

VI. SUMMARY OF APPLICABLE FEDERAL STATUTES AND REGULATIONS

This section discusses the Federal regulations that may apply to this sector. The purpose of this section is to highlight and briefly describe the applicable Federal requirements, and to provide citations for more detailed information. The three following sections are included:

- Section VI.A contains a general overview of major statutes
- Section VI.B contains a list of regulations specific to this industry
- Section VI.C contains a list of pending and proposed regulations

The descriptions within Section VI are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. For further information readers should consult the Code of Federal Regulations and other state or local regulatory agencies. EPA Hotline contacts are also provided for each major statute.

VI.A. General Description of Major Statutes

Resource Conservation and Recovery Act

The Resource Conservation And Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations (commercial chemical products, designated with the code "P" or "U"; hazardous wastes from specific industries/sources, designated with the code "K"; or hazardous wastes from non-specific sources, designated with the code "F") or materials which exhibit a hazardous waste characteristic (ignitability, corrosivity, reactivity, or toxicity and designated with the code "D").

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and record keeping standards. Facilities must obtain a permit either from EPA or from a State agency which EPA has

authorized to implement the permitting program if they store hazardous wastes for more than 90 days before treatment or disposal. Facilities may treat hazardous wastes stored in less-than-ninety-day tanks or containers without a permit. Subtitle C permits contain general facility standards such as contingency plans, emergency procedures, record keeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR Part 264 Subpart S and §264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Although RCRA is a Federal statute, many States implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 47 of the 50 States and two U.S. territories. Delegation has not been given to Alaska, Hawaii, or Iowa.

Most RCRA requirements are not industry specific but apply to any company that generates, transports, treats, stores, or disposes of hazardous waste. Here are some important RCRA regulatory requirements:

- **Identification of Solid and Hazardous Wastes** (40 CFR Part 261) lays out the procedure every generator must follow to determine whether the material in question is considered a hazardous waste, solid waste, or is exempted from regulation.
- **Standards for Generators of Hazardous Waste** (40 CFR Part 262) establishes the responsibilities of hazardous waste generators including obtaining an EPA ID number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and recordkeeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated) without obtaining a permit.
- **Land Disposal Restrictions** (LDRs) (40 CFR Part 268) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs program, materials must meet LDR treatment standards prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.
- **Used Oil Management Standards** (40 CFR Part 279) impose management requirements affecting the storage, transportation,

burning, processing, and re-refining of the used oil. For parties that merely generate used oil, regulations establish storage standards. For a party considered a used oil processor, re-refiner, burner, or marketer (one who generates and sells off-specification used oil), additional tracking and paperwork requirements must be satisfied.

- RCRA contains unit-specific standards for all units used to store, treat, or dispose of hazardous waste, including **Tanks and Containers**. Tanks and containers used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations (40 CFR Part 264-265, Subpart CC) require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities that store such waste, including large quantity generators accumulating waste prior to shipment off-site.
- **Underground Storage Tanks** (USTs) containing petroleum and hazardous substances are regulated under Subtitle I of RCRA. Subtitle I regulations (40 CFR Part 280) contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also includes upgrade requirements for existing tanks that must be met by December 22, 1998.
- **Boilers and Industrial Furnaces** (BIFs) that use or burn fuel containing hazardous waste must comply with design and operating standards. BIF regulations (40 CFR Part 266, Subpart H) address unit design, provide performance standards, require emissions monitoring, and restrict the type of waste that may be burned.

EPA's RCRA, Superfund and EPCRA Hotline, at (800) 424-9346, responds to questions and distributes guidance regarding all RCRA regulations. The RCRA Hotline operates weekdays from 9:00 a.m. to 6:00 p.m., ET, excluding Federal holidays.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law known commonly as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. CERCLA also enables EPA to force parties responsible for environmental contamination to clean it up or to reimburse the Superfund for response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986

revised various sections of CERCLA, extended the taxing authority for the Superfund, and created a free-standing law, SARA Title III, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

The CERCLA hazardous substance release reporting regulations (40 CFR Part 302) direct the person in charge of a facility to report to the National Response Center (NRC) any environmental release of a hazardous substance which equals or exceeds a reportable quantity. Reportable quantities are listed in 40 CFR §302.4. A release report may trigger a response by EPA, or by one or more Federal or State emergency response authorities.

EPA implements hazardous substance responses according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as removals. EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites. Both EPA and states can act at sites; however, EPA provides responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

EPA's RCRA, Superfund and EPCRA Hotline, at (800) 424-9346, answers questions and references guidance pertaining to the Superfund program. The CERCLA Hotline operates weekdays from 9:00 a.m. to 6:00 p.m., ET, excluding Federal holidays.

Emergency Planning And Community Right-To-Know Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by State and local governments. EPCRA required the establishment of State emergency response commissions (SERCs), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA and the EPCRA regulations (40 CFR Parts 350-372) establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA §302** requires facilities to notify the SERC and LEPC of the presence of any extremely hazardous substance (the list of such

substances is in 40 CFR Part 355, Appendices A and B) if it has such substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator.

- **EPCRA §304** requires the facility to notify the SERC and the LEPC in the event of a release equaling or exceeding the reportable quantity of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.
- **EPCRA §311 and §312** require a facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an amount exceeding a specified threshold to submit to the SERC, LEPC and local fire department material safety data sheets (MSDSs) or lists of MSDS's and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.
- **EPCRA §313** requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold quantities, to submit an annual toxic chemical release report. This report, known commonly as the Form R, covers releases and transfers of toxic chemicals to various facilities and environmental media, and allows EPA to compile the national Toxic Release Inventory (TRI) database.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

EPA's RCRA, Superfund and EPCRA Hotline, at (800) 424-9346, answers questions and distributes guidance regarding the emergency planning and community right-to-know regulations. The EPCRA Hotline operates weekdays from 9:00 a.m. to 6:00 p.m., ET, excluding Federal holidays.

Clean Water Act

The primary objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The National Pollutant Discharge Elimination System (NPDES) program (CWA §502) controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized State (EPA has authorized 42 States to administer the NPDES program), contain industry-specific, technology-based and/or water quality-based limits, and establish pollutant monitoring requirements. A facility that intends to discharge into the nation's waters must obtain a permit prior to initiating its discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. The permit will then set the conditions and effluent limitations on the facility discharges.

A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards, that were designed to protect designated uses of surface waters, such as supporting aquatic life or recreation. These standards, unlike the technological standards, generally do not take into account technological feasibility or costs. Water quality criteria and standards vary from State to State, and site to site, depending on the use classification of the receiving body of water. Most States follow EPA guidelines which propose aquatic life and human health criteria for many of the 126 priority pollutants.

Storm Water Discharges

In 1987 the CWA was amended to require EPA to establish a program to address storm water discharges. In response, EPA promulgated the NPDES storm water permit application regulations. These regulations require that facilities with the following storm water discharges apply for an NPDES permit: (1) a discharge associated with industrial activity; (2) a discharge from a large or medium municipal storm sewer system; or (3) a discharge which EPA or the State determines to contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

The term "storm water discharge associated with industrial activity" means a storm water discharge from one of 11 categories of industrial activity defined at 40 CFR 122.26. Six of the categories are defined by SIC codes while the other five are identified through narrative descriptions of the regulated industrial activity. If the primary SIC code of the facility is one of those identified in the regulations, the facility is subject to the storm water permit application requirements. If any activity at a facility is covered by one of the five narrative categories, storm water discharges from those areas where the activities occur are subject to storm water discharge permit application requirements.

Those facilities/activities that are subject to storm water discharge permit application requirements are identified below. To determine whether a particular facility falls within one of these categories, consult the regulation.

Category i: Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards.

Category ii: Facilities classified as SIC 24-lumber and wood products (except wood kitchen cabinets); SIC 26-paper and allied products (except paperboard containers and products); SIC 28-chemicals and allied products (except drugs and paints); SIC 291-petroleum refining; and SIC 311-leather tanning and finishing, 32 (except 323)-stone, clay, glass, and concrete, 33-primary metals, 3441-fabricated structural metal, and 373-ship and boat building and repairing.

Category iii: Facilities classified as SIC 10-metal mining; SIC 12-coal mining; SIC 13-oil and gas extraction; and SIC 14-nonmetallic mineral mining.

Category iv: Hazardous waste treatment, storage, or disposal facilities.

Category v: Landfills, land application sites, and open dumps that receive or have received industrial wastes.

Category vi: Facilities classified as SIC 5015-used motor vehicle parts; and SIC 5093-automotive scrap and waste material recycling facilities.

Category vii: Steam electric power generating facilities.

Category viii: Facilities classified as SIC 40-railroad transportation; SIC 41-local passenger transportation; SIC 42-trucking and warehousing (except public warehousing and storage); SIC 43-U.S. Postal Service; SIC 44-water transportation; SIC 45-transportation by air; and SIC 5171-petroleum bulk storage stations and terminals.

Category ix: Sewage treatment works.

Category x: Construction activities except operations that result in the disturbance of less than five acres of total land area.

Category xi: Facilities classified as SIC 20-food and kindred products; SIC 21-tobacco products; SIC 22-textile mill products; SIC 23-apparel related products; SIC 2434-wood kitchen cabinets manufacturing; SIC 25-furniture and fixtures; SIC 265-paperboard containers and boxes; SIC 267-converted paper and paperboard products; SIC 27-printing, publishing, and allied

industries; SIC 283-drugs; SIC 285-paints, varnishes, lacquer, enamels, and allied products; SIC 30-rubber and plastics; SIC 31-leather and leather products (except leather and tanning and finishing); SIC 323-glass products; SIC 34-fabricated metal products (except fabricated structural metal); SIC 35-industrial and commercial machinery and computer equipment; SIC 36-electronic and other electrical equipment and components; SIC 37-transportation equipment (except ship and boat building and repairing); SIC 38-measuring, analyzing, and controlling instruments; SIC 39-miscellaneous manufacturing industries; and SIC 4221-4225-public warehousing and storage.

Pretreatment Program

Another type of discharge that is regulated by the CWA is one that goes to a publicly-owned treatment works (POTWs). The national pretreatment program (CWA §307(b)) controls the indirect discharge of pollutants to POTWs by "industrial users." Facilities regulated under §307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than the State or EPA.

EPA has developed technology-based standards for industrial users of POTWs. Different standards apply to existing and new sources within each category. "Categorical" pretreatment standards applicable to an industry on a nationwide basis are developed by EPA. In addition, another kind of pretreatment standard, "local limits," are developed by the POTW in order to assist the POTW in achieving the effluent limitations in its NPDES permit.

Regardless of whether a State is authorized to implement either the NPDES or the pretreatment program, if it develops its own program, it may enforce requirements more stringent than Federal standards.

Spill Prevention, Control and Countermeasure Plans

The 1990 Oil Pollution Act requires that facilities that could reasonably be expected to discharge oil in harmful quantities prepare and implement more rigorous Spill Prevention Control and Countermeasure (SPCC) Plan required under the CWA (40 CFR §112.7). There are also criminal and civil penalties for deliberate or negligent spills of oil. Regulations covering response to oil discharges and contingency plans (40 CFR Part 300), and Facility Response Plans to oil discharges (40 CFR §112.20) and for PCB transformers and PCB-containing items were revised and finalized in 1995.

EPA's Office of Water, at (202) 260-5700, will direct callers with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water resource center, at (202) 260-7786.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to create a joint Federal-State system to ensure compliance with these standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized States enforce the primary drinking water standards, which are, contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment.

