii) Expectations. EPA generally shall consider the following expectations in developing appropriate remedial alternatives:

(A) EPA expects to use treatment to address the principal threats posed by a site, wherever practicable. Principal threats for which treatment is most likely to be appropriate include liquids, areas contaminated with high concentrations of toxic compounds and highly mobile materials.

(B) EPA expects to use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable.

(C) EPA expects to use a combination of methods, as appropriate, to achieve protection of human health and the environment. In appropriate site situations, treatment of the

principal threats posed by a site, with priority placed on treating waste that is liquid, highly toxic or highly mobile, will be combined with engineering controls (such as containment) and institutional controls, as appropriate, for treatment residuals and untreated waste.

(D) EPA expects to use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.

(E) EPA expects to consider using innovative technology when such technology offers the potential for comparable or superior treatment performance or implementability, fewer or lesser adverse impacts than other available approaches, or lower costs for similar levels of performance than demonstrated technologies.

(F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction.

(2) Remedial investigation/feasibility study. The purpose of the remedial investigation/feasibility study (RI/FS) is to assess site conditions and evaluate alternatives to the extent necessary to select a remedy. Developing and conducting an RI/FS generally includes the following activities: project scoping, data collection, risk assessment, treatability studies, and analysis of alternatives. The scope and timing of these activities should be tailored to the nature and complexity of the problem and the response alternatives being considered.

(b) Scoping. In implementing this section, the lead agency should consider the program goal, program management principles, and expectations contained in this rule. The investigative and analytical studies should be tailored to site circumstances so that the scope and detail of the analysis is appropriate to the complexity of site problems being addressed. During scoping the lead and support agencies shall confer to identify the optimal set

and sequence of actions necessary to address site problems. Specifically, the lead agency shall:

(1) Assemble and evaluate existing data on the site, including the results of any removal actions, remedial preliminary assessment and site inspections, and the NPL listing process.

(2) Develop a conceptual understanding of the site based on the evaluation of existing data described in paragraph (b)(1) of this section.

(3) Identify likely response scenarios and potentially applicable technologies and operable units that may address site problems.

(4) Undertake limited data collection efforts or studies where this information will assist in scoping the RI/FS or accelerate response actions, and begin to identify the need for treatability studies, as appropriate.

(5) Identify the type, quality, and quantity of the data that will be collected during the RI/FS to support decisions regarding remedial response activities.

(6) Prepare site-specific health and safety plans that shall specify, at a minimum, employee training and protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan that conforms with 29 CFR 1910.120(1)(1) and (1)(2).

(7) If natural resources are or may be injured by the release, ensure that state and federal trustees of the affected natural resources have been notified in order that the trustees may initiate appropriate actions, including those identified in Subpart G of this Part. The lead agency shall seek to coordinate necessary assessments, evaluations, investigations, and planning with such state and federal trustees.

(8) Develop sampling and analysis plans that shall provide a process for obtaining data of sufficient quality and quantity to satisfy data needs. Sampling and analysis plans shall be reviewed and approved by EPA. The sampling and analysis plans shall consist of two parts:

(i) The field sampling plan, which describes the number, type, and location of samples and the type of analyses; and

(ii) The quality assurance project plan, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in selecting the appropriate remedy.

(9) Initiate the identification of potential federal and state ARARs and, as appropriate, other criteria, advisories, or guidance to be considered.

(c) Community relations. (1) The community relations requirements described in this section apply to all remedial activities undertaken pursuant to CERCLA section 104 and to section 106 or section 122 consent orders or decrees, or section 106 administrative orders.

(2) The lead agency shall provide for the conduct of the following community relations activities, to the extent practicable, prior to commencing field work for the remedial investigation:

(i) Conducting interviews with local officials, community residents, public interest groups, or other interested or affected parties, as appropriate, to solicit their concerns and information needs, and to learn how and when citizens would like to be involved in the Superfund process.

(ii) Preparing a formal community relations plan (CRP), based on the community interviews and other relevant information, specifying the community relations activities that the lead agency expects to undertake during the remedial response. The purpose of the CRP is to:

(A) Ensure the public appropriate opportunities for involvement in a wide variety of site-related decisions, including site analysis and characterization, alternatives analysis, and selection of remedy;

(B) Determine, based on community interviews, appropriate activities to ensure such public involvement, and

(C) Provide appropriate opportunities for the community to learn about the site.

