

**MULTI-MEDIA APPROACH TO
ENVIRONMENTAL POLICY DEVELOPMENT**

INTERIM REPORT

Prepared For

MINISTRY OF THE ENVIRONMENT

**CANADIAN INSTITUTE FOR ENVIRONMENTAL
LAW AND POLICY
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**HATCH ASSOCIATES LTD.
CIELAP**

**P.R. # 58600
July 15, 1991**



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1.0 Introduction

1.1 Work To Date

Work to date has focused on a literature survey of activities in jurisdictions other than Ontario that reflect a "multi-media" approach. Some contact has been made with other jurisdictions to clarify literature references. This work essentially falls under Task 1 of the MOE Terms of Reference (March 12, 1991) and Task 2 of the Hatch Proposal (May, 1991).

The purpose of this segment of work is to select, from an extensive list of jurisdictions and examples, approximately three to five jurisdictions for more in depth evaluation.

2.0 Results of Literature Search

Table 1 summarizes the jurisdictions and examples identified. Appendix 1 also contains more detailed information on each jurisdictional example.

It should be noted that a broad range of programs have been identified as reflective of a multi-media approach and that many of these combine multi-media with other environmental management concepts such as "pollution prevention", "waste/hazardous waste reduction", or "ecosystem planning/management". One issue to be resolved during the progression of this study will be to identify and separate the multi-media aspects within programs.

3.0 Discussion of Terminology

One element of this study is to identify a common definition of an ideal or model multi-media approach. The approach taken to accomplish this task is to define the range of ideas and terminology identified in jurisdictional examples and then separate and categorize the concepts included in these examples.

The following list of terms used will form the basis for this aspect of the study. These terms have been found to be applied in programs and approaches in various jurisdictions. None of



these terms are truly synonymous with multi-media management, however, most of them are applied to approaches that address some or all of the aspects of multi-media as discussed in the MOE terms of reference.

To assist in placing these terms in perspective, definitions of multi-media, as applied by legislation in specific jurisdictions, are quoted. For other terms used, an outline of how they relate to a multi-media approach is given. The reader may also refer to Appendix 2 for a list of definitions applied by various jurisdictions to these other terms.

Multi-Media: **Delaware:** all environmental media including, but not limited to, workplace, water, land and air.

Indiana: air, water, land, and workplace environmental media into which pollutants and wastes are emitted, released, discharged or disposed.

Massachusetts: having to do with all environmental media, including but not limited to water, land and air and workplaces within facilities.

Mississippi: all environmental media including, but not limited to, air, water and land.

US Federal: water, air, and land.

These definitions imply the use of the term multi-media as a description of scope, rather than as a descriptor of a program methodology or goal.

Terms Applied:

Relationship to "Multi-Media" Approach

Pollution Prevention
Hazardous Pollution Prevention
Waste Reduction
Waste Minimization
Toxic Pollution Prevention
Hazardous Waste Reduction:

Applications of these terms generally require that all media be considered simultaneously. Some jurisdictions have single media programs (eg. solid waste) but prohibit cross-media transfers.

Source Reduction
Toxic's Use Reduction:

Applications of these two terms generally imply recognition of all media, as a reduction in use should reduce the impact on all media. Some applications specifically address transferring discharge between media.



Ecosystem Planning
Ecosystem Management:

As application of these terms addresses all impacts based on a geographical area, consideration of all media is implied.

Facility Wide Permitting
Integrated Permitting
Unified Inspection:

Applications of these terms specifically address a multi-media approach to permitting and inspection, although they may not include all media.

Integrated Pollution Control:

Application of this term is assumed to imply integration across media.

Best Available Technology:

Application of this term does not necessarily imply integration between media, however its definition may include limitations on cross-media transfer (as in Ontario).

Table 1
Jurisdictions of Interest

Country / State	Media Covered	Approach	Level of Application	Program Status (timing)	Availability of Evaluative Data	Comments
California		Hazardous Waste Reduction	Local Government	Programs in 3 counties	Limited	
Delaware	All Media	Waste Minimization	State-wide, non-regulatory	Enacted July/90 - Program not yet commenced	Nil	
Florida	All Media	Waste Reduction	State-wide, non-regulatory	WRAP created in 1988 & ongoing	Limited	
Georgia	Solid Waste	Hazardous Waste Reduction	State-wide, regulatory and non-regulatory	HWRP Plans by Mar/92, 1st Progress Report due 1994	Nil	
Illinois	All Media	Toxics Prevention (point source)	State-wide, linked to regulation	1989 TPP Act - Voluntary Program CROP - date unknown but ongoing	Fair	Secondary
Indiana	All Media	Toxics Prevention	State-wide, non-regulatory	1990 Statutory amendments - voluntary plans - participation rate not known	Probably very limited	
Maine	All Media	Pollution Prevention	State-wide, regulatory and non-regulatory	1990 Act - status unknown	Limited	
Massachusetts	All Media	Toxics Reduction	State-wide, regulatory and non-regulatory	Blackstone project is best bet - detailed TUR Reports due from 1991 on TUR Plans not required until 1994	Very Good - database and contacts	Primary
Michigan	All Media	Pollution Control	State-wide	Limited cross-media permit review ongoing	Unknown	

Country / State	Media Covered	Approach	Level of Application	Program Status (timing)	Availability of Evaluative Data	Comments
Minnesota	All Media	Pollution Prevention Reduction	State-wide, regulatory and non-regulatory	MnTAP since 1984 & ongoing. TPP Plans phased in under Act by facility type starting July 1/91	Limited except regarding technical assistance	
Mississippi	All Media ("Multi-Media")	Waste Reduction / Minimization	State-wide, non-regulatory	Waste Minimization plans commencing Jan.1/92 under Act. Technical assistance has started	Limited to some technical assistance	
New Jersey	All Media	Waste Reduction (prototype - not yet law)	State-wide (selected areas)	Pre-pilot permitting programs commenced Mar/91. Industrial survey commenced 1978 & expanded as Environmental Survey 1986	Excellent Database and contacts including industry	Primary
New York	All Media	Hazardous Waste Minimization	State-wide, regulatory and non-regulatory	Hazardous Waste Management Act 1989 - first group of plans due July 1/91. Multi-media TR & Integrated Facility Management proposed	Limited - but some good examples of institutional integration	
North Carolina	All Media	Pollution Prevention	State-wide, non-regulatory	Pollution Prevention Program ongoing since 1982.	Probably good regarding voluntary pollution prevention efforts.	
Oregon	All Media	Toxic Use and Hazardous Waste Reduction and Control	State-wide, regulatory and non-regulatory	First plans due Sept. 1/91 under TOR Act	Very limited	
Washington	All Media	Hazardous Waste Reduction	State-wide, regulatory and non-regulatory	Waste Reduction Plans by Sept. 1/92	Very limited or non-existent	