The SDWA Underground Injection Control (UIC) program (40 CFR Parts 144-148) is a permit program which protects underground sources of drinking water by regulating five classes of injection wells. UIC permits include design, operating, inspection, and monitoring requirements. Wells used to inject hazardous wastes must also comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restrictions standards. The UIC permit program is primarily State-enforced, since EPA has authorized all but a few States to administer the program.

The SDWA also provides for a Federally-implemented Sole Source Aquifer program, which prohibits Federal funds from being expended on projects that may contaminate the sole or principal source of drinking water for a given area, and for a State-implemented Wellhead Protection program, designed to protect drinking water wells and drinking water recharge areas.

EPA's Safe Drinking Water Hotline, at (800) 426-4791, answers questions and distributes guidance pertaining to SDWA standards. The Hotline operates from 9:00 a.m. through 5:30 p.m., ET, excluding Federal holidays.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) granted EPA authority to create a regulatory framework to collect data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk.

TSCA standards may apply at any point during a chemical's life cycle. Under TSCA §5, EPA has established an inventory of chemical substances. If a chemical is not already on the inventory, and has not been excluded by TSCA, a premanufacture notice (PMN) must be submitted to EPA prior to manufacture or import. The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemicals effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA can also restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Under TSCA §6, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on chemicals that pose unreasonable risks. Among the chemicals EPA regulates under §6 authority are asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

EPA's TSCA Assistance Information Service, at (202) 554-1404, answers questions and distributes guidance pertaining to Toxic Substances Control Act standards. The Service operates from 8:30 a.m. through 4:30 p.m., ET, excluding Federal holidays.

Clean Air Act

The Clean Air Act (CAA) and its amendments, including the Clean Air Act Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote the public health and welfare and the productive capacity of the population." The CAA consists of six sections, known as Titles, which direct EPA to establish national standards for ambient air quality and for EPA and the States to implement, maintain, and enforce these standards through a variety of mechanisms. Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the requirements of the CAAA. CAA regulations appear at 40 CFR Parts 50-99.

Pursuant to Title I of the CAA, EPA has established national ambient air

quality standards (NAAQSs) to limit levels of "criteria pollutants," including carbon monoxide, lead, nitrogen dioxide, particulate matter, volatile organic compounds (VOCs), ozone, and sulfur dioxide. Geographic areas that meet NAAQSs for a given pollutant are classified as attainment areas; those that do not meet NAAQSs are classified as non-attainment areas. Under section 110 of the CAA, each State must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet Federal air quality standards. Revised NAAQSs for particulates and ozone were proposed in 1996 and may go into effect as early as late 1997.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories. NSPSs are based on the pollution control technology available to that category of industrial source.

Under Title I, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title I, section 112(c) of the CAA further directed EPA to develop a list of sources that emit any of 189 HAPs, and to develop regulations for these categories of sources. To date EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on "maximum achievable control technology" (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.

Title IV of the CAA establishes a sulfur dioxide nitrous oxide emissions program designed to reduce the formation of acid rain. Reduction of sulfur dioxide releases will be obtained by granting to certain sources limited emissions allowances, which, beginning in 1995, will be set below previous levels of sulfur dioxide releases.

Title V of the CAA of 1990 created a permit program for all "major sources" (and certain other sources) regulated under the CAA. One purpose of the operating permit is to include in a single document all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a

State program is approved by EPA, permits will be issued and monitored by that State.

Title VI of the CAA is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restrict their use and distribution. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs) and chloroform, were phased out (except for essential uses) in 1996.

EPA's Clean Air Technology Center, at (919) 541-0800, provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline, at (800) 296-1996, provides general information about regulations promulgated under Title VI of the CAA, and EPA's EPCRA Hotline, at (800) 535-0202, answers questions about accidental release prevention under CAA §112(r). In addition, the Clean Air Technology Center's website includes recent CAA rules, EPA guidance documents, and updates of EPA activities (www.epa.gov/ttn then select Directory and then CATC).

VI.B. Industry Specific Requirements

The plastic resin and manmade fiber industries are affected by nearly all federal environmental statutes. In addition, the industries are subject to numerous laws and regulations from state and local governments designed to protect and improve the nation's health, safety, and environment. A summary of the major federal regulations affecting the plastic resin and manmade fiber industry follows.

Clean Air Act

The original CAA authorized EPA to set limits on plastic resin and manmade fiber plant emissions. In its new source performance standards (NSPS) for polymer manufacturing facilities (40 CFR Part 60 Subpart DDD), EPA set minimum standards for the lowest achievable emissions rates (LAER) and best available control technologies (BACT). The NSPS for Polymers requires air emission controls on new and existing facilities that manufacture polypropylene, polyethylene, polystyrene and poly(ethylene terephthalate). Included are standards on controlling intermittent and continuous sources of emissions from processes. EPA also published an NSPS for synthetic fiber production facilities (40 CFR Part 60 Subpart HHH). The NSPS for Synthetic Fibers regulates VOC emissions from facilities that use solvents in manufacturing fibers. There are additional NSPS that apply to plastic resin and synthetic fiber manufacturers including those for flares (40 CFR Part 60 Subpart A), storage vessels (40 CFR Part 60 Subpart K), equipment leaks (40 CFR Part 60 Subpart VV), air oxidation processes (40 CFR Part 60 Subpart III), distillation operations (40 CFR Part 60 Subpart NNN), and reactor processes (40 CFR Part 60 Subpart RRR).

The Clean Air Act Amendments of 1990 set National Emission Standards for Hazardous Air Pollutants (NESHAP) from industrial sources for 41 pollutants to be met by 1995 and for 148 other pollutants to be reached by 2003. Several provisions affect the plastic resin and manmade fiber industries.

In April 1994, the EPA published Hazardous Organic National Emissions Standards for Hazardous Air Pollutants, also known as HON, in a rule aimed at reducing air toxics emissions from chemical and allied product plants. This rule, which consists of four subparts, affects hundreds of plastic resin and manmade fiber plants and thousands of chemical process units since potential organic hazardous air pollutants are widely used as reactants. Processes covered include heat exchange systems and maintenance operations

(40 CFR Part 63 Subpart F); process vents, storage vessels, transfer operations, and wastewater (40 CFR Part 63 Subpart G); equipment leaks (40 CFR Part 63 Subpart H); and equipment leaks for polycarbonate plants (40 CFR Part 63 Subpart I). Another NESHAP that may affect plastic resin and manmade fiber manufacturers is that for treatment, storage, and disposal facilities (40 Part CFR 63 Subpart AA). The HON also includes innovative provisions such as emissions trading, that offer industry flexibility in complying with the rule's emissions goals.

Subsets of the plastic resin and manmade fiber industries are regulated under other NESHAPs. EPA published a final rule for epoxy resins and non-nylon polyamide resins in March 1995. The rule was expected to reduce epichlorohydrin emissions from process vents and storage tank emissions. In September 1996, EPA published a final rule for Group I Polymers and Resins (61 FR 46906) under 40 CFR part 63, Subpart U. This rule focused on reducing emissions from facilities that make certain elastomers used in the manufacture of synthetic rubber products. The rule was expected to reduce emissions of styrene, hexane, toluene, and other toxics. Provisions on pollution prevention, as well as a market-based provision on emissions averaging, were also included in the rule.

In September 1996, EPA also published a final rule for Designated Group IV Polymers and Resins (61 FR 48208) under 40 CFR part 63, Subpart JJJ. This rule was expected to reduce emissions of air toxics from poly(ethylene terephlate), nitrile, and styrene-based resins facilities. The rule was expected to reduce styrene, butadiene, and methanol emissions from storage vessels, process vents, equipment leaks, and wastewater operations. A direct final notice (62 FR 1869) was published on January 14, 1997, which extended the heat exchange system compliance date for the Group I rule and the equipment leak compliance dates for both the Group I and Group IV rules. Other NESHAPs that apply to the industry cover vinyl chloride manufacturers (40 CFR Part 61 Subpart F), benzene equipment leaks (40 CFR Part 61 Subpart J), fugitive emissions (40 CFR Part 61 Subpart V), benzene emissions from benzene storage vessels (40 CFR Part 61 Subpart Y), benzene emissions from benzene transfer operations (40 CFR Part 61 Subpart BB), and benzene waste operations (40 CFR Part 61 Subpart FF).

Clean Water Act

The Clean Water Act, first passed in 1972 and amended in 1977 and 1987, gives EPA the authority to regulate effluents from sewage treatment works, chemical plants, and other industrial sources into waters. The act sets “best available” technology standards for treatment of wastes for both direct and indirect (discharged to a Publicly Owned Treatment Work (POTW)) discharges. EPA originally promulgated effluent limitations guidelines and standards for the plastic resin and manmade fiber industries in two phases. Phase I, covering 13 products and processes, was promulgated on April 5, 1974 (39 FR 12502), and Phase II, covering eight additional products and processes, was promulgated on January 23, 1975 (40 FR 3716). In 1976, these regulations were challenged and eventually remanded by the federal circuit court in FMC Corp. versus Train, 539F.2d 973 (4th Cir. 1976). As a result, EPA withdrew both the Phase I and II plastic resin and manmade fiber regulations on August 4, 1976 (41 FR 32587) (EPA, 1987).

On November 5, 1987, EPA proposed final effluent guidelines (52FR42522) for the organic chemical, plastics, and synthetic fiber industries (OCPSF) (40 CFR Part 414). The effluent guidelines include limits for biological oxygen demand (BOD), total suspended solids (TSS), and acidity (pH). In this rule, limits are specified for facilities that manufacture rayon fibers, other synthetic fibers, thermoplastic resins, and thermoset resins.

The majority of this rule was upheld by the federal courts in 1989 when the Chemical Manufacturers Association sued the EPA. The Court left the rule in effect pending further rulemaking but remanded three aspects of the OCPSF guidelines. The Court remanded the New Source Performance Standards (NSPS) and the Pretreatment Standards for New Sources (PSNS) for consideration of whether zero discharge limits were appropriate for the industries; the subcategorization of the industries into two subcategories imposing differing limitations based on Best Available Technology Economically Achievable (BAT); and limitations for BAT Subpart J pollutants that were based upon in-plant biological treatment technology.

The EPA decided not to revise the NSPS and PSNS standards or the BAT subcategorization scheme and promulgated two sets of amendments to the rule in 1992 and 1993. On September 11, 1992, EPA promulgated a first set of amendments (57 FR 41836) to the OCPSF rule. These amendments allowed regulatory authorities to establish alternative cyanide limitations and standards for cyanide resulting from complexing of cyanide at the process source and establish alternative metals limitations and standards to accommodate low background levels of metals in non-“metal-bearing waste streams.” These amendments also allowed regulatory authorities to specify the method for determining five-day biochemical oxygen demand and total suspended solids effluent limitations for direct discharge plants (FR, September 11, 1992).

On July 9, 1993, EPA promulgated the remaining portions of the OCPSF rule in second set of amendments (58 FR 36872) which added Subpart J limitations based on BAT and NSPS for 19 additional pollutants. These amendments also established Pretreatment Standards for Existing Sources (PSES) and PSNS for 11 of these 19 pollutants. EPA also corrected the criteria for designating “metal-” and “cyanide-bearing” waste streams. In this rulemaking, phenol and 2,4-dimethylphenol pretreatment standards were not promulgated since EPA concluded that they did not pass through POTWs. The implementation of the guidelines is left to the states who issue NPDES permits for each facility. The compliance date for PSES was no later than July 23, 1996 (FR, July 9, 1993).

