ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 463

[FRL 2513-1]

Plastics Molding and Forming Point Source Category; Effluent Limitations Guidelines, Pretreatment Standards, and New Source Performance Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed regulation.

SUMMARY: EPA proposes a regulation to limit effluent discharges to waters of the United States and limit the introduction of pollutants into publicly owned treatment works from plants engaged in plastics molding and forming. The purposes of this proposal are to provide effluent limitations guidelines based on "best practicable technology," "best available technology," and "best conventional technology"; to establish new source performance standards; and to address whether to establish pretreatment standards for new and existing sources under the Clean Water Act. After considering comments received in response to this proposal, EPA will promulgate a final rule.

DATE: Comments on this proposal must be submitted by April 16, 1984.

ADDRESS: Send comments to: Mr. Robert M. Southworth, Effluent Guidelines Division (WH-552), Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, Attention: EGD Docket Clerk, Proposed Plastics Molding and Forming Rule (WH-552). The supporting information and all comments on this proposal will be available for inspection and copying at this EPA Public Information Reference Unit, Room 2404 (EPA Library Rear). The EPA public information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying. Copies of technical documents may be obtained from the Distribution Officer at the above address or by calling (202) 382-7115. The economic analysis may be obtained from Ms. Ann M. Watkins, Economic Analysis Staff (WH-586), Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, or by calling (202) 382-5387.

FOR FURTHER INFORMATION CONTACT: Technical information may be obtained from Mr. Robert M. Southworth at the address listed above or by calling (202) 382-7150. Economic information may be obtained from Ms. Ann M. Watkins at the above address or by calling (202) 382-5387.

SUPPLEMENTARY INFORMATION:

Overview

This preamble describes the legal authority and background, the technical and economic bases, and other aspects of the proposed regulation. The abbreviations, acronyms, and other terms used in the Supplementary Information section are defined in Appendix A to this notice.

This proposed regulation is supported by three major documents available from EPA. Analytical methods are discussed in *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants.* EPA's technical conclusions are detailed in the *Development Document for Proposed Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Plastics Molding and Forming Point Source Category.* The Agency's economic analysis is found in *Economic Impact Analysis of Proposed Effluent Limitations and Standards for the Plastics Molding and Forming Industry* (EPA 440/2-84-001).

This proposed rule does not contain any information collection requirements subject to Office of Management and Budget (OMB) review under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

Organization of This Notice

I. Legal Authority

The regulation described in this notice is proposed under authority of Sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act (the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1251 *et seq.*, as amended by the Clean Water Act of 1977, Pub. L. 95-217) (the "Act"). This regulation is also proposed in response to the Settlement Agreement in *Natural Resources Defense Council, Inc.* v. *Train,* 8 ERC 2120 (D.D.C. 1976), *modified* 12 ERC 1833 (D.D.C. 1979), *modified* by orders dated October 26, 1982, August 2, 1983, and January 6, 1984.

II. Background

A. The Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 established a comprehensive program to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," Section 101(a). By July 1, 1977, existing industrial dischargers were required to achieve "effluent limitations requiring the application of the best practicable control technology currently available" (BPT"), Section 301(b)(1)(A). By July 1, 1983, these dischargers were required to achieve "effluent limitations requiring the application of the best available technology economically achievable—which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants" ("BAT"), Section 301(b)(2)(A). New industrial

direct dischargers were required to comply with Section 306 new source performance standards ("NSPS") based on best available demonstrated technology; and new and existing dischargers to publicly owned treatment works ("POTW") were subject to pretreatment standards under Sections 307(b) and (c) of the Act. The requirements for direct dischargers were to be incorporated into National Pollutant Discharge Elimination System (NPDES) permits issued under Section 402 of the Act. Pretreatment standards were made enforceable directly against dischargers to POTW (indirect dischargers).

Although Section 402(a)(1) of the 1972 Act authorized the setting of requirements for direct dischargers on a case-by-case basis, Congress intended that, for the most part, control requirements be based on regulations promulgated by the Administrator of EPA. Section 304(b) of the Act required the Administrator to promulgate regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of BPT and BAT. Moreover, Sections 304(c) and 306 of the Act required promulgation of regulations for NSPS and Sections 304(f), 307(b), and 307(c) required promulgation of regulations for pretreatment standards. In addition to these regulations for designated industry categories, Section 307(a) of the Act required the Administrator to promulgate effluent standards applicable to all dischargers of toxic pollutants. Finally, Section 501(a) of the Act authorized the Administrator to prescribe any additional regulations "necessary to carry out his functions" under the Act.

EPA was unable to promulgate many of these regulations by the dates contained in the 1972 Act. In 1976, EPA was sued by several environmental groups, and in settlement of this lawsuit, EPA and the plaintiffs executed a "Settlement Agreement" that was approved by the Court. This Agreement required EPA to develop a program and adhere to a schedule for promulgating for 21 major industries BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 65 "priority" toxic compounds and classes of compounds. *See, Natural Resources Defense Council, Inc.* v. *Train*, 8 ERC 2120 (D.D.C. 1976), *modified*, 12 ERC 1833 (D.D.C. 1979), *modified* by orders dated October 26, 1982, August 2, 1983, and January 6, 1984.

On December 27, 1977 the President signed into law the Clean Water Act of 1977. Although this law makes several important changes in the Federal water pollution control program, its most significant feature is its incorporation into the Act of several of the basic elements of the Settlement Agreement program for toxic pollutant control. Sections 301(b)(2)(A) and 301(b)(2)(C) of the Act now require the achievement by July 1, 1984, of effluent limitations guidelines requiring application of BAT for "toxic" pollutants, including the 65 "priority" toxic compounds and classes of compounds that Congress declared "toxic" under Section 307(a) of the Act. Likewise, EPA's programs for new source performance standards and pretreatment standards are now aimed principally at toxic pollutant controls. Moreover, to strengthen the toxics control program, Section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" ("BMP") to prevent the release of toxic and hazardous pollutants from plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage associated with, or ancillary to, the industrial manufacturing or treatment process.

The 1977 Amendments added Section 301(b)(2)(E) to the Act establishing "best conventional pollutant control technology" ("BCT") for discharges of conventional pollutants from existing industrial point sources. Conventional pollutants are those defined in Section 304(a)(4) [biological oxygen demanding pollutants (BOD), total suspended solids (TSS), fecal coliform, and pH], and any additional pollutants defined by the Administrator as "conventional" [oil and grease, 44 FR 44501, July 30, 1979.]

BCT is not an additional control but replaces BAT for the control of conventional pollutants. In addition to other factors specified in Section 304(b)(4)(B), the Act requires that BCT limitations be assessed in light of a two part "cost-reasonableness" test. *See, American Paper Institute* v. *EPA*, 660 F.2d 954 (4th Cir. 1981). The first test compares the cost for private industry to reduce its conventional pollutants with the costs to publicly owned treatment works for similar levels of reduction in their discharge of these pollutants. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find that the BCT limitations are "reasonable" under both tests before they are established. In no case may BCT be less stringent than BPT.

EPA published its methodology for carrying out the BCT analysis on August 29, 1979 (44 FR 50732). In the case mentioned above, the Court of Appeals ordered EPA to correct data errors underlying EPA's calculation of the first test and to apply the second cost test. (EPA had argued that a second cost test was not required.)

On October 29, 1982, the Agency proposed a revised BCT methodology (47 FR 49176). This methodology was used to determine whether costs of additional controls for the conventional pollutants beyond BPT in this category are "reasonable."

For nonconventional pollutants, Sections 301(b)(2)(A) and (b)(2)(F) require achievement of BAT effluent limitations guidelines within three years after the limitations are established or July 1, 1984, whichever is later, but not later than July 1, 1987.

The purpose of this proposed regulation is to provide effluent limitations guidelines for BPT, BAT, and BCT; to establish NSPS; and to address whether to establish pretreatment standards for existing sources (PSES) and pretreatment standards for new sources (PSNS) under Sections 301, 304, 306, 307, 308, and 501 of the Clean Water Act.

B. Prior EPA Regulations

EPA has not previously proposed or promulgated regulations for the plastics molding and forming (PM&F) point source category.

C. Overview of the Industry

The plastic molding and forming industry is a large and diversified industry with many different types of production processes that process various combinations of raw materials.

Plants in the plastics molding and forming category are generally included within SIC 3079 of the *Standard Industrial Classification Manual* prepared in 1972 and supplemented in 1977 by the Office of Management and Budget, Executive Office of the President.

EPA estimates there are 10,260 plastics molding and forming (PM&F) plants distributed through out the United States. EPA further estimates that 1,898 of the 10,260 plants have 2,522 PM&F processes that use process water (i.e., they are wet). The 1,898 wet plants have 789 wet PM&F processes with direct discharges, 1,117 wet processes with indirect discharges, and 616 wet processes with no discharge.

The plastics molding and forming category consists of plants that blend, mold, form, or otherwise process a wide variety of plastic materials into intermediate or final plastic products. There are eight generic processes used to process plastic materials. They are:

1. Extrusion,
2. Molding,
3. Coating and laminating,
4. Thermoforming,
5. Calendering,
6. Casting,
7. Foaming, and
8. Cleaning and finishing.

Each of these processes is described briefly below including discussion of which PM&F processes use process water and the purpose of such use. In the context of this proposed rule, process water is defined as any raw, service, recycled, or reused water that contacts the plastic product or contacts shaping equipment surfaces, such as molds and mandrels, that are or have been in contact with the plastic product.

Only process water discharges are covered by this proposed rule. Noncontact cooling water is not process water and thus is not controlled by this proposed regulation. Permitting and control authroities will establish limitations for the discharge of noncontact cooling water and other nonprocess wastewater on a case-by-case basis.

Extrusion is the forcing of molten polymer through a shaping die to form products of uniform cross-sectional area such as pipe, tube, profile, sheet, and film. This process has several applications including pelletizing, the production of parisons (blow molding preforms) for later use, the production of finished and semi-finished products, and the coating of substrate materials. Process water is frequently used in extrusion processes to cool the plastic product.

Molding is the most common process used to produce finished or semi-finished products from plastic resins. Molded parts can be solid, hollow, or foamed. Plastic objects of almost any desired shape can be produced commercially by seven different types of molding processes. These are:

—Injection molding,
—Blow molding,
—Compression molding,
—Transfer molding,
—Expandable bead foam molding,
—Reaction injection molding, and
—Rotational molding

Process water may be used in injection, blow, compression, transfer, and expandable bead foam molding processes to cool or heat the molded product. This reduces the time that the product stays in the mold. Process water generally is not used in reaction injection and rotational molding processes. Usually, noncontact cooling water is used to cool the outside of the molds used in those processes.

Coating and laminating processes combine polymeric materials with other materials to produce products with special properties such as chemical resistance, toughness, humidity resistance, corrosion resistance, and electrical insulation. Heat is used in both processes. In addition to heat, lamination also requires high pressures.