(iii) Establishing at least one local information repository at or near the location of the response action. Each information repository should contain a copy of items made available to the public, including information that describes the technical assistance grants application process. The lead agency shall inform interested parties of the establishment of the information repository.

(iv) Informing the community of the availability of technical assistance grants.

(3) For PRP actions, the lead agency shall plan and implement the community relations program at a site. Potentially responsible parties (PRPs) may participate in aspects of the

community relations program at the discretion of and with oversight by the lead agency.

(4) The lead agency may conduct technical discussions involving PRPs and the public. These technical discussions may be held separately from, but contemporaneously with, the negotiations/settlement discussions.

(5) In addition, the following provisions specifically apply to enforcement actions:

(i) Lead agencies entering into an enforcement agreement with de minimis parties under CERCLA section 122(g) or cost recovery settlements under section 122(h) shall publish a notice of the proposed agreement in the FEDERAL REGISTER at least 30 days before the agreement becomes final, as required by section 122(i). The notice must identify the name of the facility and the parties to the proposed agreement and must allow an opportunity for comment and consideration of comments; and

(ii) Where the enforcement agreement is embodied in a consent decree, public notice and opportunity for public comment shall be provided in accordance with 28 CFR 50.7.

(d) Remedial investigation. (1) The purpose of the remedial investigation (RI) is to collect data necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternatives. To characterize the site, the lead agency shall, as appropriate, conduct field investigations, including treatability studies, and conduct a baseline risk assessment. The RI provides information to assess the risks to human health and the environment and to support the development, evaluation, and selection of appropriate response alternatives. Site characterization may be conducted in one or more phases to focus sampling efforts and increase the efficiency of the investigation. Because estimates of actual or potential exposures and associated impacts on human and environmental receptors may be refined throughout the phases of the RI as new information is obtained, site characterization activities should be fully integrated with the development and evaluation of alternatives in the feasibility study. Bench- or pilot- scale treatability studies shall be conducted, when appropriate and practicable, to provide additional data for the detailed analysis and to support engineering design of remedial alternatives.

(2) The lead agency shall characterize the nature of and threat posed by the hazardous substances and hazardous materials and gather data necessary to assess the extent to which the release poses a threat to human health or the environment or to support the analysis and design of potential response actions by conducting, as appropriate, field investigations to assess the following factors:

(i) Physical characteristics of the site, including important surface features, soils, geology, hydrogeology, meteorology, and ecology;

(ii) Characteristics or classifications of air, surface water, and ground water;

(iii) The general characteristics of the waste, including quantities, state, concentration, toxicity, propensity to bioaccumulate, persistence, and mobility;

(iv) The extent to which the source can be adequately identified and characterized;

(v) Actual and potential exposure pathways through environmental media;

(vi) Actual and potential exposure routes, for example, inhalation and ingestion; and

(vii) Other factors, such as sensitive populations, that pertain to the characterization of the site or support the analysis of potential remedial action alternatives.

(3) The lead and support agency shall identify their respective potential ARARs related to the location of and contaminants at the site in a timely manner. The lead and support agencies may also, as appropriate, identify other pertinent advisories, criteria or guidance in a timely manner (see § 300.400(g)(3)).

(4) Using the data developed under paragraphs (d)(1) and (2) of this section, the lead agency shall conduct a site-specific baseline risk assessment to characterize the current and potential threats to human health and the environment that may be posed by contaminants migrating to ground water or surface water, releasing to air, leaching through soil, remaining in the soil, and bioaccumulating in the food chain. The results of the baseline risk assessment will help establish acceptable exposure levels for use in developing remedial alternatives in the FS, as described in paragraph (e) of this section.

(e) Feasibility study. (1) The primary objective of the feasibility study (FS) is to ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action options can be presented to a decision-maker and an appropriate remedy selected. The lead agency may develop a feasibility study to address a specific site problem or the entire site. The development and evaluation of alternatives shall reflect the scope and complexity of the remedial action under consideration and the site problems

being addressed. Development of alternatives shall be fully integrated with the site characterization activities of the remedial investigation described in paragraph (d) of this section. The lead agency shall include an alternatives screening step, when needed, to select a reasonable number of alternatives for detailed analysis.