The Storm Water Rule (40 CFR §122.26(b)(14) Subparts (i, ii)) requires the capture and treatment of stormwater at facilities producing chemicals and allied products, including plastic resin and synthetic fiber manufacture. Required treatment will remove from stormwater flows a large fraction of both conventional pollutants, such as suspended solids and biological oxygen demand (BOD), as well as toxic pollutants, such as certain metals and organic compounds.

Resource Conservation and Recovery Act

Products, intermediates, and off-specification products generated at plastic resin and synthetic fiber facilities that are considered hazardous wastes are listed in 40 CFR Part 261.33(f). Some of the handling and treatment requirements for RCRA hazardous waste generators are covered under 40 CFR Part 262 and include the following: determining what constitutes a RCRA hazardous waste (Subpart A); manifesting (Subpart B); packaging, labeling, and accumulation time limits (Subpart C); and recordkeeping and reporting (Subpart D).

Many plastic resin and synthetic fiber facilities store some hazardous wastes at the facility for more than 90 days, and therefore, are a storage facility under RCRA. Storage facilities are required to have a RCRA treatment, storage, and disposal facility (TSDF) permit (40 CFR Part 262.34). Some plastic resin and synthetic fiber facilities are considered TSDF facilities and are subject to the following regulations covered under 40 CFR Part 264: contingency plans and emergency procedures (40 CFR Part 264 Subpart D); manifesting, recordkeeping, and reporting (40 CFR Part 264 Subpart E); use and management of containers (40 CFR Part 264 Subpart I); tank systems (40 CFR Part 264 Subpart J); surface impoundments (40 CFR Part 264 Subpart K); land treatment (40 CFR Part 264 Subpart M); corrective action of hazardous waste releases (40 CFR Part 264 Subpart S); air emissions standards for process vents of processes that process or generate hazardous

wastes (40 CFR Part 264 Subpart AA); emissions standards for leaks in hazardous waste handling equipment (40 CFR Part 264 Subpart BB); and emissions standards for containers, tanks, and surface impoundments that contain hazardous wastes (40 CFR Part 264 Subpart CC).

A number of RCRA wastes have been prohibited from land disposal unless treated to meet specific standards under the RCRA Land Disposal Restriction (LDR) program. The wastes covered by the RCRA LDRs are listed in 40 CFR Part 268 Subpart C and include a number of wastes commonly generated at plastic resin and synthetic fiber facilities. Standards for the treatment and storage of restricted wastes are described in Subparts D and E, respectively.

Many plastic resin and synthetic fiber facilities are also subject to the underground storage tank (UST) program (40 CFR Part 280). The UST regulations apply to facilities that store either petroleum products or hazardous substances (except hazardous waste) identified under the Comprehensive Environmental Response, Compensation, and Liability Act. UST regulations address design standards, leak detection, operating practices, response to releases, financial responsibility for releases, and closure standards.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA), passed in 1976, gives the Environmental Protection Agency comprehensive authority to regulate any chemical substance whose manufacture, processing, distribution in commerce, use or disposal may present an unreasonable risk of injury to human health or the environment. Four sections are of primary importance to the plastic resin and manmade fiber industries. TSCA §5 (new chemicals) mandates that plastic resin and manmade fiber companies submit pre-manufacture notices that provide information on health and environmental effects for each new product and test existing products for these effects (40 CFR Part 720). TSCA §4 (existing chemicals) authorizes the EPA to require testing of certain substances (40 CFR Part 790). TSCA §6 gives the EPA authority to prohibit, limit or ban the manufacture, process and use of chemicals (40 CFR Part 750). For certain chemicals, TSCA §8 also imposes record-keeping and reporting requirements including substantial risk notification; record-keeping for data relative to adverse reactions; and periodic updates to the TSCA Chemical Inventory.

Under §5(h)(4), which grants EPA authority to promulgate rules granting exemptions to some or all of the premanufacture requirements for new chemicals, EPA published an exemption rule in 1984 and an amendment to the rule in 1995. The amendment, entitled Premanufacture Notification

Exemptions (PMN) rule, contained a section on polymers (40 CFR Part 723.250) that allowed polymers that met certain restrictions to be exempt from some of the reporting requirements for new chemicals. Two exemptions {40 CFR Part 723.250(e)(1) and (e)(2)} exempt polymers based on molecular weight and oligomer content. The third exemption (40 CFR Part 723.250(e)(3)) exempts certain polyester polymers which use particular monomers and reactants.

In addition to meeting the specific criteria of one of the three exemption types, the new polymer must also not fall into one of the prohibited categories. This section (40 CFR Part 723.250(d)) excludes certain polymers from reduced reporting requirements, namely: certain cationic polymers; polymers that do not meet elemental restrictions; polymers that are reasonably predicted to decompose, degrade, or depolymerize; and polymers which are produced from monomers and/or other reactants which are not on the TSCA inventory or otherwise exempted from reporting under a §5 exemption.

VI.C. Pending and Proposed Regulatory Requirements

Clean Air Act

NESHAP for Formaldehyde-based Resin Manufacturers

Presumptive MACT standards were published for amino, phenolic, and acetal resins in July 1996. These resins use formaldehyde as their primary building block. A NESHAP for amino and phenolic resins is expected to be proposed in 1997 and will reduce emissions, primarily, of formaldehyde and methanol. Over 100 facilities are expected to be affected by this rule. EPA is also expecting to propose a NESHAP for acetal resins which will affect 3 facilities. For more information, please contact John Schaefer at 919-541-0296.

NESHAP for Polyether Polyols

A proposed rule for polyether polyols is expected to be published in 1997. Roughly 50 major sources in the United States are expected to be affected by this regulation. For more information, please contact David Svendsgaard at 919-541-2380.

NESHAP for Polycarbonate Resin Manufacturers

This rule, scheduled to be proposed in 1997, will reduce emissions from polycarbonate resin facilities. It is anticipated that only two major sources in the United States will be affected by this regulation. For more

information, please contact Mark Morris at 919-541-5416.

NESHAP for Acrylic and Modacrylic Fiber Manufacturers

EPA is working on a rule to reduce emissions from acrylic and modacrylic fiber manufacturers. This rule is scheduled to be proposed in 1997 and is expected to primarily reduce emissions of acrylonitrile and vinyl acetate. Only two major sources in the United States will be affected by this regulation. For more information, contact Leonardo Ceron at 404-562-9129.

VII. COMPLIANCE AND ENFORCEMENT PROFILE

Background

Until recently, EPA has focused much of its attention on measuring compliance with specific environmental statutes. This approach allows the Agency to track compliance with the Clean Air Act, the Resource Conservation and Recovery Act, the Clean Water Act, and other environmental statutes. Within the last several years, the Agency has begun to supplement single-media compliance indicators with facility-specific, multimedia indicators of compliance. In doing so, EPA is in a better position to track compliance with all statutes at the facility level, and within specific industrial sectors.

A major step in building the capacity to compile multimedia data for industrial sectors was the creation of EPA's Integrated Data for Enforcement Analysis (IDEA) system. IDEA has the capacity to "read into" the Agency's single-media databases, extract compliance records, and match the records to individual facilities. The IDEA system can match Air, Water, Waste, Toxics/Pesticides/EPCRA, TRI, and Enforcement Docket records for a given facility, and generate a list of historical permit, inspection, and enforcement activity. IDEA also has the capability to analyze data by geographic area and corporate holder. As the capacity to generate multimedia compliance data improves, EPA will make available more in-depth compliance and enforcement information. Additionally, sector-specific measures of success for compliance assistance efforts are under development.

Compliance and Enforcement Profile Description

Using inspection, violation and enforcement data from the IDEA system, this section provides information regarding the historical compliance and enforcement activity of this sector. In order to mirror the facility universe reported in the Toxic Chemical Profile, the data reported within this section consists of records only from the TRI reporting universe. With this decision, the selection criteria are consistent across sectors with certain exceptions. For the sectors that do not normally report to the TRI program, data have been provided from EPA's Facility Indexing System (FINDS) which tracks facilities in all media databases. Please note, in this section, EPA does not attempt to define the actual number of facilities that fall within each sector. Instead, the section portrays the records of a subset of facilities within the sector that are well defined within EPA databases.

As a check on the relative size of the full sector universe, most notebooks contain an estimated number of facilities within the sector according to the Bureau of Census (See Section II). With sectors dominated by small

businesses, such as metal finishers and printers, the reporting universe within the EPA databases may be small in comparison to Census data. However, the group selected for inclusion in this data analysis section should be consistent with this sector's general make-up.

Following this introduction is a list defining each data column presented within this section. These values represent a retrospective summary of inspections and enforcement actions, and reflect solely EPA, State, and local compliance assurance activities that have been entered into EPA databases. To identify any changes in trends, the EPA ran two data queries, one for the past five calendar years (April 1, 1992 to March 31, 1997) and the other for the most recent twelve-month period (April 1, 1996 to March 31, 1997). The five-year analysis gives an average level of activity for that period for comparison to the more recent activity.

Because most inspections focus on single-media requirements, the data queries presented in this section are taken from single media databases. These databases do not provide data on whether inspections are state/local or EPA-led. However, the table breaking down the universe of violations does give the reader a crude measurement of the EPA's and states' efforts within each media program. The presented data illustrate the variations across EPA Regions for certain sectors.² This variation may be attributable to state/local data entry variations, specific geographic concentrations, proximity to population centers, sensitive ecosystems, highly toxic chemicals used in production, or historical noncompliance. Hence, the exhibited data do not rank regional performance or necessarily reflect which regions may have the most compliance problems.

Compliance and Enforcement Data Definitions

General Definitions

Facility Indexing System (FINDS) -- this system assigns a common facility number to EPA single-media permit records. The FINDS identification number allows EPA to compile and review all permit, compliance, enforcement and pollutant release data for any given regulated facility.

Integrated Data for Enforcement Analysis (IDEA) -- is a data integration system that can retrieve information from the major EPA program office databases. IDEA uses the FINDS identification number to link separate data

² EPA Regions include the following states: I (CT, MA, ME, RI, NH, VT); II (NJ, NY, PR, VI); III (DC, DE, MD, PA, VA, WV); IV (AL, FL, GA, KY, MS, NC, SC, TN); V (IL, IN, MI, MN, OH, WI); VI (AR, LA, NM, OK, TX); VII (IA, KS, MO, NE); VIII (CO, MT, ND, SD, UT, WY); IX (AZ, CA, HI, NV, Pacific Trust Territories); X (AK, ID, OR, WA).

records from EPA's databases. This allows retrieval of records from across media or statutes for any given facility, thus creating a "master list" of records for that facility. Some of the data systems accessible through IDEA are: AIRS (Air Facility Indexing and Retrieval System, Office of Air and Radiation), PCS (Permit Compliance System, Office of Water), RCRIS (Resource Conservation and Recovery Information System, Office of Solid Waste), NCDB (National Compliance Data Base, Office of Prevention, Pesticides, and Toxic Substances), CERCLIS (Comprehensive Environmental and Liability Information System, Superfund), and TRIS (Toxic Release Inventory System). IDEA also contains information from outside sources such as Dun and Bradstreet and the Occupational Safety and Health Administration (OSHA). Most data queries displayed in notebook sections IV and VII were conducted using IDEA.