Coating processes are classified into four types: plastisol coating, powder coating, spread coating, and extrusion coating. Process water may be used to cool the coated products.

Lamination processes can be classified into three types: flat sheet lamination, rod and tube lamination, and continuous lamination. Process water is generally not used in lamination processes.

Thermoforming involves the heating of thermoplastic sheet or film to a pliable form and forcing the heated thermoplastic around the contours of a mold. Vacuum, air pressure, or mechanical force aid in the forming of the product. Process water is usually not used in thermoforming processes. However, in some cases, the thermoformed product may be cooled by spraying it with process water.

Calendering is widely used in the plastics molding and forming category to produce uniform quality film and sheet at high production rates. Calendering processes squeeze pliable thermoplastic between a series of rolls to produce the polymer film and sheet, to emboss sheet and film, the perform compounding operations, and to coat textile and paper products. Process water is usually not used in calendering processes.

In the plastics molding and forming industry, the term casting is used rather lossely to describe a wide variety of processes. Casting involves using liquid plastic material at atmospheric pressure in a mold or on a mold surface. There are six casting processes: pot casting, slush and dip casting, chilled film casting, solvent casting, cell casting, and continuous casting. Process water may be used in pot and slush and dip casting processes to cool the plastic product. Process water is not used in chilled film, solvent, cell, and continuous casting processes.

During the solvent casting process, the solvent used to produce a slurry of the plastic material evaporates. The gases are captured and processed to recover the solvent. Wastewater is generated during the solvent recovery operation.

Foamed plastic products (often called cellular or expanded plastics) are made by adding a blowing agent to thermoplastics or thermosets to form a spongelike material. Blowing agents are either added to the raw plastic material and then vaporized or are generated as a by-product of a cure reaction. Foamed plastic products can be classified into one of three types: extruded thermoplastic foam, structural foam, or multicomponent thermoset foam. The first is an extrusion product while the other two are molded products. Process water may be used in foaming processes to cool the foamed product.

Products produced by the various molding and forming processes may require further processing to become useful end products. A cleaning or finishing process is used to produce the final product.

Cleaning processes consist of washing plastic products to remove residual mold release agents and other matter. Washing is generally divided into two segments: a detergent wash cycle and a rinse cycle for the removal of detergents and other foreign matter. Process water is used as the carrier solution in both washing and rinsing operations. Process equipment, such as molds, pots, and mandrels, are also washed in a cleaning process.

Finishing processes render the plastic products useful. There are three general types of finishing processes: machining, decorating, and assembling. Machining processes drill, cut, mill, and otherwise shape products to match final product specifications. Decorative finishes are applied to plastic parts by a variety of methods including painting, printing, hot stamping, and vacuum metallizing. Assembling involves joining two or more plastic parts by methods such as solvent welding, ultrasonic welding, or electronic heat sealing. Process water may be used in finishing processes to carry away waste plastic material or to lubricate the product.

In several instances, particular PM&F processes and the wastewater generated by these processes may fall within this and other industrial categories for which the Agency has established effluent limitations guidelines and standards. Thus, for the purpose of regulatory coverage, the Agency has separated each process to ensure that it is clearly subject to one set of effluent limitations guidelines and standards. Processes that coat a plastic material onto a substrate may fall within the definition of electroplating and metal finishing as defined in 40 CFR Parts 413 and 433 (see, 48 FR 32485; July 15, 1983). These coating operations are excluded from the effluent limitations guidelines and standards for the electroplating and metal finishing point source category and are included in the PM&F category. See 40 CFR Part 433.10(b). Coating of plastic material onto a formed metal

substrate is also covered by the PM&F effluent limitations guidelines and standards and is not covered by the specific metal forming effluent limitations guidelines such as those for aluminum forming (40 CFR Part 467 (48 FR 49126; October 24, 1983)), copper forming (40 CFR 468 (48 FR 36942; August 15, 1983)), and nonferrous metals forming. However, the PM&F regulation applies only to the coating process; the prior forming operations are subject to the specific metal forming regulation.

Some molding and forming processes (e.g., extrusion and pelletizing) are used by plastic resin manufacturers to process crude intermediate plastic material. For the purpose of this regulation, plastic molding and forming processes used by plastic resin manufacturers to process crude intermediate plastic materials for shipment off-site are excluded from this regulation and regulated under the organic chemicals, plastics, and synthetic fibers category. Plastic molding and forming processes used by plastic resin manufacturers to process plastic materials on-site into intermediate or final plastic products by further molding and forming are controlled by the effluent limitations guidelines and standards for the plastics molding and forming category in this Part.

The characteristics of the process wastewater generated by PM&F plants may vary depending on the use of such water. The conventional and nonconventional pollutants found in PM&F wastewater are: (1) Conventional pollutants—biochemical oxygen demand (BOD), suspended solids (TSS), oil and grease, and pH and (2) nonconventional pollutants—total organic carbon, chemical oxygen demand, and total phenols. The priority toxic pollutants found are: (1) *Contact cooling and heating water*—benzene, carbon tetrachloride, 1,1,1-trichloroethane, p-chloro-m-cresol, chloroform, methylene chloride, phenol, bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, tetrachloroethylene, toluene, aldrin, dieldrin, 4,4'-DDE, heptachlor, α-BHC, β-BHC, λ-BHC, δ-BHC, cadmium, total chromium, copper, lead, mercury, nickel, and zinc and, (2) *cleaning and finishing water*—benzene, chloroform, methylene chloride, N-nitrosodiphenylamine, phenol, bis(2-ethylhexyl) phthalate, toluene, aldrin, heptachlor, α-BHC, λ-BHC, δ-BHC, total chromium, copper, nickel, selenium, and zinc.

III. Scope of This Rulemaking and Summary of Methodology

This proposed regulation is a part of the Agency's continuing effort in water pollution control requirements. For most industries, the 1973–1976 round of rulemaking emphasized the achievement of best practicable technology (BPT) by July 1, 1977. In general, this technology level represented the average of the best existing performance of well-known technologies for control of familiar (or "classical") pollutants. However, for this category, BPT effluent limitations guidelines were not proposed or promulgated. BPT effluent limitations guidelines were established on a case-by-case basis by permit writers.

In the current round of rulemakings, EPA is proposing to establish nationally applicable BPT effluent limitations guidelines and is addressing the achievement by July 1, 1984, of effluent limitations guidelines based on the best available technology economically achievable (BAT), which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants. In general, the BAT level represents the very best economically achievable performance in any industrial category or subcategory. As a result of the Clean Water Act of 1977, the emphasis of EPA's program has generally shifted from "classical" pollutants to the control of a lengthy list of toxic pollutants. The Agency is also proposing to establish BTC effluent limitations guidelines and new source performance standards. For the reasons discussed below, the Agency is not proposing categorical pretreatment standards for new and existing indirect discharges in this category.

In developing this proposed regulation, EPA studied the plastics molding and forming category to determine whether differences in raw materials, final products, manufacturing processes, equipment, age and size of plants, water use, wastewater characteristics, or other factors required the development of separate effluent limitations guidelines and standards for different segments (or subcategories) of the category. This study included the identification of raw waste characteristics, sources and volumes of water used, processes employed, and sources of wastewaters. Sampling and analysis of specific wastewaters enabled EPA to determine the presence and concentration of pollutants in wastewater discharges.

EPA also identified actual and potential wastewater control and treatment technologies (including both inprocess and end-of-process technologies). The Agency analyzed both historical and newly generated data on the performance, operational constraints, and reliability of these technologies. In addition, EPA considered the impacts of these technologies on air quality, solid waste generation, water scarcity, and energy requirements.

The Agency estimated the costs of each control and treatment technology using cost equations developed by standard engineering analyses. EPA derived control technology costs for the 408 PM&F plants in the Agency's data base. The Agency then evaluated the potential economic impacts of these costs on the category.

The Agency also developed a financial profile for 384 of the 408 plants in the data base using information from questionnaire surveys and publicly available data. Using plant specific financial information and compliance cost estimates, the impact of the proposed regulation on 101 plants with a direct discharge was determined. Those impacts were extrapolated to the estimated number of plants in the PM&F category that discharge wastewater directly to navigable waters.

On the basis of this information, EPA identified various control and treatment technologies to use as the basis for the effluent limitations guidelines and standards addressed by this proposed rule. The proposed regulation does not require, however, the installation of any particular technology. Rather, it requires compliance with effluent limitations guidelines and standards based on the proper operation of these technologies.

IV. Data Gathering Efforts

The proposed PM&F effluent limitations guidelines and standards were developed using information obtained from several sources. Information was obtained from three questionnaire surveys of PM&F plants, other EPA studies, literature, and existing discharge permits for plants in the category.

In 1978, a single page questionnaire was mailed to approximately 8,000 plants to obtain information about any PM&F processes. Results of that survey were used to select 750 plants that had plastic molding and forming processes and that used water in those processes. Under the authority of Section 308 of the Clean Water Act, these plants were mailed a detailed questionnaire in 1979 to obtain additional information (e.g., amount of water used and production) about the PM&F category. In June 1983, another questionnaire was mailed under authority of Section 308 of the Clean Water Act to 330 PM&F plants to update the 1979 information and to obtain information on "new" PM&F plants. The mailing included a random sample of

plants that returned the 1979 questionnaire, a random sample of plants that did not return the 1979 questionnaire, and a random sample of plants that entered the market between January 1, 1978, and December 31, 1981, as identified by a Dun and Bradstreet, Inc. listing and a telephone survey. All of these plants had a primary SIC of 3079 as reported by Dun and Bradstreet, Inc. To obtain information from plants with a secondary SIC of 3079 (i.e., captive plastics molders and formers), 170 questionnaires were mailed to plants on the mailing list for the magazine "Plastics World" in August 1983.

In summary, the data base for this project contains questionnaires from 408 plants. One hundred and ninety-six of the questionnaires are from the 1979 survey; 163 are from the 1983 survey of plants with a primary SIC of 3079; and 49 are from the 1983 survey of plants with a secondary SIC of 3079. If a plant submitted a questionnaire in 1979 and again in 1983, only the updated questionnaire from the 1983 survey was included in the data base.

Information on PM&F processes, economic and financial characteristics, wastewater treatment technologies, and costs were obtained from various studies and literature searches. Information regarding currently controlled pollutants and treatment technologies used was also obtained from existing National Pollutant Discharge Elimination Systems (NPDES) permits. Although the Agency used all available data obtained from these sources, effluent concentration data for specific treatment technologies considered were limited. Thus, the Agency supplemented its analyses by using treated effluent concentration data for conventional pollutants that were used to develop the proposed effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers category (48 FR 11828; March 21, 1983).

Further discussions of the data gathering efforts for this project are presented in Section IV of the technical development document for this proposed regulation development document for this proposed regulation and in the Economic Impact Analysis.