(2) Alternatives shall be developed that protect human health and the environment by recycling waste or by eliminating, reducing, and/or controlling risks posed through each pathway by a site. The number and type of alternatives to be analyzed shall be determined at each site, taking into account the scope, characteristics, and complexity of the site problem that is being addressed. In developing and, as appropriate, screening the alternatives, the lead agency shall:

(i) Establish remedial action objectives specifying contaminants and media of concern, potential exposure pathways, and remediation goals. Initially, preliminary remediation goals are developed based on readily available information, such as chemical-specific ARARs or other reliable information. Preliminary remediation goals should be modified, as necessary, as more information becomes available during the RI/FS. Final remediation goals will be determined when the remedy is selected. Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment and shall be developed by considering the following:

(A) Applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws, if available, and the following factors:

(1) For systemic toxicants, acceptable exposure levels shall represent concentration levels to which the human population, including sensitive subgroups, may be exposed without adverse effect during a lifetime or part of a lifetime, incorporating an adequate margin of safety;

(2) For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between  $10^{-4}$  and  $10^{-6}$  using information on the relationship between dose and response. The  $10^{-6}$  risk level shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure;

(3) Factors related to technical limitations such as detection/quantification limits for contaminants;

(4) Factors related to uncertainty; and

(5) Other pertinent information.

(B) Maximum contaminant levels goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release based on the factors in § 300.400(g)(2). If an MCLG is determined not to be relevant and appropriate, the corresponding maximum contaminant level (MCL) shall be attained where relevant and appropriate to the circumstances of the release.

(C) Where the MCLG for a contaminant has been set at a level of zero, the MCL promulgated for that contaminant under the Safe Drinking Water Act shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCL is relevant and appropriate under the circumstances of the release based on the factors in § 300.400(g)(2).

(D) In cases involving multiple contaminants or pathways where attainment of chemical-specific ARARs will result in cumulative risk in excess of  $10^{-4}$ , criteria in paragraph (e)(2)(i)(A) of this section may also be considered when determining the cleanup level to be attained.

(E) Water quality criteria established under sections 303 or 304 of the Clean Water Act shall be attained where relevant and appropriate under the circumstances of the release.

(F) An alternate concentration limit (ACL) may be established in accordance with CERCLA section 121(d)(2)(B)(ii).

(G) Environmental evaluations shall be performed to assess threats to the environment, especially sensitive habitats and critical habitats of species protected under the Endangered Species Act.

(ii) Identify and evaluate potentially suitable technologies, including innovative technologies;

(iii) Assemble suitable technologies into alternative remedial actions.

(3) For source control actions, the lead agency shall develop, as appropriate:

(i) A range of alternatives in which treatment that reduces the toxicity, mobility, or volume of the hazardous substances, pollutants, or contaminants is a principal element. As



appropriate, this range shall include an alternative that removes or destroys hazardous substances, pollutants, or contaminants to the maximum extent feasible, eliminating or minimizing, to the degree possible, the need for long-term management. The lead agency also shall develop, as appropriate, other alternatives which, at a minimum, treat the principal threats posed by the site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed; and

(ii) One or more alternatives that involve little or no treatment, but provide protection of human health and the environment primarily by preventing or controlling exposure to hazardous substances, pollutants, or contaminants, through engineering controls, for example, containment, and, as necessary, institutional controls to protect human health and the environment and to assure continued effectiveness of the response action.

(4) For ground-water response actions, the lead agency shall develop a limited number of remedial alternatives that attain site-specific remediation levels within different restoration time periods utilizing one or more different technologies.

(5) The lead agency shall develop one or more innovative treatment technologies for further consideration if those technologies offer the potential for comparable or superior performance or implementability; fewer or lesser adverse impacts than other available approaches; or lower costs for similar levels of performance than demonstrated treatment technologies.

(6) The no-action alternative, which may be no further action if some removal or remedial action has already occurred at the site, shall be developed.