Data Table Column Heading Definitions

Facilities in Search -- are based on the universe of TRI reporters within the listed SIC code range. For industries not covered under TRI reporting requirements (metal mining, nonmetallic mineral mining, electric power generation, ground transportation, water transportation, and dry cleaning), or industries in which only a very small fraction of facilities report to TRI (e.g., printing), the notebook uses the FINDS universe for executing data queries. The SIC code range selected for each search is defined by each notebook's selected SIC code coverage described in Section II.

Facilities Inspected --- indicates the level of EPA and state agency inspections for the facilities in this data search. These values show what percentage of the facility universe is inspected in a one-year or five-year period.

Number of Inspections -- measures the total number of inspections conducted in this sector. An inspection event is counted each time it is entered into a single media database.

Average Time Between Inspections -- provides an average length of time, expressed in months, between compliance inspections at a facility within the defined universe.

Facilities with One or More Enforcement Actions -- expresses the number of facilities that were the subject of at least one enforcement action within the defined time period. This category is broken down further into federal and state actions. Data are obtained for administrative, civil/judicial, and criminal enforcement actions. Administrative actions include Notices of Violation (NOVs). A facility with multiple enforcement actions is only counted once in this column, e.g., a facility with 3 enforcement actions

counts as 1 facility.

Total Enforcement Actions -- describes the total number of enforcement actions identified for an industrial sector across all environmental statutes. A facility with multiple enforcement actions is counted multiple times, e.g., a facility with 3 enforcement actions counts as 3.

State Lead Actions -- shows what percentage of the total enforcement actions are taken by state and local environmental agencies. Varying levels of use by states of EPA data systems may limit the volume of actions recorded as state enforcement activity. Some states extensively report enforcement activities into EPA data systems, while other states may use their own data systems.

Federal Lead Actions -- shows what percentage of the total enforcement actions are taken by the United States Environmental Protection Agency. This value includes referrals from state agencies. Many of these actions result from coordinated or joint state/federal efforts.

Enforcement to Inspection Rate -- is a ratio of enforcement actions to inspections, and is presented for comparative purposes only. This ratio is a rough indicator of the relationship between inspections and enforcement. It relates the number of enforcement actions and the number of inspections that occurred within the one-year or five-year period. This ratio includes the inspections and enforcement actions reported under the Clean Water Act (CWA), the Clean Air Act (CAA) and the Resource Conservation and Recovery Act (RCRA). Inspections and actions from the TSCA/FIFRA/EPCRA database are not factored into this ratio because most of the actions taken under these programs are not the result of facility inspections. Also, this ratio does not account for enforcement actions arising from non-inspection compliance monitoring activities (e.g., self-reported water discharges) that can result in enforcement action within the CAA, CWA, and RCRA.

Facilities with One or More Violations Identified -- indicates the percentage of inspected facilities having a violation identified in one of the following data categories: In Violation or Significant Violation Status (CAA); Reportable Noncompliance, Current Year Noncompliance, Significant Noncompliance (CWA); Noncompliance and Significant Noncompliance (FIFRA, TSCA, and EPCRA); Unresolved Violation and Unresolved High Priority Violation (RCRA). The values presented for this column reflect the extent of noncompliance within the measured time frame, but do not distinguish between the severity of the noncompliance. Violation status may be a precursor to an enforcement action, but does not necessarily indicate that an enforcement action will occur.

Media Breakdown of Enforcement Actions and Inspections -- four columns identify the proportion of total inspections and enforcement actions within EPA Air, Water, Waste, and TSCA/FIFRA/EPCRA databases. Each column is a percentage of either the "Total Inspections," or the "Total Actions" column.

VII.A. Plastic Resin and Manmade Fiber Industries Compliance History

Table 24 provides an overview of the reported compliance and enforcement data for the plastic resin and manmade fiber industries over the past five years (April 1992 to April 1997). These data are also broken out by EPA Region thereby permitting geographical comparisons. A few points evident from the data are listed below.

- The majority of plastic resin and manmade fiber facilities (about 60%) and inspections over the past five years were in Regions IV, V, and VI.
- Regions III and II had the second and third largest number of inspections, respectively, although they ranked fourth and fifth in terms of number of facilities, respectively.
- Region VI had a high ratio of enforcement actions to inspections (0.25) compared to other Regions. Region VI also had the highest number of enforcement actions and facilities with enforcement actions.
- Region II had the second largest number of enforcement actions (52), but ranks fifth in number of facilities.

Table 24: Five-Year Enforcement and Compliance Summary for the Plastic Resin and Manmade Fiber Industries

A	B	C	D	E	F	G	H	I	J
Region	Facilities in Search	Facilities Inspected	Number of Inspections	Average Months Between Inspections	Facilities with 1 or More Enforcement Actions	Total Enforcement Actions	Percent State Lead Actions	Percent Federal Lead Actions	Enforcement to Inspection Rate
I	24	16	73	20	4	8	50%	50%	0.11
II	31	30	366	5	17	52	81%	19%	0.14
III	38	36	418	5	10	21	90%	10%	0.05
IV	90	78	864	6	22	46	78%	22%	0.05
V	55	40	311	11	5	9	67%	33%	0.03
VI	51	43	309	10	28	76	71%	29%	0.25
VII	6	5	20	18	1	1	0%	100%	0.05
VIII	4	1	11	22	1	1	100%	0%	0.09
IX	25	10	41	37	4	3	100%	0%	0.07
X	5	4	17	18	1	2	100%	0%	0.12
TOTAL	329	263	2,430	8	93	219	76%	24%	0.09

VII.B. Comparison of Enforcement Activity Between Selected Industries

Tables 25 and 26 allow the compliance history of the plastic resin and manmade fiber industries to be compared with the other industries covered by the industry sector notebooks. Comparisons between Tables 25 and 26 permit the identification of trends in compliance and enforcement records of the industries by comparing data covering the last five years (April 1992 to April 1997) to that of the past year (April 1996 to April 1997). Some points evident from the data are listed below.

- The ratio of enforcement actions to inspections for plastic resin and manmade fiber manufacturing facilities over the past five years (0.09) was very close to the average across the industries shown (0.08).
- Over the past five years, the average number of months between inspections was relatively low (8 months) for plastic resin and manmade fiber facilities. The average across the industries shown was 22 months indicating that, on average, facilities in the plastic resin and manmade fiber industry are inspected more frequently than facilities in many other industries.
- While the average enforcement to inspection rate across industries fell from 0.08 over the past five years to 0.06 over the past year, the enforcement to inspection rate for plastic resin and manmade fiber facilities remained at 0.09.
- Only three of the industries shown (petroleum refining, lumber and wood, and water transportation) had a higher percent of facilities inspected with enforcement actions over the past year.

Tables 27 and 28 provide a more in-depth comparison between the plastic resin and manmade fiber industries and other sectors by breaking out the compliance and enforcement data by environmental statute. As in Tables 25 and 26, the data cover the last five years (Table 27) and the last one year (Table 28) to facilitate the identification of recent trends. A few points evident from the data are listed below.

- While the percentage of RCRA inspections remained the same between the past five years and past year, the percent of enforcement actions taken under RCRA dropped from 23 percent to 5 percent.
- The Clean Air Act accounted for the largest share of enforcement actions over the past five years (43 percent) and the past year (51 percent).

Table 25: Five-Year Enforcement and Compliance Summary for Selected Industries

A	B	C	D	E	F	G	H	I	J
Industry Sector	Facilities in Search	Facilities Inspected	Number of Inspections	Average Months Between Inspections	Facilities with 1 or More Enforcement Actions	Total Enforcement Actions	Percent State Lead Actions	Percent Federal Lead Actions	Enforcement to Inspection Rate
Metal Mining	1,232	378	1,600	46	63	111	53%	47%	0.07
Coal Mining	3,256	741	3,748	52	88	132	89%	11%	0.04
Oil and Gas Extraction	4,676	1,902	6,071	46	149	309	79%	21%	0.05
Non-Metallic Mineral Mining	5,256	2,803	12,826	25	385	622	77%	23%	0.05
Textiles	355	267	1,465	15	53	83	90%	10%	0.06
Lumber and Wood	712	473	2,767	15	134	265	70%	30%	0.10
Furniture	499	386	2,379	13	65	91	81%	19%	0.04
Pulp and Paper	484	430	4,630	6	150	478	80%	20%	0.10
Printing	5,862	2,092	7,691	46	238	428	88%	12%	0.06
Inorganic Chemicals	441	286	3,087	9	89	235	74%	26%	0.08
Resins and Manmade Fibers	329	263	2,430	8	93	219	76%	24%	0.09
Pharmaceuticals	164	129	1,201	8	35	122	80%	20%	0.10
Organic Chemicals	425	355	4,294	6	153	468	65%	35%	0.11
Agricultural Chemicals	263	164	1,293	12	47	102	74%	26%	0.08
Petroleum Refining	156	148	3,081	3	124	763	68%	32%	0.25
Rubber and Plastic	1,818	981	4,383	25	178	276	82%	18%	0.06
Stone, Clay, Glass and Concrete	615	388	3,474	11	97	277	75%	25%	0.08
Iron and Steel	349	275	4,476	5	121	305	71%	29%	0.07
Metal Castings	669	424	2,535	16	113	191	71%	29%	0.08
Nonferrous Metals	203	161	1,640	7	68	174	78%	22%	0.11
Fabricated Metal Products	2,906	1,858	7,914	22	365	600	75%	25%	0.08
Electronics	1,250	863	4,500	17	150	251	80%	20%	0.06
Automobile Assembly	1,260	927	5,912	13	253	413	82%	18%	0.07
Shipbuilding and Repair	44	37	243	9	20	32	84%	16%	0.13
Ground Transportation	7,786	3,263	12,904	36	375	774	84%	16%	0.06
Water Transportation	514	192	816	38	36	70	61%	39%	0.09
Air Transportation	444	231	973	27	48	97	88%	12%	0.10
Fossil Fuel Electric Power	3,270	2,166	14,210	14	403	789	76%	24%	0.06

Table 26: One-Year Enforcement and Compliance Summary for Selected Industries

A Industry Sector	B Facilities in Search	C Facilities Inspected	D Number of Inspections	E Facilities with 1 or More Violations		F Facilities with 1 or more Enforcement Actions		G Total Enforcement Actions	H Enforcement to Inspection Rate
				Number	Percent*	Number	Percent*		
				Metal Mining	1,232	142	211		
Coal Mining	3,256	362	765	90	25%	20	6%	22	0.03
Oil and Gas Extraction	4,676	874	1,173	127	15%	26	3%	34	0.03
Non-Metallic Mineral Mining	5,256	1,481	2,451	384	26%	73	5%	91	0.04
Textiles	355	172	295	96	56%	10	6%	12	0.04
Lumber and Wood	712	279	507	192	69%	44	16%	52	0.10
Furniture	499	254	459	136	54%	9	4%	11	0.02
Pulp and Paper	484	317	788	248	78%	43	14%	74	0.09
Printing	5,862	892	1,363	577	65%	28	3%	53	0.04
Inorganic Chemicals	441	200	548	155	78%	19	10%	31	0.06
Resins and Manmade Fibers	329	173	419	152	88%	26	15%	36	0.09
Pharmaceuticals	164	80	209	84	105%	8	10%	14	0.07
Organic Chemicals	425	259	837	243	94%	42	16%	56	0.07
Agricultural Chemicals	263	105	206	102	97%	5	5%	11	0.05
Petroleum Refining	156	132	565	129	98%	58	44%	132	0.23
Rubber and Plastic	1,818	466	791	389	83%	33	7%	41	0.05
Stone, Clay, Glass and Concrete	615	255	678	151	59%	19	7%	27	0.04
Iron and Steel	349	197	866	174	88%	22	11%	34	0.04
Metal Castings	669	234	433	240	103%	24	10%	26	0.06
Nonferrous Metals	203	108	310	98	91%	17	16%	28	0.09
Fabricated Metal	2,906	849	1,377	796	94%	63	7%	83	0.06
Electronics	1,250	420	780	402	96%	27	6%	43	0.06
Automobile Assembly	1,260	507	1,058	431	85%	35	7%	47	0.04
Shipbuilding and Repair	44	22	51	19	86%	3	14%	4	0.08
Ground Transportation	7,786	1,585	2,499	681	43%	85	5%	103	0.04
Water Transportation	514	84	141	53	63%	10	12%	11	0.08
Air Transportation	444	96	151	69	72%	8	8%	12	0.08
Fossil Fuel Electric Power	3,270	1,318	2,430	804	61%	100	8%	135	0.06
Dry Cleaning	6,063	1,234	1,436	314	25%	12	1%	16	0.01

*Percentages in Columns E and F are based on the number of facilities inspected (Column C). Percentages can exceed 100% because violations and actions can occur without a facility inspection.