During the sampling program for this project, samples were collected and analyzed for conventional pollutants, selected nonconventional pollutants, and priorty toxic pollutants. The analytical methods used during this program are discussed in the proposed regulation for the Leather Tanning Point Source Category, 40 CFR Part 425 (44 FR 38749; July 2, 1979) and in Section VI of the technical development document for this proposed regulation.

The list of 65 toxic compounds and classes of compounds specified in the NRDC Settlement Agreement and in the Clean Water Act of 1977 includes thousands of specific pollutants; analyses of all of those pollutants would have overwhelmed private and government laboratory resources. Therefore, to make the task more manageable, EPA selected 129 specific toxic pollutants (known as priority pollutants) for study in this and other industry rulemakings.

The sampling program for this project consisted of four sampling episodes in 1980 and seven sampling episodes in 1983. Forty-four samples were collected from PM&F processes that use contact cooling and heating water and 25 samples were collected from cleaning and finishing processes.

Samples of the different types of wastewater discharged by plastics molders and formers were collected and analyzed for biochemical oxygen demand (BOD), oil and grease, total suspended solids (TSS), pH, chemical oxygen demand, ammonia, total kjeldahl nitrogen, total phosphorus, total organic carbon, total phenols, sulfate, sulfite, sulfide, nitrates, fluorine, free chlorine, boran, bromide, surfactants (MBAS), and the 129 priority toxic pollutants. The analytical results are presented in Appendix A of the technical development document.

VI. Industry Subcategorization

In developing this proposed regulation, the Agency reviewed the PM&F category to determine if different effluent limitations guidelines and standards were appropriate for different segments (subcategories) of the category. The major factors considered during this review included: waste characteristics, material used, manufacturing processes, products manufactured, water use, water pollution control technology, treatment costs, solid waste generation, size of plant, age of plant, number of plant employees, total energy requirements, non-water quality characteristics, and unique plant characteristics. Section V of the technical development document contains a detailed discussion of these factors and the rationale for the basis for the PM&F industry subcategorization scheme.

The PM&F processes previously discussed generate basically two types of wastewater: contact cooling and heating water and cleaning and finishing water. Results of our sampling program indicate that the characteristics of the two types of wastewater are different in terms of the number and concentration of priority toxic pollutants found to be present. In addition, the concentrations of the conventional and nonconventional pollutants are different, although the pollutants or pollutant properties are the same. Therefore, the PM&F category was subcategorized based on the type of wastewater generated by a process. The other factors considered did not result in differences that required subcategorization of the category.

The two subcategories established for the PM&F category are: (1) Contact cooling and heating water subcategory and (2) cleaning and finishing water subcategory.

Plants in the PM&F category may have processes generating only one type of wastewater and thus fit within one subcategory. However, many plants generate both contact cooling and heating water and cleaning and finishing water. In this instance, plants must comply with the effluent limitations guidelines and standards for both subcategories. The end-of-pipe model treatment technologies used as the basis for the limitations are the same for both subcategories. Thus plants having both types of wastewater may combine both types of wastewater for common end-of-pipe treatment to achieve the effluent limitations guidelines for each subcategory.

The contact cooling and heating water subcategory includes those processes where process water contacts raw materials or plastics products for the purpose of heat transfer during plastics molding and forming. In identifying model treatment technology options for this subcategory, the Agency found that further subdivision based on average process water usage flow rate was required. Thus, processes with an average process water usage flow rate of 35 gpm or less are in one subdivision and processes with an average process water usage flow rate greater than 35 gpm are in a different subdivision. Further discussion of the flow cut-off for this subcategory is presented in Section VIII of this preamble and in Section X of the technical development document.

The cleaning and finishing subcategory includes those processes that use process water to clean or finish the plastic product or to clean shaping equipment that is or has been in contact with the formed plastic product. Process water used to clean the plastic product or shaping equipment includes water used in the detergent wash cycle and water used in the rinse cycle to remove detergents and other foreign matter. Finishing water consists of water used

to carry away waste plastic material or to lubricate the product during finishing processes.

Wastewater is also generated by the solvent recovery operation in the solution or solvent casting process. However, this wastewater does not result from the blending, molding, forming, or any processing of the plastic material and is not a process water. Samples of this wastewater indicate that its pollutant characteristics are different from the characteristics of PM&F process wastewater. In addition, the Agency estimates that only eight plants in the category generate solvent recovery wastewater. For these reasons, the Agency believes that solvent recovery wastewater is best controlled on a case-by-case basis by the permit writer or control authority. Analytical data for this type of wastewater from the Agency's study of the plastics molding and forming category may be used as a guide by the permit writer.

VII. Available Wastewater Control and Treatment Technologies

A. Control and Treatment Technologies Considered

The control and treatment technologies available for this category include both in-process and end-of-pipe technologies. These technologies were considered appropriate for the treatment of plastics molding and forming wastewater and formed the basis of the regulatory options.

The in-process control technology considered for this proposed regulation is recycle of the process water (i.e., flow reduction). Recycle consists of returning the process water to the process so that it can be used again for the same purpose. By reducing the amount of water discharged, the size and cost of the technologies used to treat the discharge are reduced. Additionally, treatment technology performance may be improved using a recycle system because the concentrations of the pollutants in the discharge from the recycle unit are higher than the concentrations in the process water. Treatment technologies usually perform better with a more concentrated wastewater.

Process water that requires cooling prior to recycle is recycled through a technology that lowers the temperature of the water. One type of recycle unit is a holding tank. Process water is held in the tank until the temperature drops through passive heat transfer to the environment. Application of this recycle unit is limited to low flow rate processes.

Another type of recycle unit is a chiller. Chillers cool the process water by mechanical refrigeration. They can be used with higher flow rate processes simply by adding the number of chillers needed to provide the required amount of refrigeration. However, at the high flow rates, the high energy cost per unit of cooling makes the chiller less attractive than other recycle units such as a cooling tower.

A cooling tower lowers the water temperature by evaporative cooling. Water flows over the surfaces of the cooling tower and is cooled when it contacts the air that is blown into the tower. This unit is particularly appropriate for high flow rate processes because of its small space and low energy requirements.

A sedimentation tank may be used to recycle process water that requires the removal of solids or oil and grease. The solids settle to the bottom of the tank and are removed; oil and grease are skimmed off of the tank water surface. The treated water is then recycled to the process.

End-of-pipe technologies considered appropriate for PM&F wastewater include pH adjustment, sedimentation, and the activated sludge process.

pH Adjustment. Acidic and basic materials are used to control the pH of the wastewater. Proper pH adjustment not only controls a pollutant property but also serves to ensure proper treatment technology performance.

Sedimentation. Sedimentation is a process that removes solid particles from a liquid matrix by gravitational force. This is done by reducing the velocity of the flow in a large volume tank so that gravitational settling can occur. Floatable materials such as oils can also be removed in this process by skimming them from the surface of the water in the tank.

Biological Treatment (Activated Sludge). The activated sludge process is a widely used biological treatment process characterized by a suspension of microorganisms maintained in a homogeneous state by mixing and turbulence induced by aeration. The microorganisms oxidize soluble and colloidal organic material to carbon dioxide and water in the presence of molecular oxygen. This process treats dissolved pollutants such as biochemical oxygen demand (BOD), total organic carbon, and total phenols. The activated sludge process, which is designed to assure optimal removal of BOD, removes organic priority pollutants in the wastewater.

Activated sludge technology also can be used with sedimentation technologies to make a package activated sludge plant. These are self-contained plants usually consisting of a primary sedimentation unit, an activated sludge unit, and a final sedimentation unit. Package activated sludge plants are used to treat flows from as low as 600 gallons per day to as high as 100,000 gallons per day.

B. Status of In-Place Technology

Recycle is a widely demonstrated in-process control in the plastics molding and forming category. Process water is recycled for 42 percent of the contact cooling and heating water processes in the data base for this project. One hundred percent of the process water is recycled for 47 percent of those processes. Process water is also recycled for 16 percent of the cleaning and finishing processes in the data base.

The end-of-pipe technologies currently used by both direct and indirect dischargers in the PM&F category include pH adjustment, sedimentation, and oil skimming. Treatment technologies used at plants where PM&F wastewater and other wastewater are combined for treatment include sedimentation, the activated sludge process, the activated carbon process, and pH adjustment.

VIII. Best Practicable Technology (BPT) Effluent Limitations Guidelines

The factors considered in defining best practicable control technology currently available (BPT) include the total cost of applying the technology in relation to the effluent reduction benefits derived, the age of equipment and facilities involved, the processes employed, non-water quality environmental impacts (including energy requirements), and other factors the Administrator considers appropriate. In general, the BPT level represents the average of the best existing performance of plants of various ages, sizes, processes, or other common characteristics. Where existing performance is uniformly inadequate, BPT may be transferred from a different subcatgory or category. Limitations based on transfer technology must be supported by a conclusion that the technology is, indeed, transferable and a reasonable prediction that it will be capable of achieving the prescribed effluent limitations guidelines. *See, Tanners' Council of America* v. *Train*, 540 F.2d 1188 (4th Cir. 1976). BPT focuses on end-of-pipe treatment rather than process changes or internal controls, except where such controls are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, that does not require the Agency to quantify benefits in monetary terms. *See, American Iron and Steel Institute* v. *EPA*, 526 F.2d 1027 (3rd Cir. 1975). In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of existing discharges, the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the cost and economic impacts of the required pollution control level. The Act does not require or permit consideration of water quality problems attributable to particular point sources or industries, or water quality improvements in particular water bodies. Accordingly, water quality considerations were not the basis for selecting the proposed BPT. *See, Weyerhaeuser Company* v. *Costle*, 590 F.2d 1011 (D.C. Cir. 1978).

Contact Cooling and Heating Water Subcategory

The Agency identified three technology options as the basis for the proposed BPT effluent limitations guidelines for the contact cooling and heating water subcategory. These options are discussed briefly below and in further detail in Section X of the technical development document for this proposed regulation.

Option 1: Sedimentation: The technology for this option consists of a tank in which the velocity of the wastewater is reduced so that solid material can settle by gravitational force. This option was rejected early in the development of this proposed rule because the suspended solids concentration in the cooling and heating water is very low and because the technology does not remove the dissolved pollutants (e.g., biochemical oxygen demand) in the contact cooling and heating water.

Option 2: For processes with an average process water usage flow rate of 35 gpm or less—zero discharge by 100 percent recycle of the process water using either a tank or chiller.

For processes with an average process water usage flow rate greater than 35 gpm—recycle through a cooling tower and treatment of the recycle unit discharge in a package activated sludge plant. An equilization tank is included as part of the package plant.