Country / State	Media Covered	Approach	Level of Application	Program Status (timing)	Availability of Evaluative Data	Comments
Wisconsin	All Media (Cross-Media)	Hazardous Pollution Prevention	State-wide and AOC non-regulatory	Informal integration. Technical support to AOC's ongoing including Mass Balance Modelling	Probably very good at the RAP level but limited regarding informal integration efforts.	Secondary
U.S. - Federal (E.P.A.)	All Media	Pollution Prevention Strategy	National, regulatory and non-regulatory	Pollution Prevention strategy in place since Mar/91 and P.P. Act since 1990. Amoco study started in Nov/89 & scheduled to finish Oct/91 includes analysis of multi-media pollution prevention options. 33 of 50 projects have started. Environmental Integration and Information Draft Act proposed since 1987. Pilot cross-media enforcement projects in place.	EPA's efforts at institutional integration including permitting are very well chronicled. Some information from Amoco study may be available. EIA is considered a good model legislation. Cross-media enforcement pilot project information is probably available.	Primary
Germany	All Media	Integrated Permitting based on cross-media optimisation	National Policy - "Lander" Administration	System has been enacted since early 1980's. At level of implementation focus is moving toward "process engineering" aimed at waste minimization and is not media-oriented. FDR recently considered proposal to build 'environmental assessment' into laws.	Good	Primary

Country / State	Media Covered	Approach	Level of Application	Program Status (timing)	Availability of Evaluative Data	Comments
Netherlands	All Media	Integrated Permitting	National Regulation / Provincial Organisation	Integrated permitting has been in place since late 1970's. Long-term strategic goals are ecosystem oriented for the period 1987-91 and rolling operational plans use environmental standards and process controls.	Good	Secondary
Scotland		Integrated Pollution Control	Regional (Scotland)	System is proposed to take effect in April 1992.	Nil	
Sweden	All Media	Single Permit - controlled using BAT's	National (Administration lower)		Good	Primary
United Kingdom	All Media	Integrated Pollution Control	National (U.K.)	Moving from multiple inspectors to single permit.	Good - several studies done to test need for one inspector/site and need for pollution control devices at plant design stage	Secondary
British Columbia		Pollution Prevention / Waste Minimization	Provincial	Completing legislative review and discussion paper for August meeting	Report due August/September	
Québec	All Media	Industrial Waste Reduction (focus on toxic substances)	Provincial	Five companies currently in trial waste characterization program on voluntary basis	None yet	

4.0 PROPOSED SELECTION CRITERIA AND SUGGESTED JURISDICTIONAL EXAMPLES FOR DETAILED ANALYSIS

It is proposed to select between three and five examples for more detailed evaluation. Examples will be sought to meet each of the following criteria.

1. Application of a multi-media approach to one aspect of traditional environmental management. This could be policy, but would more likely be regulation, permitting or enforcement. The objective of this criteria is to ensure inclusion of an example that can be related to an existing aspect of traditional MOE management activities.
2. Application of a multi-media approach within a program aimed at pollution prevention or waste minimization. The objective of this criteria is to illustrate the application of multi-media within a broader context.
3. Application of a multi-media approach in an ecosystem management, or other broad based context. The objective of this criteria is to provide an example of the possible scope of what can be defined as a multi-media approach.

A number of the jurisdictional examples presented in Table 1 have been divided into two categories: primary and secondary (this classification can be found in the last column). These classifications refer to the degree to which further detailed analysis of environmental policies will take place; primary, indicating a thorough assessment of the program, and secondary indicating a somewhat briefer but comprehensive review of environmental management systems. These selections have been made based on several criteria:

- the availability of evaluative information
- the term since program inception
- the organizational similarities between the jurisdiction and that of Ontario
- the demonstrated progressiveness of the program



Further analysis of examples will be limited to those aspects that are specifically related to the multi-media.

For those jurisdictions not selected for further inclusion in this study, contact names and references to studies or programs can be found in Appendix 1 of this interim report and will also be included in the final report.

5. OUTLINE OF CRITERIA AND METHODOLOGY FOR DETAILED ANALYSIS

The MOE terms of reference of March, 1991 outline three basic criteria of measurement of the merit of a multi-media approach:

- (i) efficiency,
- (ii) equity, and
- (iii) effectiveness.

While these criteria, and the parameters set out in Task 2(b) will form the basis of critical evaluation of the selected examples, the depth of analysis will be limited by a lack of existing, documented, critical analysis of example programs.

In order to address the limited volume of analytical information available, we propose the following for the critical review task:

- both deductive (a priori) and factual analysis will be considered, and
- non-quantitative evaluation from jurisdictional contacts will be included if considered appropriate, and qualitative data will be assessed whenever possible.

Appendix 3 outlines the type of questions that will be posed to individuals contacted in relation to each jurisdictional example.

APPENDIX 1

JURISDICTIONS



Appendix 1

JURISDICTIONS

UNITED STATES

I. Selected U.S. Jurisdictions Which Have Adopted Multi-media Environmental Management Programs or Laws:

- | | |
|------------------|--------------------|
| 1. California | 10. Mississippi |
| 2. Delaware | 11. Minnesota |
| 3. Florida | 12. New Jersey |
| 4. Georgia | 13. New York |
| 5. Illinois | 14. North Carolina |
| 6. Indiana | 15. Oregon |
| 7. Maine | 16. Washington |
| 8. Massachusetts | 17. Wisconsin |
| 9. Michigan | 18. U.S. Federal |

II. Summaries of Jurisdictions Examined

1. CALIFORNIA

Program: Various local government hazardous waste reduction/pollution prevention programs.