Table 27: Five-Year Inspection and Enforcement Summary by Statute for Selected Industries

Industry Sector	Facilities Inspected	Total Inspections	Total Enforcement Actions	Clean Air Act		Clean Water Act		RCRA		FIFRA/TSCA/EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	378	1,600	111	39%	19%	52%	52%	8%	12%	1%	17%
Coal Mining	741	3,748	132	57%	64%	38%	28%	4%	8%	1%	1%
Oil and Gas Extraction	1,902	6,071	309	75%	65%	16%	14%	8%	18%	0%	3%
Non-Metallic Mineral Mining	2,803	12,826	622	83%	81%	14%	13%	3%	4%	0%	3%
Textiles	267	1,465	83	58%	54%	22%	25%	18%	14%	2%	6%
Lumber and Wood	473	2,767	265	49%	47%	6%	6%	44%	31%	1%	16%
Furniture	386	2,379	91	62%	42%	3%	0%	34%	43%	1%	14%
Pulp and Paper	430	4,630	478	51%	59%	32%	28%	15%	10%	2%	4%
Printing	2,092	7,691	428	60%	64%	5%	3%	35%	29%	1%	4%
Inorganic Chemicals	286	3,087	235	38%	44%	27%	21%	34%	30%	1%	5%
Resins and Manmade Fibers	263	2,430	219	35%	43%	23%	28%	38%	23%	4%	6%
Pharmaceuticals	129	1,201	122	35%	49%	15%	25%	45%	20%	5%	5%
Organic Chemicals	355	4,294	468	37%	42%	16%	25%	44%	28%	4%	6%
Agricultural Chemicals	164	1,293	102	43%	39%	24%	20%	28%	30%	5%	11%
Petroleum Refining	148	3,081	763	42%	59%	20%	13%	36%	21%	2%	7%
Rubber and Plastic	981	4,383	276	51%	44%	12%	11%	35%	34%	2%	11%
Stone, Clay, Glass and Concrete	388	3,474	277	56%	57%	13%	9%	31%	30%	1%	4%
Iron and Steel	275	4,476	305	45%	35%	26%	26%	28%	31%	1%	8%
Metal Castings	424	2,535	191	55%	44%	11%	10%	32%	31%	2%	14%
Nonferrous Metals	161	1,640	174	48%	43%	18%	17%	33%	31%	1%	10%
Fabricated Metal	1,858	7,914	600	40%	33%	12%	11%	45%	43%	2%	13%
Electronics	863	4,500	251	38%	32%	13%	11%	47%	50%	2%	7%
Automobile Assembly	927	5,912	413	47%	39%	8%	9%	43%	43%	2%	9%
Shipbuilding and Repair	37	243	32	39%	25%	14%	25%	42%	47%	5%	3%
Ground Transportation	3,263	12,904	774	59%	41%	12%	11%	29%	45%	1%	3%
Water Transportation	192	816	70	39%	29%	23%	34%	37%	33%	1%	4%
Air Transportation	231	973	97	25%	32%	27%	20%	48%	48%	0%	0%
Fossil Fuel Electric Power	2,166	14,210	789	57%	59%	32%	26%	11%	10%	1%	5%
Dry Cleaning	2,360	3,813	66	56%	23%	3%	6%	41%	71%	0%	0%

Table 28: One-Year Inspection and Enforcement Summary by Statute for Selected Industries

Industry Sector	Facilities Inspected	Total Inspections	Total Enforcement Actions	Clean Air Act		Clean Water Act		RCRA		FIFRA/TSCA/EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	142	211	10	52%	0%	40%	40%	8%	30%	0%	30%
Coal Mining	362	765	22	56%	82%	40%	14%	4%	5%	0%	0%
Oil and Gas Extraction	874	1,173	34	82%	68%	10%	9%	9%	24%	0%	0%
Non-Metallic Mineral Mining	1,481	2,451	91	87%	89%	10%	9%	3%	2%	0%	0%
Textiles	172	295	12	66%	75%	17%	17%	17%	8%	0%	0%
Lumber and Wood	279	507	52	51%	30%	6%	5%	44%	25%	0%	40%
Furniture	254	459	11	66%	45%	2%	0%	32%	45%	0%	9%
Pulp and Paper	317	788	74	54%	73%	32%	19%	14%	7%	0%	1%
Printing	892	1,363	53	63%	77%	4%	0%	33%	23%	0%	0%
Inorganic Chemicals	200	548	31	35%	59%	26%	9%	39%	25%	0%	6%
Resins and Manmade Fibers	173	419	36	38%	51%	24%	38%	38%	5%	0%	5%
Pharmaceuticals	80	209	14	43%	71%	11%	14%	45%	14%	0%	0%
Organic Chemicals	259	837	56	40%	54%	13%	13%	47%	34%	0%	0%
Agricultural Chemicals	105	206	11	48%	55%	22%	0%	30%	36%	0%	9%
Petroleum Refining	132	565	132	49%	67%	17%	8%	34%	15%	0%	10%
Rubber and Plastic	466	791	41	55%	64%	10%	13%	35%	23%	0%	0%
Stone, Clay, Glass and Concrete	255	678	27	62%	63%	10%	7%	28%	30%	0%	0%
Iron and Steel	197	866	34	52%	47%	23%	29%	26%	24%	0%	0%
Metal Castings	234	433	26	60%	58%	10%	8%	30%	35%	0%	0%
Nonferrous Metals	108	310	28	44%	43%	15%	20%	41%	30%	0%	7%
Fabricated Metal	849	1,377	83	46%	41%	11%	2%	43%	57%	0%	0%
Electronics	420	780	43	44%	37%	14%	5%	43%	53%	0%	5%
Automobile Assembly	507	1,058	47	53%	47%	7%	6%	41%	47%	0%	0%
Shipbuilding and Repair	22	51	4	54%	0%	11%	50%	35%	50%	0%	0%
Ground Transportation	1,585	2,499	103	64%	46%	11%	10%	26%	44%	0%	1%
Water Transportation	84	141	11	38%	9%	24%	36%	38%	45%	0%	9%
Air Transportation	96	151	12	28%	33%	15%	42%	57%	25%	0%	0%
Fossil Fuel Electric Power	1,318	2,430	135	59%	73%	32%	21%	9%	5%	0%	0%
Dry Cleaning	1,234	1,436	16	69%	56%	1%	6%	30%	38%	0%	0%

VII.C. Review of Major Legal Actions

Major Cases/Supplemental Environmental Projects

This section provides summary information about major cases that have affected this sector, and a list of Supplemental Environmental Projects (SEPs).

VII.C.1. Review of Major Cases

As indicated in EPA's *Enforcement Accomplishments Report, FY1995 and FY1996* publications, four significant enforcement actions were resolved between 1995 and 1996 for the metal casting industry.

Teknor Apex Company: A September 30, 1996 consent agreement and order resolved TSCA violations by Teknor Apex of Pawtucket, RI. Teknor Apex had failed to report the identities and volumes of several chemicals manufactured in 1989, as required by EPA's Inventory Update rule. Teknor Apex manufactures organic plasticizers, vinyl resins, garden hose, plastic sheeting, and color pigments. The violations, which occurred at facilities in Attleboro, MA, and in Brownsville, TN, hampered EPA's efforts to assess the health and environmental risks of chemical manufacture and distribution. The settlement provides for a penalty of \$52,950 and implementation of SEPs costing \$300,000. Four SEPs at the Attleboro facility will reduce toxic emissions, reduce and improve the quality of wastewater discharges, and reduce the volume of industrial wastewater processed at Teknor's on-site wastewater treatment plant.

Union Carbide Chemicals and Plastics (South Charleston, WV): On May 16, 1995, the Regional Administrator signed a consent order resolving a RCRA administrative penalty action against Union Carbide Chemicals and Plastics Company, Inc. (UCC), for violations of the BIF Rule (Boiler and Industrial Furnace Rule) at UCC's South Charleston, West Virginia, plant. The complaint alleged failure to: continuously monitor and record operating parameters; accurately analyze the hazardous waste fed into the boiler; and properly mark equipment. Under the settlement terms UCC is required to pay a \$195,000 civil penalty and comply with the requirements of the BIF Rule.

Formosa Plastics Co.: On May 31, 1995, a Class I CERCLA 103(a) and EPCRA 304(a) consent agreement and consent order (CACO) was entered with Formosa Plastics for numerous releases of vinyl chloride from its Point Comfort, Texas, facility between February 1989 and August 1992 that were not reported to the National Response Center (NRC) in a timely manner following the release. Additionally, the respondent experienced a release of

ethylene dichloride in September 1990, and a release of hydrochloric acid in July 1991. Formosa did not report these releases to the NRC, State Emergency Response Commission (SERC), and Local Emergency Planning Committee (LEPC) in a timely manner. Formosa agreed to pay a civil penalty of \$50,000 and agreed to construct and maintain a secondary containment system which will prevent large pressure releases of vinyl chloride from the facility. The system cost is estimated to be \$1.68 million with an anticipated start-up date of January 1996. Additionally, as part of a SEP, Formosa agreed to complete the following actions: (1) implement a chemical safety project for the citizens of Point Comfort, Texas at a cost of \$10,000; (2) permit a chemical safety audit to be performed by a team led by EPA personnel to review facility emergency response procedures and plans; (3) develop and implement a risk management program; and (4) provide funding (\$35,000) to support a Region-wide LEPC conference.

VII.C.2. Supplementary Environmental Projects (SEPs)

Supplemental environmental projects (SEPs) are enforcement options that require the non-compliant facility to complete specific projects. Information on SEP cases can be accessed via the Internet at EPA's Enviro\$en\$e website: <http://es.inel.gov/sep>.

VIII. COMPLIANCE ACTIVITIES AND INITIATIVES

This section highlights the activities undertaken by this industry sector and public agencies to voluntarily improve the sector's environmental performance. These activities include those independently initiated by industrial trade associations. In this section, the notebook also contains a listing and description of national and regional trade associations.

VIII.A. Sector-Related Environmental Programs and Activities

Chemical Manufacturer's Association and EPA have developed training modules, self-audit manuals, and compliance guides for Section 608 of the Clean Air Act, which covers leak detection and repair. They are discussing developing plant level compliance guides, auditing protocols, and training materials for RCRA Subpart CC and other areas.