(7) As appropriate, and to the extent sufficient information is available, the short- and long-term aspects of the following three criteria shall be used to guide the development and screening of remedial alternatives:

(i) Effectiveness. This criterion focuses on the degree to which an alternative reduces toxicity, mobility, or volume through treatment, minimizes residual risks and affords long-term protection, complies with ARARs, minimizes short-term impacts, and how quickly it achieves protection. Alternatives providing significantly less effectiveness than other, more promising alternatives may be eliminated. Alternatives that do not provide adequate protection of human health and the environment shall be eliminated from further consideration.

(ii) Implementability. This criterion focuses on the technical feasibility and availability of the technologies each alternative would employ and the administrative feasibility of

implementing the alternative. Alternatives that are technically or administratively infeasible or that would require equipment, specialists, or facilities that are not available within a reasonable period of time may be eliminated from further consideration.

(iii) Cost. The costs of construction and any long-term costs to operate and maintain the alternatives shall be considered. Costs that are grossly excessive compared to the overall effectiveness of alternatives may be considered as one of several factors used to eliminate alternatives. Alternatives providing effectiveness and implementability similar to that of another alternatives by employing a similar method of treatment or engineering control, but at greater cost, may be eliminated.

(8) The lead agency shall notify the support agency of the alternatives that will be evaluated in detail to facilitate the identification of ARARs and, as appropriate, pertinent advisories, criteria or guidance to be considered.

(9) Detailed analysis of alternatives. (i) A detailed analysis shall be conducted on the limited number of alternatives that represent viable approaches to remedial action after evaluation in the screening stage. The lead and support agencies must identify their ARARs related to specific actions in a timely manner and no later than the early stages of the comparative analysis. The lead and support agencies may also, as appropriate, identify other pertinent advisories, criteria or guidance in a timely manner.

(ii) The detailed analysis consists of an assessment of individual alternatives against each of nine evaluation criteria and a comparative analysis that focuses upon the relative performance of each alternative against those criteria.

(iii) Nine criteria for evaluation. The analysis of alternatives under review shall reflect the scope and complexity of site problems and alternatives being evaluated and consider the relative significance of the factors within each criteria. The nine evaluation criteria are as follows:

(A) Overall protection of human health and the environment. Alternatives shall be assessed to determine whether they can adequately protect human health and the environment, in both the short- and long-term, from unacceptable risks posed by hazardous substances, pollutants, or contaminants present at the site by eliminating, reducing, or controlling exposures to levels established during development of remediation goals consistent with § 30.430(e)(2)(i). Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

(B) Compliance with ARARs. The alternatives shall be assessed to determine whether they attain applicable or relevant and appropriate requirements under federal environmental laws and state environmental or facility siting laws or provide grounds for invoking one of the waivers under paragraph (f)(1)(ii)(C) of this section.

(C) Long-term effectiveness and permanence. Alternatives shall be assessed for the long-term effectiveness and permanence they afford, along with the degree of certainty that the alternative will prove successful. Factors that shall be considered, as appropriate, include the following:

(1) Magnitude of residual risk remaining from untreated waste or treatment residuals remaining at the conclusion of the remedial activities. The characteristics of the residuals should be considered to the degree that they remain hazardous, taking into account their volume, toxicity, mobility, and propensity to bioaccumulate.

(2) Adequacy and reliability of controls such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste. This factor addresses in particular the uncertainties associated with land disposal for providing long-term protection from residuals; the assessment of the potential need to replace technical components of the alternative, such as a cap, a slurry wall, or a treatment system; and the potential exposure pathways and risks posed should the remedial action need replacement.

(D) Reduction of toxicity, mobility, or volume through treatment. The degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume shall be assessed, including how treatment is used to address the principal threats posed by the site. Factors that shall be considered, as appropriate, include the following:

(1) The treatment or recycling processes the alternatives employ and materials they will treat;

(2) The amount of hazardous substances, pollutants or contaminants that will be destroyed, treated, or recycled;

(3) The degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment or recycling and the specification of which reduction(s) are occurring;

(4) The degree to which the treatment is irreversible;

(5) The type and quantity of residuals that will remain following treatment, considering the persistence, toxicity,

mobility, and propensity to bioaccumulate of such hazardous substances and their constituents; and

(6) The degree to which treatment reduces the inherent hazards posed by principal threats at the site.

(E) Short-term effectiveness. The short-term impacts of alternatives shall be assessed considering the following:

(1) Short-term risks that might be posed to the community during implementation of an alternative;

(2) Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures;

(3) Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation; and

(4) Time until protection is achieved.