Description: Programs are based on a model resolution developed by the Local Government Commission, a non-profit think tank of local officials. May involve any combination of coordinated administration, information sharing, regulatory development, technical assistance and integrated permitting and enforcement. Santa Cruz and San Diego counties are among the local jurisdictions which have established multimedia programs.

Relevant Legislation: Resolutions of local government.

Administering Agency: Multimedia coordinating committee established by the enabling resolution.

Contacts: Anthony Eulo, Local Government Commission, 909 12th Street, Suite 205, Sacramento, Cal., 95814 (916) 448-1198.

2. DELAWARE

Program: Waste Minimization/Pollution Prevention Program

Description: Non-regulatory audit program providing technical assistance to targeted industries -

particularly small companies - data collection and research. All types of polluting waste are included. Auditing and technical assistance has not yet commenced and will be conducted by the University of Delaware.

Relevant Legislation: Waste Minimization/Pollution Prevention Act (1990) (HB 585)

Legislative Definitions:

"Multi-Media": all environmental media including, but not limited to, workplaces within facilities, water, land and air.

"Waste Minimization": the process by which a facility conducts an analysis of a production process to determine the waste minimization techniques which could be implemented

Administering Agency: Dept. of Natural Resources and Environmental Control, Solid Waste Management Branch, 89 Kings Hwy, P.O. Box 1401, Richard & Robbins Bldg., Dover, Del. 19903.

Contacts: Phil Cherry, Program Director, Waste Minimization, DNREC Solid Waste Management Branch, Dover, Del. ph. (302) 739-4403

3. FLORIDA

Program: Waste Reduction Assistance Program (WRAP)

Description: Non-regulatory technical assistance, data collection and research. All types of polluting wastes are targeted as are wasted fresh water and energy.

Relevant Legislation: Solid Waste Management Act (1988) Ch. 88-130.

Administering Agency: Department of Environmental Regulation, Division of Waste Management, Tallahassee, Florida.

Contacts: Rick Wilkins, Director, Division of Waste Management, Janet A. Campbell, Environmental Supervisor II, WRAP, or Bill Hinkley, Solid Waste Environmental Administrator, Dept. of Environmental Regulation.

4. GEORGIA

Program: Name unknown, if any.

Description: A regulatory regime aimed at reducing (mostly solid) hazardous waste. Large quantity generators of hazardous waste (as defined) must develop, by March 1, 1992, hazardous waste reduction plans including facility-wide numeric performance goals for the reduction of hazardous waste based on what is technically and economically practical, internal analysis of



hazardous waste streams with data on types, amounts and constituents of hazardous waste generated, a plan for implementation of technically and economically practical reduction options, and employee awareness and training programs. Technical assistance in plan preparation may be provided by the Georgia Institute of Technology.

Relevant Legislation: Amendments to Code s. 12-8-62 (17) Georgia Hazardous Waste Management Act

Legislative Definitions:

"Waste reduction": a practice, ...including changes in production technology, materials, processes, operations or procedures ... or closed loop recycling... that reduces the environmental and health hazards associated with waste Waste reduction excludes: practices such as ... incineration, off-site recycling, transfer from one medium to another environmental medium, or any other method of end-of-pipe management.

Administering Agency: Solid Waste Branch, Environmental Protection Division, Department of Natural Resources, 270 Washington St. S.W., Atlanta, Ga. 30334.

Contacts:

5. ILLINOIS

Programs: Toxic Pollution Prevention Program, Toxic Pollution Prevention Assistance Program, Toxic Pollution Prevention Innovation Plan and Toxic Pollution Prevention Fund, Coordinated Review of Permits Program.

Description: TPPP seeks to, among other things, better administer and coordinate laws, regulations and Illinois EPA programs and develop a toxic substances priority list based on Toxic Release Inventory Reports filed pursuant to the federal EPCRA, Section 313. TPPAP establishes a Hazardous Waste Research and Information Centre to provide educational and technical assistance, conduct research and sponsor pilot projects for toxic pollution prevention. The TPPIP enables any person to submit to the Illinois EPA a plan to achieve toxic pollution prevention through the use of an innovative production process. Once the plan is approved by the IEPA, the IEPA must make "every reasonable effort" to accommodate it, including expediting coordination and processing of permits and providing technical assistance to ensure regulatory compliance. The TPP Fund finances initiative under the Toxic Pollution Prevention Act.

Another multimedia initiative unconnected to the TPPA is the Coordinated Review of Permits program (CROP), under which permit managers from each of four major permit programs jointly track major projects that require multiple permits.

Relevant Legislation: Toxic Pollution Prevention Act (1990)

Legislative Definitions: "Toxic pollution prevention": in-plant practices that reduce, avoid or eliminate: (i) the use of toxic substances, (ii) the generation of toxic constituents in wastes, (iii)

the disposal or release of toxic substances into the environment, or (iv) the development or manufacture of products with toxic constituents. Toxic pollution prevention excludes: incineration, transfer from one medium of release to another, off-site or out of process waste recycling, or end of pipe treatment of toxic substances.

Administering Agency: Illinois Environmental Protection Agency, 200 Churchill Road, Springfield, Illinois. (217) 782-2829

Contacts:

6. INDIANA

Programs: Office of Pollution Prevention and Technical Assistance (OPPTA), Pollution Prevention and Safe Materials Institute (PPSMI), Multimedia Pollution Prevention Plans

Description: Participation by businesses in all programs developed by the OPPTA and the PPSMI is voluntary. Tasks assigned to the OPPTA include: regulatory review, program development, inter-branch and inter-agency coordination, technical assistance to businesses and local and state government agencies, information gathering and dissemination, and assisting regulatory initiatives such as standard setting and permitting "based on the goals of pollution prevention". The PPSMI is to be established by an Indiana university or not-for-profit corporation to engage in pollution prevention research, provide technical assistance to businesses and industries, and encourage businesses to develop multimedia pollution prevention plans.