VIII.B. EPA Voluntary Programs

33/50 Program

The 33/50 Program is a ground breaking program that has focused on reducing pollution from seventeen high-priority chemicals through voluntary partnerships with industry. The program's name stems from its goals: a 33% reduction in toxic releases by 1992, and a 50% reduction by 1995, against a baseline of 1.5 billion pounds of releases and transfers in 1988. The results have been impressive: 1,300 companies have joined the 33/50 Program (representing over 6,000 facilities) and have reached the national targets a year ahead of schedule. The 33% goal was reached in 1991, and the 50% goal -- a reduction of 745 million pounds of toxic wastes -- was reached in 1994. The 33/50 Program can provide case studies on many of the corporate accomplishments in reducing waste (Contact 33/50 Program Director David Sarokin -- 260-6396).

Table 29 lists those companies participating in the 33/50 program that reported the SIC codes 2821, 2823, or 2824 to TRI. Many of the companies shown listed multiple SIC codes and, therefore, are likely to carry out operations in addition to plastic resin and manmade fiber manufacturing. In addition, the number of facilities within each company that are participating in the 33/50 program and that report SIC 2821, 2823, or 2824 to TRI are shown. Finally, where available and quantifiable against 1988 releases and transfers, each company's 33/50 goals for 1995 and the actual total releases, transfers and percent reduction between 1988 and 1994 are presented.

Table 29: Plastic Resin and Manmade Fiber Industries Participation in the 33/50 Program					
Parent Company (Headquarters Location)	Company- Owned Facilities Reporting 33/50 Chemicals	Company- Wide % Reduction Goal ¹ (1988 to 1995)	1988 TRI Releases and Transfers of 33/50 Chemicals (pounds)	1994 TRI Releases and Transfers of 33/50 Chemicals (pounds)	Actual % Reduction for Facilities (1988-1994)
AIR PRODUCTS AND CHEMICALS ALLENTOWN, PA	1	50	0	411	---
AKZO NOBEL INC CHICAGO, IL	1	13	158,650	87,268	45
ALBEMARLE CORPORATION RICHMOND, VA	6	51	960,620	1,181,712	-23
ALLIED-SIGNAL INC MORRISTOWN, NJ	1	50	0	10	---
AMERICAN PLASTIC TECHNOLOGIES MIDDLEFIELD, OH	1	50	750	0	100
AMOCO CORPORATION CHICAGO, IL	1	50	0	30	---
ARISTECH CHEMICAL CORPORATION PITTSBURGH, PA	7	18	1,648,348	159,614	90
ASHLAND OIL INC RUSSELL, KY	2	50	207,440	4,632	98
ATLANTIC RICHFIELD COMPANY LOS ANGELES, CA	1	2	47,543	3,158	93
B F GOODRICH COMPANY AKRON, OH	6	50	31,478	864	97
BASF CORPORATION MOUNT OLIVE, NJ	3	50	241,760	45,195	81
BORDEN CHEM & PLAS LTD PARTNR COLUMBUS, OH	1	***	11,781	26,393	-124
BORDEN INC NEW YORK, NY	2	*	105	161	-53
BULK MOLDING COMPOUNDS INC SAINT CHARLES, IL	1	40	48,555	0	100
CAPITAL RESIN CORPORATION COLUMBUS, OH	1	50	42,480	14,077	67
CARGILL DETROIT CORPORATION CLAWSON, MI	5	40	165,288	23,836	86
CHEVRON CORPORATION SAN FRANCISCO, CA	1	50	56,216	72,044	-28
COURTAULDS FIBERS AXIS, AL	1	***	0	3,250	---
CYTEC INDUSTRIES WEST PATERSON, NJ	3	50	226,059	56,230	75

Plastic Resin and Manmade Fiber

Compliance Activities and Initiatives

Parent Company (Headquarters Location)	Company- Owned Facilities Reporting 33/50 Chemicals	Company- Wide % Reduction Goal ¹ (1988 to 1995)	1988 TRI Releases and Transfers of 33/50 Chemicals (pounds)	1994 TRI Releases and Transfers of 33/50 Chemicals (pounds)	Actual % Reduction for Facilities (1988-1994)
DOCK RESINS CORPORATION LINDEN, NJ	1	***	10,100	2,370	77
DOW CHEMICAL COMPANY MIDLAND, MI	20	50	6,202,765	1,761,522	72
E. I. DU PONT DE NEMOURS & CO WILMINGTON, DE	2	50	599,530	176,040	71
ETHYL CORPORATION RICHMOND, VA	1	46	29,174	0	100
EXXON CORPORATION IRVING, TX	3	50	10,548	11,696	-11
FINA INC DALLAS, TX	1	40	0	294	----
GENERAL ELECTRIC COMPANY FAIRFIELD, CT	6	50	7,710,278	1,798,408	77
GEORGIA-PACIFIC CORPORATION ATLANTA, GA	1	50	0	35	---
GLASGO PLASTICS INC SPRINGFIELD, OH	1	50	12,630	0	100
GLOBE MANUFACTURING CO FALL RIVER, MA	1	45	957,417	161,523	83
GRIFFITH POLYMERS HILLSBORO, OR	1	**	29,491	0	100
H & N CHEMICAL CO INC TOTOWA, NJ	1	***	10,700	2,807	74
HERCULES INCORPORATED WILMINGTON, DE	3	50	551,064	137,808	75
HERESITE PROTECTIVE COATINGS MANITOWOC, WI	1	50	2,100	0	100
HOECHST CELANESE CORPORATION CORPUS CHRISTY, TX	21	50	4,836,469	1,463,490	70
ILLINOIS TOOL WORKS INC GLENVIEW, IL	1	***	0	500	---
INTERNATIONAL PAPER COMPANY PURCHASE, NY	3	50	138,072	531,258	-285
JAMES RIVER CORP VIRGINIA RICHMOND, VA	1	53	0	0	---
LIBERTY POLYGLAS INC WEST MIFFLIN, PA	1	*	48,401	20,295	58
LYONDELL PETROCHEMICAL CO HOUSTON, TX	1	57	6,901	0	100
MILES INC PITTSBURGH, PA	20	37	2,069,780	1,410,749	32

Plastic Resin and Manmade Fiber

Compliance Activities and Initiatives

Parent Company (Headquarters Location)	Company- Owned Facilities Reporting 33/50 Chemicals	Company- Wide % Reduction Goal ¹ (1988 to 1995)	1988 TRI Releases and Transfers of 33/50 Chemicals (pounds)	1994 TRI Releases and Transfers of 33/50 Chemicals (pounds)	Actual % Reduction for Facilities (1988-1994)
MOBIL CORPORATION FAIRFAX, VA	1	50	11,922	800	93
MONSANTO COMPANY SAINT LOUIS, MO	19	25	5,554,821	1,977,399	64
MORTON INTERNATIONAL INC CHICAGO, IL	1	20	0	0	---
NEWPORT ADHESIVES & COMPOSITES FOUNTAIN VALLEY, CA	1	50	139,000	0	100
NORTH AMERICAN PLASTICS INC. PRAIRIE, MS	2	*	4	12	-200
OCCIDENTAL PETROLEUM CORP LOS ANGELES, CA	6	19	1,670,197	702,818	58
PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OK	1	50	0	168	---
PLASTICS ENGINEERING COMPANY SHEBOYGAN, WI	1	*	3,685	0	100
PPG INDUSTRIES INC PITTSBURGH, PA	2	50	580,992	161,719	72
PREMIX INC N KINGSVILLE, OH	2	23	41,200	750	98
QUANTUM CHEMICAL CORPORATION ISELIN, NJ	7	50	391,086	177,588	55
RANBAR TECHNOLOGY INC GLENSHAW, PA	1	52	26,900	5,693	79
REVLIS CORPORATION AKRON, OH	1	50	1,500	1,870	-25
REXENE CORPORATION DALLAS, TX	1	50	347,520	103,401	70
ROGERS CORPORATION ROGERS, CT	5	***	243,173	82,483	66
ROHM AND HAAS COMPANY PHILADELPHIA, PA	3	50	319,380	37,660	88
SARTORIUS NORTH AMERICA INC BRENTWOOD, NY	1	50	377,320	77,750	79
SOLVAY AMERICA INC HOUSTON, TX	2	*	9,800	21,000	-114
TEXTILE RUBBER & CHEMICAL CO DALTON, GA	1	*	7,150	0	100
UNION CAMP CORPORATION WAYNE, NJ	1	50	136,301	1,434	99

Parent Company (Headquarters Location)	Company- Owned Facilities Reporting 33/50 Chemicals	Company- Wide % Reduction Goal ¹ (1988 to 1995)	1988 TRI Releases and Transfers of 33/50 Chemicals (pounds)	1994 TRI Releases and Transfers of 33/50 Chemicals (pounds)	Actual % Reduction for Facilities (1988-1994)
UNION CARBIDE CORPORATION DANBURY, CT	2	54	810,702	1,337	100
UNOCAL CORPORATION LOS ANGELES, CA	1	50	44,750	0	100
VALSPAR CORPORATION MINNEAPOLIS, MN	4	50	111,244	71,238	36
VISTA CHEMICAL COMPANY HOUSTON, TX	5	50	553,331	61,068	89
W R GRACE & CO INC BOCA RATON, FL	1	50	10,980	43,300	-294
ZENECA HOLDINGS INC WILMINGTON, DE	1	*	2,639	1,774	33
TOTAL	209		38,468,090	12,688,942	39

Source: U.S. EPA 33/50 Program Office, 1996.

¹ Company-Wide Reduction Goals aggregate all company-owned facilities which may include facilities not manufacturing plastic resins or manmade fibers.

* = Reduction goal not quantifiable against 1988 TRI data.

** = Use reduction goal only.

*** = No numeric reduction goal.

--- = Actual reduction not quantifiable against 1988 TRI data.

Environmental Leadership Program

The Environmental Leadership Program (ELP) is a national initiative developed by EPA that focuses on improving environmental performance, encouraging voluntary compliance, and building working relationships with stakeholders. EPA initiated a one year pilot program in 1995 by selecting 12 projects at industrial facilities and federal installations that demonstrate the principles of the ELP program. These principles include: environmental management systems, multimedia compliance assurance, third-party verification of compliance, public measures of accountability, community involvement, and mentor programs. In return for participating, pilot participants receive public recognition and are given a period of time to correct any violations discovered during these experimental projects.