The flow cut-off (i.e., 35 gpm) for this option is based on the average of the best performance of plants in the contact cooling and heating water subcategory that achieve 100 percent recycle. Data from the questionnaire surveys for this project indicate that 89 processes in this subcategory with a flow rate up to 50 gpm achieve 100 percent recycle. Of these processes, eight have a flow rate between 20 gpm and 50 gpm. The Agency averaged the flow rate for those eight processes to arrive at a flow rate of 35 gpm as the cut-off based on the average of the best. Above 50 gpm, a cooling tower is most commonly used to recycle process water. A cooling tower necessarily includes some amount of discharge, which is treated in a package activated sluge plant in this option.

This technology option results in no discharge of pollutants from processes with an average process water usage flow rate of 35 gpm or less and significantly reduces the concentration of conventional, nonconventional, and priority pollutants discharged by processes with an average process water usage flow rate greater than 35 gpm.

Option 3: For processes with an average process water usage flow rate of 35 gpm or less—Zero discharge by 100 percent recycle of the wastewater through either a tank or a chiller.

For processes with an average process water usage flow rate greater than 35 gpm—Recycle through a cooling tower and zero discharge by contract haul of the discharge from the recycle unit.

The 35 gpm flow rate was used as the cut-off for this option for the same reasons it was used in Option 2. A cooling tower is also used in this option to recycle process water for processes with an average process water usage flow rate greater than 35 gpm. However, the recycle unit discharge is contract hauled to achieve zero discharge instead of being treated at the plant and discharged.

Contract haul was used in this option to handle the discharge from the recycle unit because treatment technologies other than those used in Option 2 are not considered feasible for the PM&F category. Technologies (e.g., activated carbon) that could be used to treat PM&F wastewater are expensive and are difficult to operate and maintain. The Agency considers contract haul more practicable for this subcategory than those technologies.

This technology option results in zero discharge of pollutants from all processes that use process water for contact cooling and heating.

Option Selected

The Agency is proposing Option 2 as the model technology basis for BPT effluent limitations guidelines for the contact cooling and heating water subcategory. As prevously mentioned, many plants in the data base for this project indicated they currently recycle 100 percent of the contact cooling and heating water from PM&F processes with an average process water usage flow rate of 35 gpm or less. Further, those plants reported that the only wastes from this technology result from occasional cleaning of the recycle units (i.e., once every one to two years) for which a discharge allowance is not required.

The proposed BPT effluent limitations guidelines for processes with an average process water usage flow rate of 35 gpm or less require zero discharge of the wastewater. The "average process water usage flow rate" is the volume of process water used per year by a process divided by the total time per year the process operates. The "average process water usage flow rate" for a plant with more than one PM&F process that uses contact cooling and heating water is the sum of the "average process water usage flow rates" for each of these processes. The sum of the process flow rates determines if a plant has PM&F contact cooling and heating processes with an average process water usage flow rate less than, equal to, or greater than 35 gpm.

The proposed BPT effluent limitations guidelines for processes with an average process water usage flow rate greater than 35 gpm are based on recycle through a cooling tower and treatment of the recycle unit discharge in a package activated sludge plant. The activated sludge process is only demonstrated at integrated treatment facilities that treat PM&F wastewater combined with wastewater discharged by other industrial processes. Treatment at plants that discharge PM&F wastewater separately is uniformly inadequate because these plants indicated that they use only sedimentation and oil skimming, which, as discussed earlier, does not remove dissolved pollutants. None of the PM&F plants where the Agency collected samples and none of the plants in the questionnaire data base had an activated sludge process solely for the treatment of PM&F wastewater.

Since the Agency found that plants discharging PM&F wastewater separately have uniformly inadequate treatment and since the Agency lacks performance data for the activated sludge process on only PM&F wastewater, the treatment effectiveness of this technology was evaluated and established by examining its performance on similar wastewaters. The Agency compared the PM&F data obtained during the sampling program

for this project to wastewater data from the organic chemicals, plastics, and synthetic fibers category, particularly the plastics only subcategory, and found that the wastewaters for the two categories have similar characteristics. Specifically, data on raw waste concentrations of BOD, TSS, and oil and grease were examined statistically. The results show that the raw waste concentrations for these pollutants are neither significantly greater nor more variable than the raw waste concentrations at plants that manufacture plastics. This provided support for the Agency's technical judgment that activated sludge will treat PM&F wastewater effectively and achieve conventional pollutant levels demonstrated by activated sludge processes that treat wastewater generated by plastics manufacturing plants in the organic chemicals, plastics, and synthetic fibers category. Thus, the Agency transferred the activated sludge technology and treated effluent data for that technology from the organic chemicals, plastics, and synthetic fibers category to the PM&F category. Effluent concentration values were transferred for biochemical oxygen demand, total suspended solids, and oil and grease.

The Agency is proposing mass-based BPT effluent limitations guidelines because flow reduction by recycle of the wastewater is an important part of the model treatment technology. The effluent limitations guidelines are expressed in terms of the allowable mass of pollutant discharged per unit of production and reflect the reduction in flow achieved by application of BPT.

The mass limitations were calculated by combining two values: (1) Treatment technology effluent concentrations and (2) a production normalized wastewater flow for the subcategory. The unit of production used to determine the production normalized wastewater flow is mass of plastic material processed. Mass of plastic material processed was selected as the appropriate production normalizing parameter because the mass of pollutants generated relates to the mass of plastic material processed. Also, many plants reported that records are routinely kept in terms of mass of plastic materials processed. Thus, in addition to providing an equitable normalizing parameter, this parameter minimizes compliance burdens on the industry.

The production normalized flow (PNF) used to calculate the allowable mass was obtained using information from the questionnaire surveys. Since the selected BPT option is based on flow reduction, information from plants that currently recycle water was used to calculate the PNF. Of the 183 plants in this subcategory reporting recycle of contact cooling and heating water, 48 had an average process water usage flow rate greater than 35 gpm and a recycle ratio between 90 and 99.9 percent. Thus, the total discharge for these 48 processes (liters per year) was divided by the total production reported for these processes to obtain a production normalized flow (liters per thousand kilograms) for all processes in this subcategory. The Agency considered but is not establishing a separate production normalized flow for each type of molding or forming process. Data indicate that the amount of water required for contact cooling or heating purposes is primarily a function of the mass of material cooled or heated and does not appear to be dependent on the type of molding and forming process used. The PNF was multiplied by the concentration values to obtain the allowable mass of a pollutant discharged per mass of plastic material processed for this subcategory.

Under BPT, the Agency proposes to establish effluent limitations guidelines for biochemical oxygen demand, total suspended solids, oil and grease, and pH. The Agency estimates that when these limitations are met approximately 79 percent of the amount of nonconventional pollutants discharged by PM&F processes and approximately 80 percent of the amount of priority toxic pollutants discharged will be removed. These estimates are based on removal percentages reported in previous EPA studies and other literature sources for the nonconventional and priority toxic pollutants.

Although the proposed model treatment technology removes approximately 79 percent of the amount of nonconventional pollutants discharged, a substantial amount of those pollutants remain in the discharge. For this reason, the Agency plans to study the nonconventional pollutants, particularly chemical oxygen demand and total organic carbon, between proposal and promulgation of the PM&F effluent limitations guidelines and standards to determine the chemical constituents of these pollutants. Depending on the results of that work, the Agency may consider additional controls for the nonconventional pollutants.

The 35 gpm cut-off used in BPT Options 2 and 3 is based on the demonstrated recycle of 100 percent of the process water for processes with an average process water usage flow rate of 35 gpm or less. However, available information suggests that 100 percent recycle may be achieved by processes with higher flow rates. Accordingly, the Agency will give further consideration to the flow cut-off for this subcategory between proposal and promulgation of the PM&F effluent limitations guidelines and standards. If additional information and further studies confirm the achievability of 100 percent recycle for flows up to and including all contact cooling and heating water flows, the Agency may decide to raise the 100 percent recycle flow cut-off. EPA invites comment on this issue.

The Agency is not proposing Option 3 as the technology basis for the BPT effluent limitations guidelines for this subcategory because the mass of toxic pollutants in the raw wastewater is very low (i.e., approximately one kilogram per day per direct discharger) and the annual costs are significantly higher for contract hauling than the annual costs for treatment in Option 2 ($9.4 million per year for Option 2 compared to $41.2 million per year for Option 3). (All costs are expressed in 1982 dollars.) However, as discussed earlier, the Agency will be conducting further studies to identify what contributes to the nonconventional pollutants. Based on the results of this study, EPA may give further consideration to Option 3 and to other appropriate technologies, including a higher flow cut-off for 100 percent recycle, for the control of nonconventional pollutants.

The Agency estimates that the proposed BPT effluent limitations guidelines for this subcategory result in the removal of approximately 7.5 million kilograms of conventional pollutants per year, 21.5 million kilograms per year of nonconventional pollutants, and 99,000 kilograms per year of priority toxic pollutants from the raw wastes. The estimate investment costs and total annual costs in 1982 dollars for the proposed BPT effluent limitations guidelines are $15.2 million and $9.4 million, respectively. The Agency has determined that the effluent reduction benefits associated with compliance with BPT justify the costs.

Engineering cost estimates, effluent reduction estimates, and the economic impact analysis for BPT Options 2 and 3 are based on an average process water usage flow rate cut-off of 15 gpm. The cut-off was subsequently changed to 35 gpm. The Agency believes that the results of those analyses using the 15 gpm cut-off support the proposed BPT 35 gpm cut-off because technology costs for processes with flow rates between 15 and 35 gpm are expected to decrease

and benefits for those processes are expected to increase (i.e., more processes will recycle 100 percent of the process water) when the 35 gpm cut-off is used. The Agency will revise those analyses using the 35 gpm cut-off prior to promulgation of the PM&F effluent limitations guidelines and standards.

Cleaning and Finishing Water Subcategory

The Agency identified three technology options for the basis for the proposed BPT effluent limitations guidelines for the cleaning and finishing water subcategory. One hundred percent recycle of cleaning and finishing wastewater is not feasible because of the high solids concentration in that water and, therefore, was not considered for this subcategory. The three options considered are discussed briefly below and in further detail in Section X of the technical development document.

Option 1: pH Adjustment and Sedimentation: The technology for this option consists of a tank in which the velocity of the wastewater is reduced so that solid material can settle by gravitational force. Acidic or basic material is added to either the tank influent or the tank effluent to adjust the pH of the wastewater.

Option 2: This option consists of recycle through a sedimentation tank and treatment of the discharge from the recycle unit in a package activated sludge plant. The package plant includes an equalization unit and pH adjustment. A sedimentation tank is used to remove the suspended solids so that the process water can be recycled.

Option 3: Option 3 consists of recycle through a sedimentation tank for all processes and contract haul of the discharge from the recycle unit.

Option Selected

The Agency is proposing Option 2 as the technology basis for the BPT effluent limitations guidelines for this subcategory. For the same reasons discussed in the preceding section on the contact cooling and heating water subcategory, the effluent concentration values for BOD, TSS, and oil and grease for the activated sludge process were transferred from plants that manufacture plastics in the organic chemicals, plastics, and synthetic fibers category.