Relevant Legislation: Industrial Pollution Prevention and Safe Materials Act (1990)

Legislative Definitions:

"Environmental wastes": all environmental pollutants, wastes, discharges, and emissions, regardless of whether or how they are regulated and regardless of whether they are released to the general environment or the workplace environment.

"Multimedia": air, water, land, and workplace environmental media into which pollutants and wastes are emitted, released, discharged, or disposed.

"Pollution prevention": the employment by a business of a practice that reduces the industrial use of toxic materials or reduces the environmental and health hazards associated with an environmental waste before the release, handling, storage, transport, treatment, or disposal of the waste. Pollution prevention does not include a practice that is applied to an environmental waste after the waste is generated or comes into existence or after waste exits a production or commercial operation. The term does not promote or require waste burning for the purposes of energy recovery or the transfer of an environmental waste from one environmental medium to: another environmental medium, the workplace environment, a product, offsite waste recycling, or any other method of end-of-pipe management.

Administering Agency: Department of Environmental Management, Office of Pollution



Prevention, 105 South Meridian Street, Indianapolis, Indiana 46225.

Contacts:

7. MAINE

Programs: Mandatory toxics use, toxics release and hazardous waste reduction plans for certain facilities, and the Toxics Use, Toxics Release and Hazardous Waste Reduction Program (TURP).

Description: The reduction plans mandated by the Toxics Use and Hazardous Waste Reduction Act are explicitly cross-media in their scope. Subject to certain exemptions, the reduction goals specified in the Act may not be met by techniques that result in new or increased toxics release or hazardous waste generation. The TURP provides a number of services to toxics users, toxics releasers and hazardous waste generators, including data collection, technical assistance, financial assistance and technical information.

Relevant Legislation: Toxics Use and Hazardous Waste Reduction Act

Legislative Definitions:

"Toxics use reduction": front-end substitution, product reformulation, or in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of hazardous substances or generation of hazardous byproducts per unit of product to reduce the risks to the health of workers, consumers or the environment, without shifting risks between workers, consumers or parts of the environment.

Administering Agencies: Maine Department of Environmental Protection, State House Station 17, Augusta, Maine, 04333.

Maine Waste Management Agency, State House Station 154, Augusta Maine, 04333

Contacts:

8. MASSACHUSETTS

Programs: Legislated industry inventory reporting and planning requirements, Office of Toxics Use Reduction Assistance and Technology (OTA), Toxics Use Reduction Institute (TURI), Council on Toxics Use, Blackstone Project

Description: The Massachusetts Toxics Use Reduction Act includes both regulatory and non-regulatory initiatives. Beginning in 1991 the largest 2400 users of toxic and hazardous chemicals will file annual inventory reports. The same firms will develop toxics use and waste reduction plans by 1994. The OTA will provide technical assistance in pollution prevention to both large and small toxics users. TURI is being established at the University of Lowell to engage in long-term research, education and information dissemination. The CTU seeks to promote coordinated

enforcement of relevant laws, recommend measures to standardize and coordinate reporting requirements, and make policy recommendations.

The Blackstone Project is a pilot pollution prevention project involving the combined efforts of the OTA, the DEP and a local sewer authority in the Upper Blackstone Watershed. Aspects of the project include multimedia source reduction training for inspectors, multimedia inspections, source reduction-biased enforcement and on-site technical assistance. Blackstone is widely regarded as the leading multimedia pollution prevention demonstration project.

Relevant Legislation: Massachusetts Toxics Use Reduction Act (1989)

Legislative Definitions:

"Multi-media": having to do with all environmental media, including but not limited to, water, land and air and workplaces within facilities.

"Toxics use reduction": in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or generation of hazardous byproducts per unit of product, so as to reduce risks to the health of workers, consumers or the environment, without shifting risks between workers, consumers or parts of the environment. Toxics use reduction excludes: incineration, transfer from one medium of release or discharge to other media, off-site or out-of-production unit waste recycling, or methods of end-of-pipe treatment of toxics as waste.

Administering Agency: Massachusetts Department of Environmental Protection

Contacts: Tim Greiner, Office of Technical Assistance, (617) 727-3260 ext. 696;
Ken Geiser, Director, TURI, (508) 934-3250

9. MICHIGAN

Programs: Integrated permit review.

Description: Permit applications are reviewed for potential cross-media impact. For example, solid waste landfill applications are reviewed by the Air Quality Division of the state Natural Resources Department, for potential air quality impacts, and proposed sewage discharges from air pollution control scrubbers are reviewed by the Surface Water Quality division. Michigan also enacted a trio of waste reduction laws in 1987, however they cannot legitimately be regarded as multi-media in approach, because, although all types of waste are included, unlike other state waste reduction laws the Michigan statutes do not preclude cross-media transfers.

Administering Agency: Natural Resources Department, Box 30028, Lansing, MI, 48909.

10. MINNESOTA

Program: Toxic pollution prevention plans and annual progress reports, technical assistance program (MnTAP)

Description: Toxic pollution prevention plans are a key component of the Minnesota Toxic Pollution Prevention Act. All facilities required to file federal toxic chemical release forms are required to complete plans by a fixed date, which is no later than July 1, 1992. The same facilities must also file annual progress reports which satisfy the requirements of the Pollution Control Agency (MPCA). MnTAP, which began in 1984 to assist small businesses, predates the TPPA but has been expanded to provide technical assistance to affected companies. Funding for Minnesota's pollution prevention programs comes in part from an annual fee levied against facilities and based on number and amounts of toxic pollutants released. The development of pollution prevention programs in Minnesota, and in particular the TPPA, has been driven in part by the Capacity Assurance Plan (CAP) requirement under SARA, Section 104(k). In its CAP Minnesota has set as its goal a 40% reduction in hazardous waste generation by the year 2009. The state Office of Waste Management (OWM) has recently completed a "Report on Barriers to Pollution Prevention" and is currently preparing a strategic "Plan of Action" for meeting its CAP goal.

Relevant Legislation: Minnesota Waste Management Act (1980); Minnesota Toxic Pollution Prevention Act (1990).