(F) Implementability. The ease or difficulty of implementing the alternatives shall be assessed by considering the following types of factors as appropriate:

(1) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

(2) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions);

(3) Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

(G) Cost. The types of costs that shall be assessed include the following:

(1) Capital costs, including both direct and indirect costs;

(2) Annual operation and maintenance costs; and

(3) Net present value of capital and O&M costs.

(H) State acceptance. Assessment of state concerns may not be completed until comments on the RI/FS are received but may be discussed, to the extent possible, in the proposed plan issued for public comment. The state concerns that shall be assessed include the following:

(1) The state's position and key concerns related to the preferred alternative and other alternatives; and

(2) State comments on ARARs or the proposed use of waivers.

(I) Community acceptance. This assessment includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose. This assessment may not be completed until comments on the proposed plan are received.

(f) Selection of remedy -- (1) Remedies selected shall reflect the scope and purpose of the actions being undertaken and how the action relates to long-term, comprehensive response at the site.

(i) The criteria noted in paragraph (e)(9)(iii) are used to select a remedy. These criteria are categorized into three groups.

(A) Threshold criteria. Overall protection of human health and the environment and compliance with ARARs (unless a specific ARAR is waived) are threshold requirements that each alternative must meet in order to be eligible for selection.

(B) Primary balancing criteria. The five primary balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost.

(C) Modifying criteria. State and community acceptance are modifying criteria that shall be considered in remedy selection.

(ii) The selection of a remedial action is a two-step process and shall proceed in accordance with § 300.515(e). First, the lead agency, in conjunction with the support agency, identifies a preferred alternative and presents it to the public in a proposed plan, for review and comment. Second, the lead agency shall review the public comments and consult with the state (or support agency) in order to determine if the alternative remains the most appropriate remedial action for the site or site problem. The lead agency, as specified in § 300.515(e), makes the final remedy selection decision, which shall be documented in the ROD. Each remedial alternative selected as a Superfund remedy will employ the criteria as indicated in paragraph (f)(1)(i) of this section to make the following determination:

(A) Each remedial action selected shall be protective of human health and the environment.

(B) On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C).

(1) Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment.

(2) Components of the remedy not described in the ROD must attain (or waive) requirements that are identified as applicable or relevant and appropriate at the time the amendment to the ROD or the explanation of significant difference describing the component is signed.

(C) An alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected under the following circumstances:

(1) The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement;

(2) Compliance with the requirement will result in greater risk to human health and the environment than other alternatives;

(3) Compliance with the requirement is technically impracticable from an engineering perspective;

(4) The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach;

(5) With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state; or

(6) For Fund-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment.

(D) Each remedial action selected shall be cost effective, provided that it first satisfies the threshold criteria set forth

in §§ 300.430(f)(1)(ii)(A) and (B). Cost-effectiveness is determined by evaluating the following three of the five balancing criteria noted in paragraph 300.430(f)(1)(i)(B) to determine overall effectiveness: long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. A remedy shall be cost-effective if its costs are proportional to its overall effectiveness.

(E) Each remedial action shall utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This requirement shall be fulfilled by selecting the alternative that satisfies paragraph (f)(1)(ii)(A) and (B) of this section and provides the best balance of trade-offs among alternatives in terms of the five primary balancing criteria noted in paragraph (f)(1)(i)(B) of this section. The balancing shall emphasize long-term effectiveness and reduction of toxicity, mobility, or volume through treatment. The balancing shall also consider the preference for treatment as a principal element and the bias against off-site land disposal of untreated waste. In making the determination under this paragraph, the modifying criteria of state acceptance and community acceptance described in paragraph (f)(1)(i)(C) shall also be considered.