The Agency is proposing mass-based BPT effluent limitations guidelines because flow reduction by recycle of the wastewater is an important part of the model treatment technology. The limitations are expressed in terms of the allowable mass of pollutant discharged per unit of production and reflect the reduction in flow achieved by application of BPT.

For this subcategory, the Agency calculated two production normalized flows, one applicable to cleaning processes, which include both detergent wash cycle and a rinse cycle, and one applicable to finishing processes. The Agency determined that two separate production normalized flow were necessary for processes within this subcategory because of the difference in the amounts of wastewater discharged from cleaning as opposed to finishing processes. Data indicate that washing and rinsing of molded or formed plastic parts and shaping equipment uses significantly more water than used to finish plastic products. Thus, EPA calculated the production normalized flow for cleaning processes by adding the total discharge (liters per year) for all cleaning processes that recycle process water by the total production (kkg) from these processes as reported by plants in the data base. The Agency used the same method to calculate a production normalized flow for all finishing processes using all available data for those processes. These production normalized flows were then multiplied by the concentration value for the activated sludge process to obtain the allowable mass of pollutant discharged per cleaning or finishing process.

The Agency estimates that the proposed BPT effluent limitations guidelines result in the removal of 643,000 kilograms per year of conventional pollutants, 806,000 kilograms per year of nonconventional pollutants, and 790 kilograms per year of priority pollutants from the raw waste. The estimated total investment costs and total annual costs for the proposed BPT effluent limitations guidelines are $2.0 million and $1.5 million, respectively. The Agency has determined that the costs are justified by the effluent reduction benefits.

Costs used to evaluate Option 2 are based on recycle and contract hauling for flows of two gpm or less because the Agency assumes that plants will comply with the regulations in the least costly manner. Equipment vendors indicate that the smallest commercially available activated sludge package plant is designed for a flow rate of 600 gallons per day. Using the assumed recycle ratio for the flow reduction unit in the model treatment technology for this subcategory, a process must have an average process water usage flow of greater than two gpm for this treatment technology to be practical. Although EPA recognizes that plants with cleaning and finishing processes with a flow rate of two gpm or less may choose to install a custom built system to achieve the limitations, it is difficult for EPA to estimate the costs of a custom system. Further, the Agency believes that for plants with an average process water usage flow rate of two gpm or less, it may be more economical to contract haul the wastewater. Thus, the Agency costed contract hauling for plants with an average process water usage flow rate of two gpm or less. PM&F plants that contract haul their wastewater will achieve the proposed BPT effluent limitations guidelines and standards.

The Agency is not proposing BPT effluent limitations guidelines for this subcategory based on Option 1 because that technology does not adequately remove the pollutants for this subcategory. The Agency is not proposing BPT effluent limitations guidelines based on Option 3 because the incremental mass of toxic pollutants removed by this option from raw wastewater is very low (i.e., less than 0.1 kilogram per day per direct discharger) and the annual costs are significantly higher for this option than the annual costs for treatment at Option 2 ($1.5 million per year for Option 2 as compared to $6.0 million per year for Option 3). However, as discussed in the section on the contact cooling and heating water subcategory, the Agency may give further consideration to BPT effluent limitation guidelines based on other technology options, including Option 3, depending on the results of further study of the nonconventional pollutants. Under BPT, the Agency proposes to establish limitations for biochemical oxygen demand, total suspended solids, oil and grease, and pH. EPA believes that the toxic pollutants for this subcategory are effectively controlled when the limitations for the above pollutants are met.

IX. Best Available Technology (BAT) Effluent Limitations Guidelines

The factors considered in assessing best available technology economically achievable (BAT) include the age of equipment and facilities involved, the process employed, process changes, non-water quality environmental impacts (including energy requirements) and the costs of applying such technology (Section 304(b)((2)(B) of the Clean Water Act). At a minimum, the BAT technology level represents the best economically achievable performance of plants of various ages, sizes, processes, or other shared

characteristics. As with BPT, where the Agency has found the existing performance to be uniformly inadequate, BAT may be transferred from a different subcategory or category. BAT may include feasible process changes or internal controls even when not common industry practice.

The required assessment of BAT "considers" costs, but does not require a balancing of costs against effluent reduction benefits (*See, Weyerhaeuser, v. Costle, supra*). In developing the proposed BAT, however, EPA has given substantial weight to the reasonableness of cost. The Agency has considered the volume and nature of discharges expected after application of BPT, the general environmental effects of the pollutants, and the costs and economic impacts of the additional pollution control levels.

Despite this expanded consideration of costs, the primary determinant of BAT is effluent reduction capability. As a result of the Clean Water Act of 1977, the achievement of BAT has become the principal national means of controlling toxic pollutants. The wastewaters generated by PM&F processes contain approximately 28 priority toxic pollutants including eight toxic metals and 20 toxic organics.

Contact Cooling and Heating Water Subcategory

The Agency considered two technology options as the basis for the proposed BAT effluent limitations guidelines. These options are the same as Option 2 and Option 3 considered for the proposed BPT effluent limitations guidelines for this subcategory and are discussed in the preceding section of this preamble.

The Agency is not proposing BAT effluent limitations guidelines more stringent than the proposed BPT effluent limitations guidelines for this subcategory because there are insignificant quantities of toxic pollutants remaining in contact cooling and heating water after compliance with the applicable BPT effluent limitations guidelines. As previously discussed, the proposed BPT technolgy (Option 2) achieves significant removal of toxic pollutants present in contact cooling and heating water. Of the estimated 124,000 kilograms per year of toxic pollutants currently discharged by direct dischargers in this subcategory, 99,000 kilograms per year of these pollutants will be removed by compliance with the proposed BPT effluent limitiations guidelines. Thus, 25,000 kilograms per year of toxic pollutants will be discharged after applications of the BPT effluent limitations guidelines.

This discharge equates to approximately 0.20 kilograms per day of toxic pollutants per direct discharger in this subcategory. The Agency believes that the amount and toxicity of these pollutants do not justify establishing more stringent BAT effluent limitations guidelines for the toxic pollutants. Accordingly, EPA is proposing to exclude these pollutants from further national regulation under Paragraph 8(a)(i) of the Settlement Agreement in *NRDC* v. *Train, supra*. However, the Agency will give further consideration to applicable technologies, including Option 3 and raising the 100 percent recycle flow cut-off in Option 2, based on further study of the nonconventional pollutants. In addition, if the final technology basis for BPT effluent limitations guidelines differs from that proposed, the Agency will re-evaluate the appropriateness of establishing more stringent BAT effluent limitations guidelines.

Cleaning and Finishing Water Subcategory

The Agency considered two technology options for the basis for the BAT effluent limitations guidelines for this subcategory. These options are the same as Option 2 and Option 3 discussed above for the BPT effluent limitations guidelines for this subcategory.

The Agency in not proposing BAT effluent limitations guidelines more stringent than the proposed BAT effluent limitations guidelines for this subcategory because there are insignificant quantities of priority toxic pollutants remaining in cleaning and finishing water after compliance with the proposed applicable BPT effluent limitations guidelines. The Agency estimates that BPT effluent limitations guidelines will result in the removal of 790 kilograms per year of toxic pollutants from the current discharge of 890 kilograms per year toxic pollutants by plants in this subcategory. Thus, 100 kilograms per year of toxic pollutants would be discharged after application of the proposed BPT effluent limitations guidelines. This equates to less than 0.01 kilograms per day of toxic pollutants per direct discharger. The Agency has determined that the amount and toxicity of these pollutants do not justify establishing more stringent BAT effluent limitations guidelines for toxic pollutants. Accordingly, EPA is proposing to exclude these pollutants from further national regulation under Paragraph 8(a)(i) of the Settlement Agreement in *NDRC* v. *Train, supra*. However, the Agency may give further consideration to other applicable technologies, including Option 3, after reviewing the results of the study on nonconventional pollutants. In addition, if the final model technology basis for the BPT effluent limitations guidelines differs from that proposed, the Agency will re-evaluate the appropriateness of establishing more stringent BAT effluent limitations guidelines for this subcategory.

X. Best Conventional Technology (BCT) Effluent Limitations Guidelines

BCT effluent limitations guidelines control the discharge of conventional pollutants from existing industrial point sources. BCT is not an additional limitation but replaces BAT for the control of conventional pollutants.

In addition to factors specified in Section 304(b)(4)(B) of the Act, EPA is required to access the BCT effluent limitations guidelines in light of a two-part "cost-reasonableness" test, which was previously discussed. EPA must find that the BCT effluent limitations guidelines are "reasonable" under both parts before they are established. In no case may BCT be less stringent than BPT.

The Agency reviewed treatment techologies that could be used to remove additional conventional pollutants after BPT in each subcategory. The only technology considered feasible in each subcategory is flow reduction and zero discharge by contract haul of the discharge from the flow reduction unit (e.g. a cooling tower or sedimentation tank).

Based on the preliminary results of the proposed two-part BCT cost test (47 FR 49176; October 29, 1982), the costs to achieve the additional removal of conventional pollutants are not "reasonable." The Agency proposes, therefore, that BCT equal BPT for each subcategory and that no further controls be established for the conventional pollutants beyond BPT.

If the BPT effluent limitations guidelines are revised between proposal and promulgation, the Agency will apply the two-part BCT cost test to the revised BPT effluent limitations guidelines to determine whether the cost of further control is "reasonable". The Agency will also conduct that test again when the final BCT cost methodology is promulgated. Thus depending on these results, EPA may promulgate more stringent BCT effluent limitations guidelines.

XI. New Source Performance Standards (NSPS)

The basis for new source performance standards (NSPS) under Section 306 of

the Act is the best available demonstrated technology. New plants have the opportunity to design and use the best and most efficient plastic molding and forming processes and wastewater treatment technologies without facing the added costs and restrictions encountered in retrofitting an existing plant. Therefore, Congress directed EPA to consider the best demonstrated process changes, in-plant controls, and end-of-pipe treatment technologies that reduce pollution to the maximum extent feasible.

The Agency believes that characteristics of wastewater discharged by new PM&F processes in each subcategory will be the same as the characteristics of wastewater discharged by existing PM&F processes in those subcategories. Thus, the options considered for new sources in each subcategory are the same as those considered for existing sources.

The Agency is proposing NSPS based on the same model treatment technologies as the proposed BPT effluent limitations guidelines in each subcategory. EPA is not proposing NSPS more stringent than the effluent limitations guidelines for existing sources because the amount and toxicity of the toxic pollutants remaining after treatment in the BPT/BAT model treatment technologies for each subcategory do not justify more stringent controls. However, the Agency may give further consideration to a higher flow rate cut-off for 100 percent recycle for the contact cooling and heating water subcategory after the study on nonconventional pollutants is completed. EPA may also consider other technology options for NSPS if the final technology basis for the BPT effluent limitations guidelines differs from that proposed.