EPA is making plans to launch its full-scale Environmental Leadership Program in 1997. The full-scale program will be facility-based with a 6-year participation cycle. Facilities that meet certain requirements will be eligible to participate, such as having a community outreach/employee involvement programs and an environmental management system (EMS) in place for 2

years. (Contact: <http://es.inel.gov/elp> or Debby Thomas, ELP Deputy Director, at 202-564-5041)

Project XL

Project XL was initiated in March 1995 as a part of President Clinton's *Reinventing Environmental Regulation* initiative. The projects seek to achieve cost effective environmental benefits by providing participants regulatory flexibility on the condition that they produce greater environmental benefits. EPA and program participants will negotiate and sign a Final Project Agreement, detailing specific environmental objectives that the regulated entity shall satisfy. EPA will provide regulatory flexibility as an incentive for the participants' superior environmental performance. Participants are encouraged to seek stakeholder support from local governments, businesses, and environmental groups. EPA hopes to implement fifty pilot projects in four categories, including industrial facilities, communities, and government facilities regulated by EPA. Applications will be accepted on a rolling basis. For additional information regarding XL projects, including application procedures and criteria, see the May 23, 1995 Federal Register Notice. (Contact: Fax-on-Demand Hotline 202-260-8590, Web: <http://www.epa.gov/ProjectXL>, or Christopher Knopes at EPA's Office of Policy, Planning and Evaluation 202-260-9298)

Climate Wise Program

Climate Wise is helping US industries turn energy efficiency and pollution prevention into a corporate asset. Supported by the technical assistance, financing information and public recognition that Climate Wise offers, participating companies are developing and launching comprehensive industrial energy efficiency and pollution prevention action plans that save money and protect the environment. The nearly 300 Climate Wise companies expect to save more than \$300 million and reduce greenhouse gas emissions by 18 million metric tons of carbon dioxide equivalent by the year 2000. Some of the actions companies are undertaking to achieve these results include: process improvements, boiler and steam system optimization, air compressor system improvements, fuel switching, and waste heat recovery measures including cogeneration. Created as part of the President's Climate Change Action Plan, Climate Wise is jointly operated by the Department of Energy and EPA. Under the Plan many other programs were also launched or upgraded including Green Lights, WasteWi\$e and DoE's Motor Challenge Program. Climate Wise provides an umbrella for these programs which encourage company participation by providing information on the range of partnership opportunities available. (Contact: Pamela Herman, EPA, 202-260-4407 or Jan Vernet, DoE, 202-586-4755)

Energy Star Buildings Program

EPA's ENERGY STAR Buildings Program is a voluntary, profit-based program designed to improve the energy-efficiency in commercial and industrial buildings. Expanding the successful Green Lights Program, ENERGY STAR Buildings was launched in 1995. This program relies on a 5-stage strategy designed to maximize energy savings thereby lowering energy bills, improving occupant comfort, and preventing pollution -- all at the same time. If implemented in every commercial and industrial building in the United States, ENERGY STAR Buildings could cut the nation's energy bill by up to \$25 billion and prevent up to 35% of carbon dioxide emissions. (This is equivalent to taking 60 million cars off the road). ENERGY STAR Buildings participants include corporations; small and medium sized businesses; local, federal and state governments; non-profit groups; schools; universities; and health care facilities. EPA provides technical and non-technical support including software, workshops, manuals, communication tools, and an information hotline. EPA's Office of Air and Radiation manages the operation of the ENERGY STAR Buildings Program. (Contact: Green Light/Energy Star Hotline at 1-888-STAR-YES or Maria Tikoff Vargas, EPA Program Director at 202-233-9178 or visit the ENERGY STAR Buildings Program website at <http://www.epa.gov/appdstar/buildings/>)

Green Lights Program

EPA's Green Lights program was initiated in 1991 and has the goal of preventing pollution by encouraging U.S. institutions to use energy-efficient lighting technologies. The program saves money for businesses and organizations and creates a cleaner environment by reducing pollutants released into the atmosphere. The program has over 2,345 participants which include major corporations, small and medium sized businesses, federal, state and local governments, non-profit groups, schools, universities, and health care facilities. Each participant is required to survey their facilities and upgrade lighting wherever it is profitable. As of March 1997, participants had lowered their electric bills by \$289 million annually. EPA provides technical assistance to the participants through a decision support software package, workshops and manuals, and an information hotline. EPA's Office of Air and Radiation is responsible for operating the Green Lights Program. (Contact: Green Light/Energy Star Hotline at 1-888-STAR-YES or Maria Tikoff Vargar, EPA Program Director, at 202-233-9178 the)

WasteWi\$e Program

The WasteWi\$e Program was started in 1994 by EPA's Office of Solid Waste and Emergency Response. The program is aimed at reducing municipal solid wastes by promoting waste prevention, recycling collection

and the manufacturing and purchase of recycled products. As of 1997, the program had about 500 companies as members, one third of whom are Fortune 1000 corporations. Members agree to identify and implement actions to reduce their solid wastes setting waste reduction goals and providing EPA with yearly progress reports. To member companies, EPA, in turn, provides technical assistance, publications, networking opportunities, and national and regional recognition. (Contact: WasteWi\$e Hotline at 1-800-372-9473 or Joanne Oxley, EPA Program Manager, 703-308-0199)

NICE³

The U.S. Department of Energy is administering a grant program called The National Industrial Competitiveness through Energy, Environment, and Economics (NICE³). By providing grants of up to 45 percent of the total project cost, the program encourages industry to reduce industrial waste at its source and become more energy-efficient and cost-competitive through waste minimization efforts. Grants are used by industry to design, test, and demonstrate new processes and/or equipment with the potential to reduce pollution and increase energy efficiency. The program is open to all industries; however, priority is given to proposals from participants in the forest products, chemicals, petroleum refining, steel, aluminum, metal casting and glass manufacturing sectors. (Contact: <http://www.oit.doe.gov/access/nice3>, Chris Sifri, DOE, 303-275-4723 or Eric Hass, DOE, 303-275-4728)

Design for the Environment (DfE)

DfE is working with several industries to identify cost-effective pollution prevention strategies that reduce risks to workers and the environment. DfE helps businesses compare and evaluate the performance, cost, pollution prevention benefits, and human health and environmental risks associated with existing and alternative technologies. The goal of these projects is to encourage businesses to consider and use cleaner products, processes, and technologies. For more information about the DfE Program, call (202) 260-1678. To obtain copies of DfE materials or for general information about DfE, contact EPA's Pollution Prevention Information Clearinghouse at (202) 260-1023 or visit the DfE Website at <http://es.inel.gov/dfe>.

VIII.C. Trade Association/Industry Sponsored Activity

VIII.C.1. Environmental Programs

The Global Environmental Management Initiative (GEMI) is made up of a group of leading companies dedicated to fostering environmental excellence by business. GEMI promotes a worldwide business ethic for environmental management and sustainable development, to improve the environmental performance of business through example and leadership. In 1994, GEMI's membership consisted of about 30 major corporations including Union Carbide Corporation and Dow Chemical.

Center for Waste Reduction Technologies under the aegis of the American Institute of Chemical Engineers sponsored research on innovative technologies to reduce waste in the chemical processing industries. The primary mechanism is through funding of academic research.

The **American Plastics Council** is working on a life-cycle study to examine the emissions released from plastics and resins manufacturing facilities. The study will compare emissions from plastics and resins manufacturing with manufacturing of other materials, such as wood products.

The **National Science Foundation** and the **Environmental Protection Agency's** Office of Pollution Prevention and Toxics signed an agreement in January of 1994 to coordinate the two agencies' programs of **basic research related to pollution prevention**. The collaboration will stress research in the use of less toxic chemical and synthetic feedstocks, use of photochemical processes instead of traditional ones that employ toxic reagents, use of recyclable catalysts to reduce metal contamination, and use of natural feedstocks when synthesizing chemicals in large quantities.

The **Chemical Manufacturer's Association** funds research on issues of interest to their members particularly in support of their positions on proposed or possible legislation. They recently funded a study to characterize the environmental fate of organochlorine compounds.

The **Responsible Care® Initiative** of the Chemical Manufacturer's Association requires all members and partners to continuously improve their health, safety, and environmental performance in a manner that is responsive to the public. Launched in 1988, the Responsible Care® concepts are now being applied in 36 countries around the world. Responsible Care® is a comprehensive, performance-oriented initiative composed of ten progressive Guiding Principles and six board Codes of Management Practices. These Management Practices cover all aspects of the chemical industry's operations, from research to manufacturing, distribution, transportation, sales and

marketing, and to downstream users of chemical products. Through Responsible Care®, CMA members and partners gain insight from the public through, among other means, a national Public Advisory Panel and over 250 local Community Advisory Panels. This, coupled with the fact that participation in Responsible Care® is an obligation of membership with the Chemical Manufacturer's Association, make this performance improvement initiative unique. The Synthetic Organic Chemical Manufacturer's Association whose membership consists of smaller batch and custom chemical manufacturers with typically fewer than 50 employees and less than \$50 million in annual sales, encourages its members to achieve continuous performance improvement in their health, safety, and environmental programs through implementation of the chemical industry's Responsible Care® initiative. SOCMA is a partner in Responsible Care®.

The Society of the Plastics Industry has implemented two programs aimed at reducing plastic pellet loss. In 1991, SPI's Polymeric Materials Producers Division developed and endorsed a "Pellet Retention Environmental Code." Companies that sign the code commit themselves to the total containment of plastic pellets throughout the pellets' lifespan and to operating in full compliance with environmental laws and regulations pertaining to pellet containment (SPI, 1994). In 1992, SPI expanded the program to include a processor's pledge to uphold six principles to prevent the loss of resin pellets into the environment.

ISO 9000 is a series of international total quality management guidelines. After a successful independent audit of their management plans, firms are qualified to be ISO 9000 registered. In June of 1993, the International Standards Organization created a technical committee to work on new standards for environmental management systems.

VIII.C.2. Summary of Trade Associations

American Chemical Society
1155 16th Street, NW
Washington, D.C. 20036
Phone: 202-872-4600
Fax: 202-872-4615

Members: 150,000 individuals
Staff: 1950
Budget: \$192,000,000

The American Chemical Society (ACS) has an educational and research focus. The ACS produces approximately thirty different industry periodicals and research journals, including *Environmental Science and Technology* and *Chemical Research in Toxicology*. In addition to publishing, the ACS presently conducts studies and surveys; legislation monitoring, analysis, and reporting; and operates a variety of educational programs. The ACS library and on-line information services are extensive. Some available on-line

services are *Chemical Journals Online*, containing the full text of 18 ACS journals, 10 Royal Society of Chemistry journals, five polymer journals and the Chemical Abstracts Service, CAS, which provides a variety of information on chemical compounds. Founded in 1876, the ACS is presently comprised of 184 local groups and 843 student groups nationwide.

American Fiber Manufacturers
Association, Inc.
1150- 17th Street, NW, Suite 310
Washington, DC 22036
Phone: 202-296-6508
Fax: 202-296-3052
E-mail: afma@aol.com

Members: 18 companies
Staff: 6
Budget: \$2,000,000

Previously known as the Man-Made Fiber Producers Association up until 1988, the American Fiber Manufacturers Association, Inc. (AFMA) is a domestic trade organization representing U.S. producers of more than 90 percent of domestic production of manufactured fibers, filaments, and yarns. AFMA manages programs on government relations, international trade policy, the environment, technical issues, and educational services. Committees of experts from member companies work on each of these subjects. The group publishes fact books and economic profiles, *Fiber Organon*, and recently published an environmental life cycle study.

Chemical Manufacturers Association
1300 Wilson Boulevard
Arlington, VA 22209
Phone: 703-741-5224
Fax: 703-741-6224

Members: 185 companies
Staff: 246
Budget: \$36,000,000

A principal focus of the Chemical Manufacturer's Association (CMA) is on regulatory issues facing chemical manufacturers at the local, state, and federal levels. At its inception in 1872, the focus of CMA was on serving chemical manufacturers through research. Research is still ongoing at CMA. Member committees, task groups, and work groups routinely sponsor research and technical data collection that is then provided to the public in support of CMA's advocacy. Much additional research takes place through the CHEMSTAR® program. CHEMSTAR® consists of a variety of self-funded panels working on single-chemical research agendas. This research fits within the overall regulatory focus of CMA; CHEMSTAR® study results are provided to both CMA membership and regulatory agencies. Other initiatives include the Responsible Care® program, which includes six codes of management practices designed to go beyond simple regulatory

compliance. CMA is currently developing measurement and appropriate verification systems for these codes. CMA also conducts workshops and technical symposia, promotes in-plant safety, operates a chemical emergency center (CHEMTREC®) which offers guidance in chemical emergency situations, and operates the Chemical Referral Center which provides chemical health and safety information to the public. Publications include the annual *U.S. Chemical Industry Statistical Handbook*, containing detailed data on the industry; *Responsible Care in Action*, the 1993-94 progress report on implementing Responsible Care®; and *Preventing Pollution in the Chemical Industry: A Progress Report (1988-1993)*, summarizing waste generation and reduction data for the years 1988-93. CMA holds an annual meeting for its membership in White Sulphur Springs, WV.