Legislative Definitions:

"Pollution prevention": eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes.

"Reduction": lessening the quantity or toxicity of toxic pollutants, hazardous substances, and hazardous wastes used, generated, or released at the source. Reduction does not include decreases in quantity or toxicity due to a decrease in facility production output.

Administering Agency: Minnesota Pollution Control Agency, Office of Waste Management, 1350 Energy Lane, St. Paul, Minnesota 55108.

Contacts: Kevin MacDonald, Office of Waste Management, MPCA, (612) 649-5744.

11. MISSISSIPPI

Programs: Mississippi Comprehensive Multimedia Waste Reduction/Waste Minimization Program, mandatory waste minimization plans for generators of hazardous waste, and Comprehensive Waste Minimization Fund.

Description: The Comprehensive Multimedia Waste Reduction/Waste Minimization Program is a non-regulatory initiative involving the coordinated efforts of the state Department of Environmental Quality and Mississippi State University. Two sub-programs have been established

thus far: the Mississippi Technical Assistance Program for the Management of Industrial Waste (MISSTAP) for hazardous waste and the Mississippi Solid Waste Reduction Assistance Program (MISSWRAP) for non-hazardous waste. Emphasis of MISSTAP is on technical assistance in the form of facility waste potential reduction analyses, research, including in-plant demonstration projects, and education and information exchange. MISSWRAP's emphasis is on education and technology transfers.

No later than January 1, 1992, each large quantity generator of hazardous waste, small quantity generator or each facility operator required to file a report under Section 313 of the EPCRA, must prepare a waste minimization plan and submit a certified report of the types and quantities of wastes generated and the types and quantities of wastes minimized.

The Comprehensive Waste Minimization Fund is intended to finance waste minimization efforts. It is funded in part by a tax on generated wastes calculated according to EPCRA filings.

Relevant Legislation: Mississippi Comprehensive Multimedia Waste Minimization Act (1990) Ch. 507.

Legislative Definitions:

"Multimedia": all environmental media including, but not limited to, air, water and land.

Administering Agency: Department of Environmental Quality, P.O. Box 10385, Jackson, Miss. 39209.

Contacts: Thomas E. Whitten, Director, Waste Reduction/Waste Minimization Dept. of Environmental Quality, ph. (601) 961-5171;
Dr. Donald O. Hill, Director, MISSTAP/MISSWRAP (601) 325-8454;
Dr. Caroline K. Hill, Technology Transfer Specialist, MISSTAP/MISSWRAP, (601) 325-8454.

12. NEW JERSEY

Program: Pollution Prevention Initiative

Description: The Initiative, as proposed includes a system of cross-media environmental permit integration. The proposal would enable the Office of Pollution Prevention to coordinate and review all air, water and hazardous-waste permits, consent orders, and compliance schedules for a facility. Under the new law the DEP will issue ten to fifteen facility -wide permits over five years as a pilot project. In the interim, the DEP has already initiated a so-called "pre-pilot program" in which three volunteer facilities will prepare pollution prevention plans that will be integrated into facility-wide permits. The Pollution Prevention Initiative also proposes specific statewide goals for reductions in the use of hazardous substances, in the discharge of hazardous substances into all media, and in hazardous-waste generation. The legislation would require about 800 priority industrial facilities to prepare pollution prevention plans identifying ways and setting goals for reducing pollution. The Initiative would rely in part on the data base generated



by the Industrial Survey Project conducted by the DEP in the late 1970s and early 1980s. The Survey Project was a pioneering effort to identify the types and quantities of toxic substances used by New Jersey industry, and to determine their cross-media dispersion and effect.

Relevant Legislation: Pollution Prevention Act [NOT YET PASSED INTO LAW]

Administering Agency: New Jersey Department of Environmental Protection.

Contacts: Michael Catania, Executive Director, New Jersey Nature Conservancy, (908) 439-3007;
Steve Anderson, Office of Pollution Prevention, New Jersey Department of Environmental Protection, ph. (609) 777-0376.
Barry Rabe, Assistant Professor, School of Public Health, Department of Public Health Policy and Administration, University of Michigan, 1420 Washington Heights, Ann Arbor, Mi. ph. (313) 764-2132.

Re the "Pre-pilot program" volunteers:

Schering-Plough - Linn Weiss, Director of Corporate Communications, (201) 822-7400
Fisher Scientific - Frank Poliferno, Director of Safety and Environmental Affairs, (201) 796-7100
Sybron Chemicals - John Schroeder, Vice President of Manufacturing, (609) 893-1100

13. NEW YORK

Programs: New hazardous waste facility siting legislation, facility waste audits, waste exchange service. Also, (1) a multi-media toxics reduction plan has been proposed by the state Department of Environmental Conservation (DEC). A similar proposal has been introduced in the state legislature as the Multi-media Toxic Chemical Release Inventory Act; (2) the DEC has recently proposed an integrated facility management program, using multi-disciplinary teams to integrate all aspects of the regulatory process (permitting, compliance and remedial action) for certain industries.

Description: The hazardous waste facility siting legislation emphasizes pollution prevention. The legislation establishes a Waste Minimization section in the Division of Hazardous Substances Regulation, and gives the section a formal role in the hazardous waste permitting process. The section has developed regulations requiring as part of the permitting process "Waste Reduction Impact Statements" (WRIS), which are designed to force applicants to consider waste minimization options for releases to all media. The DEC plans, in the long-term, to require similar impact statements as part of other single-medium permit programs, so as to maximize possible waste reduction and minimize cross-media transfers.

The state operated Environmental Facilities Corporation currently conducts facility waste audits. New York also maintains a waste exchange brokerage service designed to match waste generators and potential users, who then negotiate their own transfer arrangements.

Relevant Legislation: Rules for Siting Industrial Hazardous Waste Facilities (1987)

Administering Agency: Department of Environmental Conservation, Albany, N.Y.