The model technology basis for NSPS is zero discharge by 100 percent recycle for processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm or less. For contact cooling and heating water processes with an average process water usage flow rate greater than 35 gpm and for all cleaning and finishing water processes, the NSPS option consists of recycle and treatment of the discharge from the recycle unit. As discussed earlier, the technology basis for the treatment of the discharge is equalization, pH adjustment, and a package activated sludge plant.

Recycle and pH adjustment are fully demonstrated at existing PM&F plants. For the reasons stated earlier, the activated sludge process was transferred from the organic chemicals, plastics, and synthetic fibers category. The production normalized flows used to calculate NSPS are the same as those used at BPT for each subcategory. These technologies and production normalized flows are discussed in more detail in Section VIII of this preamble.

Pollutants controlled by NSPS include biochemical ozygen demand, total suspended solids, oil and grease, and pH. The Agency believes that the toxic pollutants for both subcategories are effectively controlled when the NSPS for the above pollutants are met. NSPS are expressed in terms of mass of plastic produced for the reasons discussed under BPT. As discussed in the BPT section of this preamble, the Agency will further study the nonconventional pollutants discharged after compliance with the BPT effluent limitations guidelines. Depending on the results of this study to determine what contributes to the nonconventional pollutants, the Agency may establish additional controls for nonconventional pollutants at NSPS. The data relied on for selection of NSPS were primarily the data developed for existing sources, which includes costs on a plant-by-plant basis along with retrofit costs where applicable. The Agency believes that compliance costs could be lower for new sources than cost estimates for equivalent existing sources because production processes can be designed to achieve the model regulatory flows and there will be no costs associated with retrofitting in-process controls. The Agency does not believe that applying this level of technology to new sources, including major modifications to existing sources, creates a barrier to entry into the category because new sources will expend an amount equal to, or possibly less than, the amount required by existing sources to comply with this proposed regulation.

XII. Pretreatment Standards for Existing Sources (PSES)

Section 307(b) of the Act requires EPA to promulgate pretreatment standards for existing sources (PSES) to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of POTW. These standards must be achieved within three years of promulgation.

To determine whether pollutants pass through a POTW, the Agency compares the percentage of a pollutant removed by a POTW to the percentage removed by direct dischargers applying the best available technology economically achievable. In this case where EPA is not proposing BAT effluent limitations guidelines more stringent than the proposed BPT effluent limitations guidelines, the Agency determined pass through by comparing POTW removals to BPT level removals. Thus, a pollutant is deemed to pass through the POTW when the average percentage removed nationwide by well-operated POTWs meeting secondary treatment requirements is less than the average percentage removed by direct dischargers complying with the proposed BPT effluent limitations guidelines for that pollutant.

This definition of pass through satisfies two competing objectives set by Congress; (1) That standards for indirect dischargers be equivalent to standards for direct dischargers, and, at the same time, (2) that the treatment capability and performance of the POTW be recognized and taken into account in regulating the discharge of pollutants from indirect dischargers.

The BPT effluent limitations guidelines for PM&F processes in the contact cooling and heating water subcategory with an average process water usage flow rate greater than 35 gpm and for all processes in the cleaning and finishing water subcategory are based on treatment by the activated sludge process. As discussed earlier, the Agency estimated the percentage removals for that technology for the toxic and nonconventional pollutants based on information presented in previous EPA studies and literature sources. The Agency compared percentage toxic pollutant removals for that process to POTW percent removal data and found that the toxic pollutants do not pass through a POTW. The average percentage of the toxic pollutants in PM&F wastewater removed by well operated POTWs meeting secondary treatment requirements is about 64 percent, whereas the percentage that can be removed by a direct discharger applying BPT/BAT is approximately 62 percent. Based on those findings, the Agency has concluded that toxic pollutants in PM&F wastewater do not pass through a POTW.

The BPT/BAT effluent limitations guidelines for processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm or less are based on zero discharge by 100 percent recycle. Based on a comparison of the National average percentage removal of priority pollutants by well operated POTWs meeting secondary treatment requirements to the 100 percent removal of pollutants in the BPT/BAT technology, the priority pollutants pass through a POTW. However, the amount of pollutants discharged per day per

indirect discharger in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm or less is estimated to be 0.6 kilogram per day. The Agency believes that the amount and toxicity of the priority pollutants discharged by those processes do not justify the development of PSES for this segment of the PM&F category. Accordingly, pretreatment standards are not being developed for those pollutants based on Paragraph 8(a)(iv) of the Settlement Agreement in *NRDC* v *Train, supra.* If the 100 percent recycle flow rate in the contact cooling and heating water subcategory is revised in the final rule, the Agency will re-evaluate the amount and toxicity of the pollutants that pass through a POTW.

Accordingly, the Agency proposes no PSES for the PM&F category. Even though plants within this category are not regulated by categorical pretreatment standards, they must comply with the General Pretreatment Regulations (40 CFR Part 403).

XIII. Pretreatment Standards for New Sources (PSNS)

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources (PSNS) at the same time that it promulgates NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate the best available demonstrated technologies including the process changes, in-plant controls, and end-of-pipe treatment technologies, and to use plant site selection to ensure adequate treatment system installation.

The Agency is not proposing PSNS for this category because the pollutants for this category either do not pass through a POTW or the amount and toxicity of the pollutants discharged to a POTW do not justify establishing PSNS. The Agency believes that new and existing indirect discharge sources will discharge the same pollutants in similar amounts. As discussed in the preceding section, the average percentage removal by well operated POTWs meeting secondary treatment requirements is approximately equivalent to the percentage of toxic pollutants removed by a direct discharger in the cleaning and finishing subcategory and by direct discharges with an average process water usage flow rate greater than 35 gpm in the contact cooling and heating water subcategory to comply with NSPS (also the proposed BPT effluent limitations guidelines). In addition, for those plants in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm or less, even though some toxic pollutants may pass through, the amount and toxicity (0.6 kilograms per discharger per day) do not justify establishing PSNS. Even though new indirect dischargers are not subject to categorical pretreatment standards, they must comply with the General Pretreatment Regulations (40 CFR Part 403).

XIV. Regulated Pollutants

The basis on which the pollutants for the PM&F category were selected is discussed in Sections VII and X of the technical development document for this proposed rule. Some of these pollutants are designated as toxic under Section 307(a) of the Act. Three pollutants have been deleted from the list of 129 toxic pollutants. These are dichlorodifluoromethane and trichlorofluoromethane (46 FR 79692; January 8, 1981) and (bis(chloromethyl) ether (46 FR 10723; February 4, 1981).

Pollutants controlled by the proposed BPT effluent limitations guidelines are biochemical oxygen demand, total suspended solids, oil and grease, and pH. The discharge is controlled by maximum daily and monthly average mass effluent limitations stated in milligrams (mg) per kilogram of plastic material processed.

The Agency proposes not to establish specific limitations guidelines at BAT for the priority pollutants in PM&F wastewater because the BPT level of treatment for conventional pollutants provides effective control of the priority pollutants. These toxic pollutants are listed in Appendix B.

The Agency is proposing BCT effluent limitations guidelines equal to the proposed BPT effluent limitations guidelines. Therefore, no additional controls are established for conventional pollutants at BCT.

The pollutants limited by the proposed NSPS are the same as those limited by the proposed BPT effluent limitations guidelines.

No pollutants are controlled by categorical pretreatment standards. New and existing indirect discharges must comply with the General Pretreatment Standards (40 CFR Part 403).

XV. Pollutants and Subcategory Segments Excluded From Regulation

The Settlement Agreement in *NRDC* v. *Train, supra* contains provisions authorizing the exclusion from regulation in certain instances of toxic pollutants and industry subcategories. These provisions have been rewritten in a Revised Settlement Agreement that was approved by the District Court for the District of Columbia on March 8, 1979. See *NRDC* v. *Costle,* 12 ERC 1833 (D.D.C. 1979), *modified* by orders dated October 26, 1982, August 2, 1983, and January 6, 1984.

A. Exclusion of Pollutants

The Agency has deleted the following three pollutants from the toxic pollutant list: (49) trichlorofluoromethane and (50) dichlorofluoromethane (46 FR 79692; January 8, 1981) and (17) bis(chloromethyl)ether (46 FR 10723; February 4, 1981). The other 126 priority pollutants are being excluded from regulation for the reasons listed below.

Paragraph 8(a)(i) of the Settlement Agreement allows the Administrator to exclude from regulation pollutants where equal or more stringent protection is already provided by an effluent limitations guideline, new source performance standard, or pretreatment standard promulgated pursuant to Sections 301, 304, 306, 307(a), 307(b), or 307(c) of the Act. Appendix B contains the toxic pollutants excluded in each subcategory for this reason.

Paragraph 8(a)(ii) of the Settlement Agreement allows the Administrator to exclude from regulation pollutants found in concentrations at or below the concentration of the pollutants in the source water. Appendix C lists the toxic pollutants excluded for this reason.

Paragraph 8(a)(iii) of the Settlement Agreement allows the Administrator to exclude from regulation toxic pollutants not detectable by Section 304(h) analytical methods or other state-of-the-art methods. Appendix D lists the toxic pollutants excluded for this reason including those pollutants that were detected at or below the analytical detection limit.

Paragraph 8(a)(iii) also allows the Administrator to exclude from regulation toxic pollutants detectable in the effluent from only a small number of sources within the subcategory because they are uniquely related to those sources. Appendix E lists, for each subcategory, toxic pollutants that were excluded from regulation for this reason.

B. Exclusion of Subcategory Segment

Additionally, Paragraph 8(a)(iv) of the Settlement Agreement authorizes the exclusion of subcategories in which the amount and toxicity of each pollutant in the discharge do not justify developing national regulations. The segment in the contact cooling and heating water subcategory with processes that have an average process water usage flow rate of 35 gpm or less is being excluded from pretreatment standards for this reason. Appendix F lists the pollutants excluded

from pretreatment standards in that segment.

XVI. Economic Considerations

A. Introduction

The Agency's economic impact assessment of this proposed regulation is presented in the report entitled *Economic Impact Analysis of Effluent Limitations and Standards for the Plastics Molding and Forming Industry,* EPA 440/2-84-001. Section IX of the technical development document details the investment and annual costs for the plastics molding and forming industry. These compliance costs are based on engineering estimates of capital requirements for the effluent control systems described earlier in this preamble. The Economic Impact Analysis assesses the impact of these effluent control costs on the PM&F industry in terms of price changes, production cost changes, plant closures, employment effects, and balance of trade effects. The impacts for each of the model treatment technologies options are discussed in the report.

In addition, EPA has conducted an analysis of the incremental removal cost per pound equivalent for each of the technology options. A pound equivalent is calculated by multiplying the number of pounds of a toxic pollutant discharged by a weighting factor for that pollutant. The weighting factor is equal to the water quality criterion for a standard pollutant (copper), divided by the water quality criterion for the pollutant, being evaluated. The use of "pound equivalent" gives relatively more weight to removal of more toxic pollutants. Thus, for a given expenditure, the cost per pound equivalent removed would be lower when a highly toxic pollutant is removed than if a less toxic pollutant is removed. This analysis is included in the record of this proposed rulemaking, and is entitled "Cost Effectiveness Analysis of Proposed Effluent Limitations and Standards for the Plastics Molding and Forming Industry." EPA invites comments on the methodology used in this analysis.