Polyurethane Manufacturers

Association

800 Roosevelt Road, Bldg.C, Ste. 20

Glen Ellyn, IL 60137-5833

Phone: 708-858-2670

Fax: 708-790-3095

Members: 116 companies

Staff: 4

Budget: \$500,000

This group includes manufacturers, suppliers, distributors and sales agents of raw materials, additives, or processing equipment; processors of solid cast, microcellular, RIM and thermoplastic urethane elastomers; and individuals or companies providing publishing, education, research, or consulting services to the industry. The association publishes the bimonthly *Polytopics*.

Society of Plastics Engineers

14 Fairfield Drive

Brookfield, CT 06804-0403

Phone: 203-775-0471

Fax: 203-775-8490

Members: 37,000 individuals

Staff: 38

Budget: \$6,100,000

Society of Plastics Engineers (SPE) is a group dedicated to promoting the knowledge and education of plastics and polymers worldwide and strives to be the leading technology society for the plastics industry. SPE is made up of over 37,500 members around the world involved in engineering, design, production and processing, research and development, consulting, marketing and sales, purchasing, education, and all levels of management. SPE publishes journals, including *Plastics Engineering* and *Polymer Engineering and Science*, and sponsors a large range of technical conferences on polymer and plastics processing.

Society of the Plastics Industry, Inc.

1801 K Street, NW, Suite 600K

Washington, DC 20006-1301

Phone: 202-974-5200

Fax: 202-296-7005

Web: www.socplas.org

Members: 1900 companies

Staff: 130

Budget: \$30,000,000

SPI is a principal trade association for the U.S. plastics industry. Comprised of 2,000 members, SPI has representatives from all segments of the plastics industry, including materials suppliers, processors, machinery manufacturers, moldmakers, distributors, and other industry-related groups and individuals. SPI publishes an annual report on market trends called *Facts and Figures of the U.S. Plastics Industry*. In addition to its general services -- Government and Technical Affairs, Communications, Trade Shows, Membership, and Finance Administration -- SPI has 28 business units as well as numerous key services offering programs specifically geared to the interests of particular industry segments. These special purpose groups include the Degradable Polymers Council, which acts as a clearinghouse for research in the degradable plastics industry, and the Polymeric Materials Producers Division, which includes manufacturers of basic polymers or prepolymers for the plastics industry. Other industry segment groups which focus on particular plastic resins include the Fluoropolymers Division, Naphthalate Polymers Council, the Phenolic Division, the Polyurethane Division, the Styrene Information and Research Center, and the Vinyl Institute. SPI also has an affiliation with the American Plastics Council which includes U.S. resin and monomer producers, plastics processors, and suppliers. Contact information for these groups is listed below.

American Plastics Council, Red Cavaney, President, 202-974-5400

Composites Institute, Catherine Randazzo, Executive Director, 212-351-5410

Degradable Polymers Council, John Malloy, Director of Packaging Services,
202-974-5245, dpc@socplas.org

Fluoropolymers Division, Allen Weidman, Director, 202-974-5233

Naphthalate Polymers Council, John Malloy, Director of Packaging Services, 202-974-5245

Phenolic Division, Allen Weidman, Director, 202-974-5233

Polymeric Materials Producers Division, Betsy Shirley, Executive Director, 202-974-5319,
pmd@socplas.org

Polyurethane Division, Fran Lichtenberg, Executive Director, 212-351-5242,
polyu@socplas.org

Styrene Information and Research Center, Betsy Shirley, Executive Director, 202-974-5319
sirc@socplas.org

The Vinyl Institute, Robert Burnett, Executive Director, 201-898-6633, vi@socplas.org

Synthetic Organic Chemicals
Manufacturer's Association
1100 New York Avenue, NW
Washington, D.C. 20005
Phone: 202-414-4100
Fax: 202-289-8584

Members: 250
Staff: 50
Budget: \$12,000,000

Synthetic Organic Chemicals Manufacturer's Association (SOCMA) is the national trade association representing the legislative, regulatory, and commercial interests of some 250 companies that manufacture, distribute, or market organic chemicals. Most of SOCMA's members are batch and custom chemical manufacturers who are the highly innovative, entrepreneurial and customer-driven sector of the U.S. chemical industry. The majority of SOCMA's members are small businesses with annual sales of less than \$50 million and fewer than 50 employees. SOCMA assists its members in improving their environmental, safety, and health performance through various programs focusing on continuous improvement. A bi-monthly newsletter provides information on legislative and regulatory developments, as well as on education and training opportunities. SOCMA holds an annual meeting in May and also sponsors INFORMEX, the largest custom chemical trade show in the U.S. In addition, SOCMA's Association Management Center includes two dozen self-funded groups that focus on single chemical issues.

IX. CONTACTS/ACKNOWLEDGMENTS/REFERENCES

For further information on selected topics within the plastic resin and manmade fiber industries, a list of publications and contacts are provided below.

Contacts³

Name	Organization	Telephone	Subject
Sally Sasnett	EPA, Office of Compliance	202-564-7074	Compliance assistance
Bob Rosensteel	EPA, OAQPS	919-541-5608	Industrial processes and regulatory requirements (CAA)
George Jett	EPA, Office of Water	202-260-7151	Industrial processes and effluent guidelines
Bob Barker	AFMA	202-296-6508	Industrial processes
Lucinda Schofer	CMA	703-741-5231	Industrial resources and regulatory requirements
David Gustafson	Dow Chemical	517-636-2953	Regulatory requirements and polyethylene manufacture
John Dege	Du Pont	302-773-0900	Regulatory requirements and synthetic fiber manufacture
Bob Lambour	Exxon	713-870-6017	Regulatory requirements, polyethylene and polypropylene manufacture
Brent Smith	NC State	919-515-6548	Manmade fibers processes and pollution prevention methods
Jim Kachtick	Occidental Chemical	713-215-7602	Regulatory requirements and PVC manufacture
Lynne Harris	SPI	202-974-5217	Industrial resources and regulatory requirements

AFMA: American Fiber Manufacturers Association

CMA: Chemical Manufacturers Association

CAA: Clean Air Act

OAQPS: Office of Air Quality Planning and Standards

SPI: Society of the Plastics Industry

³ Many of the contacts listed below have provided valuable background information and comments during development of this document. EPA appreciates this support and acknowledges that the individuals listed do not necessarily endorse all statements made within this notebook.

References**Section II - Introduction**

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- 2) Brydson, J.A., *Plastics Materials*, 6th edition, Butterworth-Heinemann Ltd., Oxford, 1995.
- 3) Linton, G. E. *Natural and Manmade Textile Fibers: Raw material to finished fabric*. Duell, Sloan and Pearce, New York, 1966.
- 4) *Modern Plastics Encyclopedia*, Mid-November 1994 Issue, volume 71, no. 12, McGraw-Hill, Inc., New York, 1994.
- 5) Society of the Plastics Industry, Inc., *Facts and Figures of the U.S. Plastics Industry*, 1995 edition, SPI, Washington, DC, 1995.
- 6) U.S. Department of Commerce, *United States Industrial Outlook 1994*, US Department of Commerce, Washington, DC, 1994.
- 7) U.S. Environmental Protection Agency, *Best Management Practices for Pollution Prevention in the Textile Industry*, EPA, Office of Research and Development, Washington, DC., September, 1995.
- 8) U.S. International Trade Commission, *Industry and Trade Summary: Manmade Fibers*, US ITC, Washington, DC., April, 1995, USITC Publication #2874.
- 9) U.S. Office of Management and Budget, *Standard Industrial Classification Manual*, U.S. OMB, 1987.
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Section III - Industrial Process Description

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- 3) Chemical Manufacturers Association, *CMA Waste Minimization Resource Manual*, CMA, Washinton, DC, 1989.

- 4) Grayson, M. (ed.), *Encyclopedia of Textiles, Fibers, and Nonwoven Fabrics*, John Wiley and Sons, New York, 1984.
- 5) Kent, J.A. (ed.), *Riegel's Handbook of Industrial Chemistry*, Van Nostrand Reinhold, New York, 1992.
- 6) Kroschwitz, J.I. (ed.), *Encyclopedia of Polymer Science and Engineering*, volume 12, John Wiley and Sons, New York, 1986.
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- 8) Masters, G.M. *Introduction to Environmental Engineering and Science*. Prentice-Hall, Inc., New York, 1991.
- 9) McKetta, J.J. (ed.), *Encyclopedia of Chemical Processing and Design*, volume 39, Marcel Dekker, Inc., New York, 1992.
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- 11) Randall, P.M., "Pollution Prevention Strategies for Minimizing of Industrial Wastes in the Vinyl Chloride Monomer - Polyvinyl Chloride Industry," *Environmental Progress*, volume 13, no. 4, November, 1994.
- 12) Rodriguez, F., *Principles of Polymer Systems*, fourth edition, Taylor and Francis, Washington, DC., 1996.
- 13) Smith, W.M. (ed.), *Manufacture of Plastics: Volume 1*, Reinhold Publishing Corporation, New York, 1964.
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- 15) Society of the Plastics Industry, *Operation Clean Sweep: A Manual on Preventing Pellet Loss*. SPI, Washington, DC, 1994.
- 16) Synthetic Organic Chemical Manufacturers Association, *SOCMA Pollution Prevention Study*. Prepared for SOCMA, Washington, DC, January 1993.
- 17) U.S. Environmental Protection Agency, *Best Management Practices for Pollution Prevention in the Textile Industry*, EPA, Office of Research and Development, September, 1995.
- 18) U.S. Environmental Protection Agency, *AP-42*, EPA, Office of Air and Radiation, 1993.

- 19) U.S. Environmental Protection Agency, *Plastic Pellets in the Aquatic Environment: Sources and Recommendations*, EPA, Office of Water, Washington, DC., December, 1992.
- 20) U.S. Environmental Protection Agency, *Development Document for Effluent Limitations Guidelines and Standards for the Organic Chemicals, Plastics, and Synthetic Fibers, Point Source Category, Volumes 1 and 2*, EPA, Office of Water Regulations and Standards, October 1987.
- 21) U.S. Environmental Protection Agency, *Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products*, EPA, Office of Air Quality Planning and Standards, 1978.
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- 2) Chemical Manufacturers Association, *Preventing Pollution in the Chemical Industry: Five Years of Progress*, CMA, Washington, DC, 1992.
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- 15) *New Value Packing Material Reduces Leaking Control Valves at Texas Eastman in Longview*, <http://es.inel.gov/studies/eastx-d.html>.
- 16) *Fact Sheet: Source Reduction and Recycling Lead to P2 Efforts*, <http://es.inel.gov/techinfo/facts/cma/cma-fs3.html>.
- 17) *On-Site Recycle and Reuse of Alcohol Wash Solution*, <http://es.inel.gov/studies/cs435.html>.
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