Contacts: Dennis Lucia, Division of Hazardous Substances, NYDEC, (518) 457-6934

14. NORTH CAROLINA

Program: Pollution Prevention Pays Program

Description: A non-regulatory program designed to reduce the generation of hazardous wastes, air and water pollution and the use of toxic materials. The Program provides for technical assistance, research and education, and financial assistance. Specific services include an information clearinghouse, on-site technical assistance to develop plant-specific waste reduction options, matching grants to industry for prevention demonstration projects, grants to universities for research and development projects, workshops, manuals and fact-sheets.

Relevant Legislation: Hazardous Waste Management Act (1989)

Administering Agency: North Carolina Department of Environment, Health and Natural Resources, Raleigh, N.C.

Contacts: Gary Hunt, Director, Pollution Prevention Program, NCDEHNR (919) 571-4100.

15. OREGON

Program: Toxics use and hazardous waste reduction plans and annual reports, technical assistance.

Description: Various classes of toxics users and hazardous waste generators, as defined in the TURHWRA must file toxics use and hazardous waste reduction plans by September 1, 1991 or 1992, and annual reports thereafter.

Relevant Legislation: Toxics Use Reduction and Hazardous Waste Reduction Act (1989)

Legislative Definitions:

"Toxics use reduction": in-plant changes in production or other processes or operations, products or raw materials that reduce, avoid or eliminate the use or production of toxic substances without creating substantial new risks to public health, safety and the environment.

"Waste reduction": any recycling or other activity applied after hazardous waste is generated that is consistent with the general goal of reducing present and future threats to public health, safety and the environment and that results in:

(a) the reduction of total volume of hazardous waste generated that would otherwise be



Pollution Prevention Act of 1990. The ITP is a voluntary program which seeks to reduce industrial releases of seventeen chemicals identified in the Toxics Release Inventory established under Section 313 of SARA by 33% by the end of 1992 and 50% by the end of 1995.

The EPA is currently considering a fundamental redirection and reorganization of federal environmental management to emphasize pollution prevention and the reduction of cross-media transfers, as well as risk reduction and the integration of environmental concerns into other policy areas such as energy, transportation and agriculture. The basis of this proposal is contained in a draft statute called the "Environmental Integration and Information Act", which was prepared at the Conservation Foundation in 1987 by J. Clarence Davies, who is now the EPA's assistant administrator at the Office of Policy, Planning and Evaluation.

The EPA is also using pilot projects to test a cross-media approach to permitting and pollution reduction within the current statutory and regulatory structure. One such project is being conducted at the Amoco Oil Company's Yorktown Virginia refinery.

The EPA's pilot cross-media enforcement programs include the Chesapeake Bay Enforcement Initiative and the Great Lakes initiative

Relevant Legislation: Pollution Prevention Act of 1990

Key Legislative Definitions:

"Source reduction": any practice which--

(i) reduces the amount of any hazardous substance, pollutant or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and

(ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants or contaminants.

Source reduction excludes any practice which alters the physical, chemical or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service.

"Multi-media": water, air, and land.

Administering Agency: Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460

Contacts: Hank Schilling, Director, Office of Policy Planning and Evaluation, EPA, 401 M Street S.W., Washington, D.C.

James M. Strock, Assistant Administrator for Enforcement, EPA, 401 M Street S.W., Washington, D.C.

Amoco pilot project: Dr. Mahesh K. Podar, Office of Policy Analysis, EPA, (202) 382-2756

EUROPE

FEDERAL REPUBLIC OF GERMANY

In the FDR, the relative importance of the federal and *Land* (state) authorities differ significantly enough to impact on whether multi-media approaches are legally possible or organizationally practicable. Federal authorities influence the development of legal framework for environmental protection (of both primary and secondary legislation), the *Lander* (states) have the influence over organizational issues.

In the areas of waste management, air pollution control, and combatting noise, federal authorities have legislative power. The *Lander* are responsible unless federal legislation exists. The *Lander* are free to organize their administration as they see fit, and thus the organizational structure between *Lander* can differ significantly. In some *Lander*, permits for smaller discharges to water are issued by the local authority while permits for large discharges come from district administration. In other instances the Trade Authority is responsible for facilities which fall under the Trade Regulations.

Effective implementation is the highest priority of contemporary environmental policy with the final goal of implementation defined as achieving maximum environmental benefit at optimum economic cost. There is thus a shift in focus from the national level to the *Lander*.

The FDR system operates on highly detailed legal prescriptions and developed system of standards. The legal standards act as a communication link between legislative and implementing levels of government in a situation where federal authorities can exercise only residual rights of supervision over the execution of the law by the *Lander*.

Hamburg as an Example

The Unit for Permits (found under the Environmental Protection division within the Environment Agency of the City of Hamburg) is responsible for all major environmentally significant permits including air, noise, water quality and waste. An important characteristic is the Unit's organisation of integration of waste and air pollution at the lowest organizational level, and all of the environmental media at the second hierarchical level. At the lowest level, responsibility for water quality control remains separate - in terms of office space though staff responsible for this area are interspersed with other staff so that informal exchanges occur.

The smallest units are organised by type of source controlled (i.e. chemical plants, refineries, etc) rather than environmental medium. Thus responsible officials at all levels are required to take cross-media aspects into account as they develop permits. The West German government has a program of subsidies which is closely linked to the development of integrated permits and seeks to optimise environmental conditions beyond legally prescribed norms.

After a number of years of implementation a number of advantages have emerged:



- it has been possible to reduce average time between presentation of a complete application and final decision to about 6 months. - A major factor of delay appears to be the need to involve the lower, district level of administration.
- it has become possible to discuss priority investments with industry and to effectively agree to medium-term environmental investment plans.
- Only officials with broad responsibility for an entire facility can engage in productive dialogue with those responsible for other aspects such efficiency of raw material use, economic efficiency, overall process control, and safety aspects.
- Indirect benefit has been that discussion of environmental issues has also occurred at a more integrated level of the applicant's decision-making structure, that is at or near board level.

Conclusions

At the national level there was a strong focus on developing and imposing limit values. But at the level of implementation attention in shifting more toward process engineering as the determinant of environmental releases.