B. Impacts

1. Universe. EPA estimates there are 10,260 plastics molding and forming plants. The Agency also estimates that 1,898 of these plants have plastic molding and forming processes that use process water. The other 8,262 plants have dry plastics molding and forming processes.

2. Aggregate costs and Impacts. Total investment for the proposed BPT for both subcategories is projected to be $17.2 million with annual costs of $10.9 million, including depreciation and interest. If water cost savings achieved by the treatment technologies are included, the annual costs are only $2.9 million. These costs, as well as subsequent costs, are expressed in 1982 dollars and are based on the determination that plants will build on existing treatment. No plant closures are projected as a result of compliance costs for this proposed regulation. However, this regulation is projected to result in 22 jobs lost due to four process line closures. Production cost increases would be less then 0.1 percent. If all costs were passed on to consumers, price increases would be less than 0.2 percent. Balance of trade effects are insignificant. Since EPA is not proposing BAT effluent limitations guidelines more stringent than BPT effluent limitations guidelines, there are no additional impacts for BAT compliance. For reasons explained elsewhere in this preamble, the Agency is not proposing to establish PSES or PSNS. Thus, there well be no economic impact on indirect dischargers as a result of the proposed regulation.

3. Methodology. The methodology for the economic impact analysis is detailed in Section 3 of the Economic Impact Analysis Report. The economic impacts were analyzed for three groups of direct dischargers in the plastics molding and forming industry: those plants that have only contact cooling and heating water processes; those plants that have only cleaning and finishing water processes; and those plants that have both processes.

Economic and financial data were available for 384 of the plants that completed survey questionnaires. Data from 101 direct discharging plants were used in the closure analysis. Of the remaining 283 plants in the economic data base, data were not used for 111 plants because they do not discharge wastewater and data were not used from another 172 plants because they are indirect dischargers and so are not affected by this regulation. A finanical profile was developed for each of the 101 plants included in the closure analysis, using the questionnaire data and publicly available data. Key variables analyzed for each plant included present profitability and salvage value of the plant.

The costs of implementing the proposed regulation were estimated for each of the 101 direct dischargers. Variables considered in developing plant-by-plant costs included plant size and treatment-in-place. Using these compliance costs and sales information from each plant, the Agency performed a discounted cash flow analysis and plant closure analysis.

The estimated cost of the treatment technology was subtracted from the plant's cash flow. If the plant had a positive cash flow after investment, it was assumed that the plant can afford the pollution control. Implicitly, then, that plant could obtain financing for the pollution control investment. In the plant closure analysis, plants were assumed to close if the expected discounted cash flow of the plant, less the investment cost of the pollution control equipment, was less than the salvage value of the plant. The results of the closure analysis were extrapolated to the estimated number of plastics molding and forming plants in the category that are direct dischargers of wastewater.

C. BPT

The proposed BPT effluent limitations guidelines are expected to affect all direct discharging plants within both subcategories. The cost to comply with BPT for these plants is projected to be $17.2 million in investment costs and $10.9 million in annual costs (including depreciation and interest). Annual costs are only $2.9 million if water cost savings are included. These costs are based on engineering compliance cost estimated presented earlier in the preamble. According to the analysis of economic impact, no plant closures are associated with the proposed BPT treatment option in each subcategory. However, 22 job losses are expected to result from the closure of four process lines. Production costs are expected to increase less than 0.1 percent. If all costs were passed on to consumers, price increases would be less than 0.2 percent. The Agency has determined that the effluent reduction benefits associated with compliance with the proposed BPT effluent limitations guidelines justify the costs.

D. BAT

Since the Agency proposes BAT effluent limitations guidelines equal to BPT effluent limitations guidelines, there are no additional costs or impacts associated with the proposed BAT effluent limitations guidelines.

E. NSPS

The versatility of molded and formed plastics products and relatively inexpensive oil supplies, from which plastic resins are synthesized, contributed to the rapid growth of the plastic molding and forming industry in the last four decades. EPA believes that demand for molded and formed plastics products will continue to increase in the

years ahead. This projected increase in demand should result in the opening of new plants.

EPA is proposing NSPS based on the same technologies as BPT/BAT. Comparing estimated costs for the treatment technologies to expected revenues, the Agency developed a small and large "normal" plant for each of the two subcategories. A normal plant is a theoretical plant that has the operations covered by the subcategory and production that is the average level of production in the subcatgory. Section XII of the technical development document presents in detail the composition of the plastics molding and forming "normal" plants.

The Agency estimates that NSPS overall costs for the normal plant will be $26,068 for investment and $10,896 in annual costs. Production costs at new sources are estimated to increase less than 0.5 percent as a result of NSPS. These estimated costs apply to all new sources regardless of whether they result from major modifications of existing facilities or are constructed as greenfield sites. The Agency believes that the proposed NSPS will not deter entry into the plastics molding and forming industry because new sources will expend amounts equal to or possibly less than those expended by existing sources to comply with the proposed regulation.

F. Special Impacts

No plant closures in the plastics molding and forming industry are projected to result from this proposed regulation. However, four process lines that use process water in cleaning and finishing are projected to close, with 22 associated job losses. The community impact of these 22 job losses will be minimal.

G. Regulatory Flexibility Analysis

Public Law 96-354 requires EPA to prepare an Initial Regulatory Flexibility Analysis for all proposed regulations that have a significant impact on a substantial number of small entities. This analysis may be done in conjunction with or as a part of any other analysis conducted by the Agency. The economic impact analysis described above indicates that there will not be a significant impact on any segment of the regulated population, large or small. Therefore, a formal regulatory flexibility analysis is not required.

H. SBA Loans

The Agency continues to encourage small plants to use Small Business Administration (SBA) financing as needed for pollution control equipment. The three basic programs are: (1) The Pollution Control Bond Program, (2) the Section 503 Program, and (3) the Regular Business Loan Program. Eligibility for SBA programs varies by industry. Generally, a company must be independently owned; not dominant in its field; the employee size ranges from 250 to 1,500 employees (dependent upon industry); and annual sales revenue ranges from $275,000 to $22 million (varies by industry). The estimated economic impacts for this category do not include consideration of financing available through these programs.

For further information and specifics on the Pollution Control Bond Program contact: U.S. Small Business Administraton, Office of Pollution Control Financing, 4040 North Fairfax Drive, Rosslyn, Virginia 22203 (703) 235-2920.

The Section 503 Program, as amended in July 1980, allows long-term loans to small and medium sized businesses. These loans are made by SBA approved local development companies. These companies are authorized to issue Government-based debentures that are bought by the Federal Financing Bank, an arm of the U.S. Treasury.

Through SBA's Regular Business Loan Program, loans are made available by commercial banks and are guaranteed by the SBA. This program has interest rates equivalent to market rates.

For additional information on the Regular Business Loan and Section 503 Programs contact your local SBA Office. The coordinator at EPA headquarters is Ms. Frances Desselle who may be reached at (202) 382-5373.

I. Executive Order 12291

Executive Order 12291 requires EPA and other agencies to perform regulatory impact analyses of major regulations. Major rules are those that impose a cost on the economy of $100 million a year or more or have certain other economic impacts. This regulation is not a major rule because its annualized cost of $10.9 million is less than $100 million and it meets none of the other criteria specified in Section I paragraph (b) of the Executive Order. The economic impact analysis prepared for this proposed rulemaking meets the requirements for non-major rules.

XVII. Non-Water Quality Aspects of Pollution Control

The elimination or reduction of one form of pollution may cause other environmental problems. Therefore, Sections 304(b) and 306 of the Act require EPA to consider the non-water quality environmental impact (including energy requirements) of certain regulations. In compliance with these provisions, EPA has considered the effect of this proposed regulation on air pollution, solid waste generation, water scarcity, and energy consumption. This proposed rule was circulated to and reviewed by EPA personnel responsible for non-water quality environmental programs. While it is difficult to balance pollution problems against each other and against energy utilization, EPA is proposing a regulation that it believes best serves often competing national goals.

The following are the non-water quality environmental impacts (including energy requirements) associated with the proposed regulation:

A. Air Pollution

Technologies used as the basis for the proposed effluent limitations guidelines and standards settle or biologically oxidize polluants found in PM&F wastewater. Some volatile organic compounds may be emitted to the air from these treatment technologies. However, those emissions are not expected to cause air pollution problems. Accordingly, the proposed effluent limitations guidelines and standards will not create any substantial air pollution problems.

B. Solid Waste

EPA believes that only very small amounts of solid wastes are currently generated by PM&F plants because of the limited use of treatment technologies in the PM&F category. EPA estimates that the proposed BPT effluent limitations guidelines will increase the production of solid wastes by 42,000 metric tons (or kkg) per year beyond that generated by treatment in place. These wastes are comprised of settled solids that may contain toxic metals, treatment process sludges containing biological solids, skimmed oil, and residues from the periodic cleaning of the tank or chiller. The proposed BAT effluent limitations guidelines result in no additional solid waste production because BAT is the same as BPT.

EPA believes that the amount of solid wastes generated by a new source will be the same as the amount genereated by an existing source at BPT.

Therefore, the estimated annual average plant production of solid wastes generated in compliance with NSPS is the same as the annual average plant production for BPT, whilch is 22 metric tons per year. No additional solid wastes will be generated by indirect dischargers because the Agency is not proposing categorical pretreatment standards.

The Agency examined the solid wastes that would be generated at PM&F plants by the proposed model treatment technologies and believes they are not hazardous under Section 3001 of the Resource Conservation and Recovery Act (RCRA). This judgment is based on the recommended treatment technology of a package activated sludge plant consisting of primary sedimentation, activated sludge, and final sedimentation.

None of the toxic organic compounds for which the extract in the Extraction Procedure (EP) toxicity test are analyzed are in PM&F process water (see 40 CFR 261.24 (45 33084; May 19, 1980)). Only four of the eight metals for which the extracts from the EP toxicity test are analyzed were found in contact coooling and heating process water. Only two of those metals were found in cleaning and finishing process water. EPA believes that the estimated concentration of those metals in the treatment system sludge will not cause the concentration of those metals in the EP test extract to exceed the "allowable" concentration (i.e., the concentration that makes the wastes hazardous) in the extract.

PM&F wastes are also not listed as hazardous pursuant to 40 CFR Part 261.11 (45 FR 33121; May 19, 1980, as amended by 45 FR 76624; November 19, 1980). Since the PM&F wastes are not believed to be hazardous, no estimates were made of the costs to dispose of those wastes in accordance with RCRA hazardous waste requirements.