(2) The proposed plan. In the first step in the remedy selection process, the lead agency shall identify the alternative that best meets the requirements in paragraph 300.430(f)(1), above, and shall present that alternative to the public in a proposed plan. The lead agency, in conjunction with the support agency and consistent with § 300.515(e), shall prepare a proposed plan that briefly describes the remedial alternatives analyzed by the lead agency, proposes a preferred remedial action alternative, and summarizes the information relied upon to select the preferred alternative. The selection of remedy process for an operable unit may be initiated at any time during the remedial action process. The purpose of the proposed plan is to supplement the RI/FS and provide the public with a reasonable opportunity to comment on the preferred alternative for remedial action, as well as alternative plans under consideration, and to participate in the selection of remedial action at a site. At a minimum, the proposed plan shall:

(i) Provide a brief summary description of the remedial alternatives evaluated in the detailed analysis established under paragraph (e)(9) of this section;

(ii) Identify and provide a discussion of the rationale that supports the preferred alternative;

(iii) Provide a summary of any formal comments received from the support agency; and

(iv) Provide a summary explanation of any proposed waiver identified under paragraph (f)(1)(ii)(C) of this section from an ARAR.

(3) Community relations to support the selection of remedy.

(i) The lead agency, after preparation of the proposed plan and review by the support agency, shall conduct the following activities:

(A) Publish a notice of availability and brief analysis of the proposed plan in a major local newspaper of general circulation;

(B) Make the proposed plan and supporting analysis and information available in the administrative record required under Subpart I of this Part;

(C) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and the supporting analysis and information located in the information repository, including the RI/FS. Upon timely request, the lead agency will extend the public comment period by a minimum of 30 additional days;

(D) Provide the opportunity for a public meeting to be held during the public comment period at or near the site at issue regarding the proposed plan and the supporting analysis and information;

(E) Keep a transcript of the public meeting held during the public comment period pursuant to CERCLA section 117(a) and make such transcript available to the public; and

(F) Prepare a written summary of significant comments, criticisms, and new relevant information submitted during the public comment period and the lead agency response to each issue. This responsiveness summary shall be made available with the record of decision.

(ii) After publication of the proposed plan and prior to adoption of the selected remedy in the record of decision, if new information is made available that significantly changes the basic features of the remedy with respect to scope, performance, or cost, such that the remedy significantly differs from the original proposal in the proposed plan and the supporting analysis and information, the lead agency shall:

(A) Include a discussion in the record of decision of the significant changes and reasons for such changes, if the lead



agency determines such changes could be reasonably anticipated by the public based on the alternatives and other information available in the proposed plan or the supporting analysis and information in the administrative record; or

(B) Seek additional public comment on a revised proposed plan, when the lead agency determines the change could not have been reasonably anticipated by the public based on the information available in the proposed plan or the supporting analysis and information in the administrative record. The lead agency shall, prior to adoption of the selected remedy in the ROD, issue a revised proposed plan, which shall include a discussion of the significant changes and the reasons for such changes, in accordance with the public participation requirements described in paragraph (f)(3)(i) of this section.

(4) Final remedy selection. (i) In the second and final step in the remedy selection process, the lead agency shall reassess its initial determination that the preferred alternative provides the best balance of trade-offs, now factoring in any new information or points of view expressed by the state (or support agency) and community during the public comment period. The lead agency shall consider state (or support agency) and community comments regarding the lead agency's evaluation of alternatives with respect to the other criteria. These comments may prompt the lead agency to modify aspects of the preferred alternative or decide that another alternative provides a more appropriate balance. The lead agency, as specified in § 300.515(e), shall make the final remedy selection decision and document that decision in the ROD.

(ii) If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

(iii) The process for selection of a remedial action at a federal facility on the NPL, pursuant to CERCLA section 120, shall entail:

(A) Joint selection of remedial action by the head of the relevant department, agency, or instrumentality and EPA; or

(B) If mutual agreement on the remedy is not reached, selection of the remedy is made by EPA.

(5) Documenting the decision. (i) To support the selection of a remedial action, all facts, analyses of facts, and site-specific policy determinations considered in the course of carrying out activities in this section shall be documented, as

appropriate, in a record of decision, in a level of detail appropriate to the site situation, for inclusion in the administrative record required under Subpart I of this Part. Documentation shall explain how the evaluation criteria in paragraph (e)(9)(iii) of this section were used to select the remedy.