THE NETHERLANDS

In 1970's a number of new acts were legislated (Surface Water Pollution Act, Air Pollution Act, Sea Water Pollution Act, Chemical Wastes Act, Wastes Act, Noise Pollution Act, and the Soil Protection Act). Important changes occurred at this time - some pollution control responsibilities were taken away from municipalities and placed with provinces (i.e. more serious atmospheric emissions, waste disposal, and soil protection) and to central government (toxic wastes). However such actions did not foster an environment to coordinate the procedures in certain states. In particular variances occurred in the permitting process from sector to sector with regards to the duration, scope for public consultation, and opportunity for appeal. Thus the 1979 Environmental Health General Provisions Act formed the basis for a standard permitting procedure.

Primary source of implementation is the permit.

The focus is on the release of pollutants at source, using both a strategic and operational approach.

The strategic approach to integration at source implies that target groups are selected based on the extent to which a group's processes or products contribute to environmental pollution and the group's role in the national/international economy (identified groups are agriculture, electric and gas utilities, refineries, and traffic). A "coordinator" of government activities is appointed to the group, who then prepares a document describing the group. The coordinator also provides focus for consultation on content, pace and order of potential control measures. The document

Environmental Management under the chairmanship of a coordinating officer. Typically such working groups are comprised of 3 to 4 officers and would increase where permit applications involved cooperation with other regulatory agencies. Of the 75 to 100 applications which fell into this category each year, some 10% would involve major proposals with far-reaching environmental implications. The Dept. of Environmental Management has 45 personnel, and the Central Environmental Management Service has about 250 staff, although 70% of the personnel worked solely on the granting of permits under the Nuisance Act.

Coordinating the work of these two environmental units was the task of the Environmental Steering Group. Each permit application undergoes 7 steps prior leading up to a granting of a permit:

- (1) Preparatory consultations
- (2) formal application
- (3) public consultation
- (4) consultation over draft permits
- (5) announcement of draft permits
- (6) final consultations
- (7) granting the permit

From one of the case studies cited, the preconditions for integrated pollution control in Rijnmond were not tied to organisational questions - the administrative structure of the various authorities involved in the study remained essentially sectoral. Three operational factors prove to be crucial to the outcome of the process: early consultations, uniform permitting procedures, and intensive coordination (within and between agencies). Two additional factors contributed to the process of consultation: clear agreements as to how major decisions were to be taken, and good personal relations between key officers.

Essentially, the structure of the Rijnmond Authority revolved around two key factors: a special interdepartmental/interagency working group to administer each major permit application and intensive coordination with the applicant, within the Authority itself, and with other agencies involved in the application.

SWEDEN

In Sweden, permitting and inspection are integrated across media at the source of release.

System utilizes inspectors dedicated to particular industries rather than for separate environmental media.

Under the Environmental Protection Act a single national body, the Franchise Board, administers the single permit process which regulates discharges to water, land, and air. Enforcement of the Act is the responsibilities of other bodies. The permit documents: (a) plant's description of its processes and proposed releases; (b) comments by the county, the National Environment Protection Board, and the public, and (c) the decision of the Franchise Board on the types and amounts of allowable releases to air, water and waste management facilities.



The Board conducts hearings with four members, a chairperson, senior engineer, a representative from the National Environment Protection Board, and a representative from the appropriate industry. Decisions are based on the overall pollution levels and selection of appropriate and technically feasible technologies.

Although there are emission guidelines, Sweden does not have binding emission or environmental quality standards for most pollutants.

The Swedish approach focuses on releases of pollutants from the source at the operational level (may mean dealing with all releases from commercial and environmental cycles of a product from a single manufacturing or waste management facility, or from an activity).

Decisions on controls at the source and inspection are organized by industrial sector rather than being dependent on coordination.

Decisions on controls are based primarily on selection of Best Available Technologies.

The approach proposes percentage targets for pollution reduction in energy, agricultural, and transport sectors, and also provides funding to support such reductions.

Concerns

One is that some permits are vaguely worded, hampering a companies efforts at reducing emission and monitoring and inspection as well.

Another recent debate concerns the division of responsibilities among the national, county, and municipal levels in permitting and inspection. A government commission proposed basing the division on the size of the plant. One level of government would have authority for both permitting and inspecting a plant. Local and county authorities generally felt that inspection should remain the their levels.

THE UNITED KINGDOM

The United Kingdom has a new Inspectorate of Pollution, which until recently utilized inspectors from the separate air, water, waste, and radioactive substance areas who became responsible for the site as a whole. Two recently completed test studies have confirmed the intent of the Inspectorate to move toward an administrative structure based on one inspector for each site using colleagues as necessary - effectively move to the use of multi-media disciplinary offices and teams.

Again the U.K. system, under the auspices of the Green Bill dictates the use of Best Available Technologies not entailing excessive costs to focus its Integrated Pollution Control (IPC) program.



Under the IPC program, each industry sector must follow individually tailored guidelines developed by 'joint industry groups' comprised of members of the regulatory bodies and industry representatives.

The two case studies also emphasized the importance of addressing pollution control decisions at the stage of plant design.

Based on 1990 data, the U.K. is planning to modify legislation so that a single permit is given by the Inspectorate of Pollution who is also responsible for enforcement. Furthermore, it is expected that this Inspectorate will be made independent of the Department of Environment.

The U.K. has chosen reorganization as the method of implementing multi-media which combines former bodies with responsibility for air, water, waste, and radioactivity. For the new inspectorate to function effectively, it must have legislative authority and thus the government has proposed that the inspectorate be given authority to approve the process technology, methods of operation, and levels of discharges to all media. The legislative proposal further focuses on the use of integrated pollution.



Implementation of the program will include provision of technical assistance and methodology outlines for sampling and evaluating discharge impacts on local receptors. Mention is made of referencing US EPA and Ontario MISA programs in determining allowable levels.

Stage of Implementation

The legislative framework for PRRI was included in Bill 99, however no regulations have been developed as of the summer of 1991. The principal mechanism is eventually to require that companies receive an "Attestation d'Assainissement" in order to open a new industrial establishment or to continue the operation of an existing establishment.

As of the summer of 1991, five major industrial companies have been asked to take part in a trial program of waste characterization, beginning with water and soil, on a voluntary basis.