(ii) The ROD shall describe the following statutory requirements as they relate to the scope and objectives of the action:

(A) How the selected remedy is protective of human health and the environment, explaining how the remedy eliminates, reduces, or controls exposures to human and environmental receptors;

(B) The federal and state requirements that are applicable or relevant and appropriate to the site that the remedy will attain;

(C) The applicable or relevant and appropriate requirements of other federal and state laws that the remedy will not meet, the waiver invoked, and the justification for invoking the waiver;

(D) How the remedy is cost-effective, i.e., explaining how the remedy provides overall effectiveness proportional to its costs;

(E) How the remedy utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and

(F) Whether the preference for remedies employing treatment which permanently and significantly reduces the toxicity, mobility, or volume of the hazardous substances, pollutants, or contaminants as a principal element is or is not satisfied by the selected remedy. If this preference is not satisfied, the record of decision must explain why a remedial action involving such reductions in toxicity, mobility, or volume was not selected.

(iii) The ROD also shall:

(A) Indicate, as appropriate, the remediation goals, discussed in paragraph (e)(2)(i) of this section, that the remedy is expected to achieve. Performance shall be measured at appropriate locations in the ground water, surface water, soils, air, and other affected environmental media. Measurement relating to the performance of the treatment processes and the engineering controls may also be identified, as appropriate;

(B) Discuss significant changes and the response to comments described in paragraph (f)(3)(i)(F) of this section;

(C) Describe whether hazardous substances, pollutants, or contaminants will remain at the site such that a review of the remedial action under paragraph (f)(4)(ii) of this section no less often than every five years shall be required; and

(D) When appropriate, provide a commitment for further analysis and selection of long-term response measures within an appropriate timeframe.

(6) Community relations when the record of decision is signed. After the ROD is signed, the lead agency shall:

(i) Publish a notice of the availability of the ROD in a major local newspaper of general circulation; and

(ii) Make the record of decision available for public inspection and copying at or near the facility at issue prior to the commencement of any remedial action.

§ 300.435 Remedial design/remedial action, operation and maintenance.

(a) General. The remedial design/remedial action (RD/RA) stage includes the development of the actual design of the selected remedy and implementation of the remedy through construction. A period of operation and maintenance may follow the RA activities.

(b) RD/RA activities. (1) All RD/RA activities shall be in conformance with the remedy selected and set forth in the ROD or other decision document for that site. Those portions of RD/RA sampling and analysis plans describing the QA/QC requirements for chemical and analytical testing and sampling procedures of samples taken for the purpose of determining whether cleanup action levels specified in the ROD are achieved, generally will be consistent with the requirements of § 300.430(b)(8).

(2) During the course of the RD/RA, the lead agency shall be responsible for ensuring that all federal and state requirements that are identified in the ROD as applicable or relevant and appropriate requirements for the action are met. If waivers from any ARARs are involved, the lead agency shall be responsible for ensuring that the conditions of the waivers are met.

(c) Community relations. (1) Prior to the initiation of RD, the lead agency shall review the CRP to determine whether it should be revised to describe further public involvement activities during RD/RA that are not already addressed or provided for in the CRP.

(2) After the adoption of the ROD, if the remedial action or enforcement action taken, or the settlement or consent decree entered into, differs significantly from the remedy selected in the ROD with respect to scope, performance, or cost, the lead agency shall consult with the support agency, as appropriate, and shall either:

(i) Publish an explanation of significant differences when the differences in the remedial or enforcement action, settlement, or consent decree significantly change but do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. To issue an explanation of significant differences, the lead agency shall:

(A) Make the explanation of significant differences and supporting information available to the public in the administrative record established under § 300.815 and the information repository; and

(B) Publish a notice that briefly summarizes the explanation

of significant differences, including the reasons for such differences, in a major local newspaper of general circulation; or

(ii) Propose an amendment to the ROD if the differences in the remedial or enforcement action, settlement, or consent decree fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost. To amend the ROD, the lead agency, in conjunction with the support agency, as provided in § 300.515(e), shall:

(A) Issue a notice of availability and brief description of the proposed amendment to the ROD in a major local newspaper of general circulation;

(B) Make the proposed amendment to the ROD and information supporting the decision available for public comment;

(C) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written or oral comments on the amendment to the ROD. Upon timely request, the lead agency will extend the public comment period by a minimum of 30 additional days;

(D) Provide the opportunity for a public meeting to be held during the public comment period at or near the facility at issue;

(E) Keep a transcript of comments received at the public meeting held during the public comment period;

(F) Include in the amended ROD a brief explanation of the amendment and the response to each of the significant comments, criticisms, and new relevant information submitted during the public comment period;

(G) Publish a notice of the availability of the amended ROD in a major local newspaper of general circulation; and

(H) Make the amended ROD and supporting information available to the public in the administrative record and information repository prior to the commencement of the remedial action affected by the amendment.