APPENDIX 2
JURISDICTIONAL DEFINITIONS OF TERMS

Appendix 2**JURISDICTIONAL DEFINITIONS OF TERMS**

Pollution Prevention	<p>Indiana: the employment of a business practice that reduces the industrial use of toxic materials or reduces the environmental and health hazards associated with an environmental waste before the release, handling, storage, transport, treatment, or disposal of the waste. ...does not include a practice that is applied to ... waste after the waste is generated or comes into existence or after the waste exits a ... operation. The term does not promote ... waste burning for the purposes of energy recovery ... transfer ... or any other method of end-of-pipe management.</p> <p>Minnesota: eliminating or reducing at the source the use, generation, or release of toxic pollutants, hazardous substances, and hazardous wastes. (Reduce: lessening the quantity or toxicity of toxic pollutants ...)</p>
Hazardous Pollution Prevention	<p>Wisconsin: changes in processes or raw materials that reduce or eliminate the use or production of hazardous substances, toxic pollutants and hazardous waste. ...excludes incineration, changes in the manner of release ..., recycling ... outside of the process or treatment ... after completion of the process.</p>
Waste Reduction	<p>Georgia: a practice, ...including changes in production technology, materials, processes, operations or procedures ...or closed loop recycling... that reduces the environmental and health hazards associated with waste... Excludes practices such as incineration, off-site recycling, transfer from one medium to another medium or any other method of end of pipe management.</p> <p>Washington: all in-plant practices that reduce, avoid, or eliminate the generation of wastes or the toxicity of wastes, prior to generation, without creating substantial new risks to human health or the environment.</p>
Waste Minimization	<p>Delaware: the process by which a facility conducts an analysis of a production process to determine the waste minimization techniques which could be implemented.</p>
Source Reduction	<p>US Federal: any practice which-- (i) reduces the amount of any hazardous substance... entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and (ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants or contaminants ...excludes any practice which alters the physical chemical or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service.</p>



Toxic Pollution
Prevention

Illinois: in-plant practices that reduce, avoid or eliminate: (1) the use of toxic substances, (ii) the generation of toxic constituents in wastes, (iii) the disposal or release of toxic substances into the environment, or (iv) the development or manufacture of products with toxic constituents.excludes incineration, transfer from one medium to another off-site or out of process waste recycling, or end of pipe treatment...

Toxic's Use
Reduction

Maine: front-end substitution, product reformation, or in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of hazardous substances or generation of hazardous byproducts per unit of product to reduce the risks to the health of workers, consumers or the environment, without shifting risks between workers, consumers or parts of the environment.

Massachusetts: in-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances or generation of hazardous byproducts per unit of product ... (ref. Maine). ... excludes incineration, transfer from one medium of release or discharge to other media, off site or out-of-production unit waste recycling, or methods of end-of-pipe treatment of toxics as waste.

Ecosystem-
Oriented:

OECD: implies that comprehensive sets of information and quality objectives based upon the aggregate impacts of different pollutants and physical intrusions, are developed for different types of ecosystems in order to reflect the variety in ecosystems.

Substance-
Oriented:

OECD: implies that quality and emission control targets for particular polluting compounds should be established on the basis of an assessment of their impacts in different environmental media (cross-media control) and different uses (cradle to grave control).

APPENDIX 3
QUESTIONS FOR CRITICAL ANALYSIS TASK

Appendix 3

QUESTIONS FOR CRITICAL ANALYSIS TASK

The following is a question guideline for contacts carried out as part of Task 3 in the Hatch terms of reference. This follow up contact will focus on a limited number of jurisdictions and will be to gather evaluative information on programs identified as relating to multi-media within that jurisdiction.

Potential contacts have been broken into three groups (Jurisdictional, Industry and Non-Government). The order of these groups reflects the order of importance for data gathering. In particular, Industry and Non-Government groups will be contacted on a limited basis.

General Areas of Interest

The Hatch proposal of April, 1991 outlined some general areas of questioning for the critical review of multi-media experience:

- Did the regulated parties find a multi-media approach more cost-effective?
- What was the development and promulgation period of multi-media legislation compared to single-medium based legislative packages and initiatives?
- What were the reasons for any differences?
- Did the multi-media approach stimulate new technology based research?
- What was the amount of work required by the various parties involved to develop and implement the various changes made?
- Who is responsible for paying for the program (is it user-pay?)
- Is there technical assistance available from the government to industry?
- Was the attitude of the regulated parties towards pollution control affected?

With these in mind, the following general question areas are proposed for each type of contact.

Jurisdictional Contacts

Data Confirmation

1. Confirm nature and stage of program.

Program Evaluation

1. What evaluation has been made of program impacts, or results (intended and non-intended).
 - a) published
 - b) un-published
 - c) personal information

Particular aspects of interest will be economic and impact on the environment.

2. Have non-government groups been involved in the program, or have commented on or evaluated the program.
3. What feedback has been received from industry (or non-government groups).
4. Evaluation of the approval and implementation process for the program
 - a) speed
 - b) impacts on other aspects of environmental management (other programs, organizations).
5. Awareness of any new technological activity or control approach that has resulted from program; creation of secondary industries or income-generating activities of companies.

Industry Contacts

Data Confirmation

1. Explain understanding of program (form, intention).

Program Evaluation

1. Describe impacts experience from program.
2. Comment on perception of the efficiency, equity and effectiveness of the program.
3. Check for knowledge of any third party evaluation of program.
4. Awareness of any new technological activity or control approach that has resulted from program.
5. In the absence of knowledge or involvement in the process - is there a reason for non-participation.
6. Was it found that the program was cost effective.

Non-Government Organizations

Data Confirmation

1. Explain understanding of program (form, intention).

Program Evaluation

1. Describe impacts experience from program.
2. Comment on perception of the efficiency, equity and effectiveness of the program.



3. Check for knowledge of any third party evaluation of program.

Methodology

1. Further literature search for selected examples.
2. Telephone contact with individuals or organizations identified as of interest.
3. Receipt of written materials from contacts (if available).
4. Follow-up / secondary contacts.