(3) After the completion of the final engineering design, the lead agency shall issue a fact sheet and provide, as appropriate, a public briefing prior to the initiation of the remedial action.

(d) Contractor conflict of interest. (1) For Fund-financed RD/RA and O&M activities, the lead agency shall:

(i) Include appropriate language in the solicitation requiring potential prime contractors to submit information on

their status, as well as the status of their subcontractors, parent companies, and affiliates, as potentially responsible parties at the site.

(ii) Require potential prime contractors to certify that, to the best of their knowledge, they and their potential subcontractors, parent companies, and affiliates have disclosed all information described in § 300.435(d)(1)(i) or that no such information exists, and that any such information discovered after submission of their bid or proposal or contract award will be disclosed immediately.

(2) Prior to contract award, the lead agency shall evaluate the information provided by the potential prime contractors and:

(i) Determine whether they have conflicts of interest that could significantly impact the performance of the contract or the liability of potential prime contractors or subcontractors.

(ii) If a potential prime contractor or subcontractor has a conflict of interest that cannot be avoided or otherwise resolved, and using that potential prime contractor or subcontractor to conduct RD/RA or O&M work under a Fund-financed action would not be in the best interests of the state or federal government, an offeror or bidder contemplating use of that prime contractor or subcontractor may be declared nonresponsible or ineligible for award in accordance with appropriate acquisition regulations, and the contract may be awarded to the next eligible offeror or bidder.

(e) Recontracting. (1) If a Fund-financed contract must be terminated because additional work outside the scope of the contract is needed, EPA is authorized to take appropriate steps to continue interim RAs as necessary to reduce risks to public health and the environment. Appropriate steps may include extending an existing contract for a federal-lead RA or amending a cooperative agreement for a state-lead RA. Until the lead agency can reopen the bidding process and recontract to complete the RA, EPA may take such appropriate steps as described above to cover interim work to reduce such risks, where:

(i) Additional work is found to be needed as a result of such unforeseen situations as newly discovered sources, types, or quantities of hazardous substances at a facility; and

(ii) Performance of the complete RA requires the lead agency to rebid the contract because the existing contract does not encompass this newly discovered work.

(2) The cost of such interim actions shall not exceed \$2 million.

(f) Operation and maintenance. (1) Operation and maintenance (O&M) measures are initiated after the remedy has achieved the remedial action objectives and remediation goals in the ROD, and is determined to be operational and functional, except for ground or surface water restoration actions covered under § 300.435(f)(4). A state must provide its assurance to assume responsibility for O&M, including, where appropriate, requirements for maintaining institutional controls, under § 300.510(c).

(2) A remedy becomes "operational and functional" either one year after construction is complete, or when the remedy is determined concurrently by the EPA and the state to be functioning properly and is performing as designed, whichever is earlier. EPA may grant extensions to the one-year period, as appropriate.

(3) For Fund-financed remedial actions involving treatment or other measures to restore ground or surface water quality to a level that assures protection of human health and the environment, the operation of such treatment or other measures for a period of up to 10 years after the remedy becomes operational and functional will be considered part of the remedial action. Activities required to maintain the effectiveness of such treatment or measures following the 10-year period, or after remedial action is complete, whichever is earlier, shall be considered O&M. For the purposes of federal funding provided under CERCLA section 104(c)(6), a restoration activity will be considered administratively "complete" when:

(i) Measures restore ground or surface water quality to a level that assures protection of human health and the environment;

(ii) Measures restore ground or surface water to such a point that reductions in contaminant concentrations are no longer significant; or

(iii) Ten years have elapsed, whichever is earliest.

(4) The following shall not be deemed to constitute treatment or other measures to restore contaminated ground or surface water under § 300.435(f)(3):

(i) Source control maintenance measures; and

(ii) Ground or surface water measures initiated for the primary purpose of providing a drinking water supply, not for the purpose of restoring ground water.

§ 300.440 Procedures for planning and implementing off-site response actions [Reserved].