Although it is the Agency's view that solid wastes generated as a result of these guidelines are not expected to be classified as hazardous under the regulations implementing Subtitle C of the Resource Conservation and Recovery Act (RCRA), generators of these wastes must test the waste to determilne if they meet any of the characteristics of hazardous waste. See 40 CFR Part 262.11 (45 FR 12732–12733; February 26, 1980). The Agency may also list these sludges as hazardous pursuant to 40 CFR Part 261.11 (45 FR at 33121; May 19, 1980, as amended at 45 FR 76624; November 19, 1980).

If these wastes are identified as hazardous, they will come within the scope of RCRA's "cradle to grave" hazardous waste management program, requiring regulation from the point of generation to point of final disposition. EPA's generator standards require generators of hazardous wastes to meet containerization, labeling, record keeping, and reporting requirements; if plastics molders or formers dispose of hazardous wastes off-site, they would have to prepare a manifest that tracks the movement of the wastes from the generator's premises to a permitted off-site treatment, storage, or disposal facility. See 40 CFR Part 262.20 (45 FR 33142; May 19, 1980, as amended at 45 FR 86973; December 31, 1980). The transporter regulations require transporters of hazardous wastes to comply with the manifest system to ensure that the wastes are delivered to a permitted facility. See 40 CFR Part 263.20 (45 FR 33142; May 19, 1980, as amended at 45 FR 86973; December 31, 1980). Finally, FCRA regulations establish standards for hazardous waste treatment, storage, and disposal facilities allowed to receive such wastes. See 40 CFR Part 264 (46 FR 2802; January 12, 1981, 47 FR 32274; July 26, 1982).

Even if these wastes are not identified as hazardous, they still must be disposed in a manner that will not violate the open dumping prohibition of 4005 of RCRA. The Agency has calculated as part of the costs for wastewater treatment the cost of hauling and disposing of these wastes in accordance with this requirement. For more details see Section IX of the technical development document.

C. Consumptive Water Loss

Recycle of contact cooling and heating water requires the use of a cooling tower for PM&F processes with large flow rates. The evaporative cooling mechanism in a cooling tower can cause water loss and could contribute to water scarcity problems—a primary concern in arid and semi-arid regions. While this proposed regulation assumes water recyle through a cooling tower, the quantity of water loss in the cooling tower is not regionally significantly. Thus, EPA concludes that the consumptive water loss is insigificant and that the effluent reduction benefits of recyle technologies outweigh their impact on consumptive water loss.

D. Energy Requirements

The Agency estimates that the achievement of BPT effluent limitations guidelines will result in a net increase in electrical energy consumption of approximately 19.9 million kw-hr/yr, which is less than one percent of the estimated total current energy usage for the PM&F category. Since the Agency is not proposing BAT or BCT effluent limitations guidelines more stringent than BPT, no additional electrical energy is required. There is no additional electrical energy consumption associated with pretreatment standards since the Agency is not proposing PSES and PSNS. EPA believes that the energy used by a new direct discharging plant will be the same amount used by an existing source at BPT. Therefore, the estimated annual plant energy use for NSPS is the same as the annual average energy use for BPT, which is 14,000 kw-hr/yr. This does not significantly add to the total energy consumption for the PM&F category. The Agency concludes that the increased energy use to comply with these proposed effluent limitations guidelines and standards is insignificant and that effluent reduction benefits outweigh the increased energy use.

XVIII. Best Management Practices (BMP)

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" ("BMP"), as described in the "Authority and Background" section of this preamble. EPA is not now considering proposing or promulgating BPM specific to the plastics molding and forming category.

XIX. Upset and Bypass Provisions

An issue of recurring concern has been whether industry guidelines should include provisions authorizing noncompliance with effluent limitations guidelines during periods of "upset" or "bypass." An upset, sometimes called an "excursion," is unintentional noncompliance occurring for reasons beyond the reasonable control of the permittee. Industry argues that an upset provision in EPA's effluent limitations guidelines is necessary because such upsets inevitably occur due to limitations in even properly opeated control equipment. Because technology-based limitations require only what technology can achieve, they claim that liability for such situations is improper. When confronted with this issue, courts have been divided on the question of whether an explicit upset or excursion exemption is necessary or whether upset or excusion incidents may be handled through EPA's exercise of enforcement discretion. Compare, *Marathan Oil Co.* v. *EPA*, 564 F.2d 1253 (9th Cir. 1977), with *Weyerhaeuser Co.* v. *Costle*, 590 F.2d 1011 (D.C. Cir. 1978), and *Corn Refiners Association, Inc.* v. *Costle*, 594 F.2d 1223 (8th Cir. 1979.) *See also, American Petroleum Institute* v. *EPA*, 540 F.2d 1023 (10th Cir. 1976); *CPC International, Inc.* v. *Train*, 540 F.2d 1320 (8th Cir. 1976); *FMC Corp.* v. *Train*, 539 F.2d 973 (4th Cir. 1976).

While an upset is an unintentional episode during which effluent limitations guidelines are exceeded, a bypass is an act of intentional noncompliance during which waste treatment facilitates are circumvented in emergency situations. Bypass provisions

have, in the past, been included in NPDES permits.

EPA has determined that both upset and bypass provisions should be included in NPDES permits and has promulgated NPDES regulations that include such permit provisions (40 CFR 122.41; 45 FR 14146; April 1, 1983). The upset provision establishes an upset as an affirmative defense to prosecution for violation of technology-based effluent limitations guidelines. The bypass provision authorizes bypassing to prevent loss of life, personal injury or severe property damage. Because permittees in the plastics molding and forming category are entitled to upset and bypass provisions in NPDES permits, this proposed regulation does not address these issues.

XX. Variances and Modifications

Upon the promulgation of the final regulation, the numerical effluent limitations guidelines for the appropriate subcategory must be applied in all federal and state NPDES permits thereafter issued to plastics molding and forming direct dischargers.

For the BPT effluent limitations guidelines, the only exception to the binding limitations is EPA's "fundamentally different factors" variance. *See, E. I. duPont de Nemours and Co.* v. *Train,* 430 U.S. 112 (1977); *Weyerhaeuser Co.* v. *Costle, supra.* This variance recognizes factors concerning a particular discharger that are fundamentally different from the factors considered in this rulemaking. However, the economic ability of the individual operator to meet the compliance cost for BPT effluent limitations guidelines is not a consideration for granting a variance. *See, National Crushed Stone Association* v. *EPA,* 449 U.S. 64 (1980). This variance clause was originally set forth in EPA's 1973–1976 industry regulations and will not be included in the plastics molding and forming or other specific industry regulations. See the NPDES regulations at 40 CFR Part 125 Subparts A & D for the text and explanation of the "fundamentally different factors" variance.

The BAT effluent limitations guidelines in this regulation also are subject to EPA's "fundamentally different factors" variance. New source performance standards are not subject to EPA's "fundamentally different factors" variance or any statutory or regulatory modifications. *See, duPont* v. *Train, supra.*

XXI. Relationship to NPDES Permits

The BPT, BAT, and BCT effluent limitations guidelines and NSPS in this proposed regulation will be applied to individual plastics molding and forming plants through NPDES permits issued by EPA or approved state agencies under Section 402 of the Act. The preceding sections of this preamble discussed the binding effect of this regulation on NPDES permits, except to the extent that variances and modifications are expressly authorized. This section describes several other aspects of the interaction of this regulation and NPDES permits.

One matter that has been subject to different judicial views is the scope of NPDES permit proceedings in the absence of effluent limitations guidelines and standards. Under currently applicable EPA regulations, states and EPA Regions issuing NPDES permits before promulgation of this regulation must do so on a case-by-case basis. This regulation provides a technical and legal base for new permits.

Another noteworthy topic is the effect of this regulation on the powers of NPDES permit issuing authorities. The proposed regulation does not restrict the power of any permit-issuing authority to act in a manner that is consistent with the law on these or any other EPA regulations, guidelines, or policy. For example, the fact that this regulation does not control a particular pollutant does not preclude the permit issuer from limiting such pollutant on a case-by-case basis, when necessary to carry out the purposes of the Act. In addition, to the extent that state water quality standards or other provisions of state or Federal law require limitation of pollutants not covered by this regulation (or require more stringent effluent limitations guidelines on covered pollutants), the permit-issuing authority must apply such effluent limitations guidelines.

One additional topic that warrants discussion is the operation of EPA's NPDES enforcement program, many aspects of which have been considered in developing this regulation. The Agency wishes to emphasize that, although the Clean Water Act is a strict liability statute, the initiation of enforcement proceedings by EPA is discretionary (*Sierra Club* v. *Train,* 557 F. 2d 485 (5th Cir. 1977)). EPA has exercised and intends to exercise that discretion in a manner that recognizes and promotes good faith compliance efforts.

XXII. Summary of Public Participation

In June 1983, EPA mailed a detailed questionnaire to 330 plants in the PM&F category. The purpose of questionnaire, which was reviewed and approved by the Office of Management and Budget (OMB), was to obtain information on which to base this proposed regulation. Prior to receiving OMB's approval, EPA published a notice (48 FR 75; January 3, 1983) that indicated a questionnaire was going to be sent to PM&F plants and requested comments on the questionnaire.

Comments were received for the Society of Plastics Industries (SPI). A meeting was held with SPI on June 9, 1983, to discuss their comments. A memorandum that discusses their comments and EPA's response to those comments is in the adminstrative record for this proposed rule.

XXIII. Solicitation of Comments

EPA invites and encourages public participation in this proposed rulemaking. The Agency asks that any deficiencies in the record of this proposal be specifically addressed and that suggested revisions or corrections be supported by data.

EPA is particularly interested in receiving additional comments and information on the following issues:

(1) To estimate the number of plants that have PM&F processes and to select the plants that received a questionnaire, the Agency relied on: (1) A list of plants with a primary Standard Industrial Classification of 3079 obtained from Dun and Bradstreet, Inc.; (2) a Fortune 500 list of plants that mold and form plastic material; (3) various state industrial guides; and (4) the mailing list for the magazine "Plastics World." EPA requests comments with respect to the accuracy of this estimate. Particularly, if our estimate is inaccurate, what is a more accurate estimation and why? Also, the Dun and Bradstreet list relied on for survey mailings contained only those P&F plants having 10 or more employees. EPA requests additional information for plants with less than 10 employees.

(2) The effluent limitations guidelines and standards proposed in this regulation are mass based (i.e., an allowable mass of pollutant discharged per mass of plastic material processed). EPA believes that the amount of wastewater generated and the mass of pollutants discharged are related to the amount of plastic material processed. EPA requests comments on this approach.

(3) The proposed BPT and BAT effluent limitation guidelines and NSPS for PM&F processes in the contact cooling and heating water subcategory with an average process water usage flow rate greater than 35 gpm and for the cleaning and finishing water subcategory are based on the

performance of the activated sludge biological treatment process. That technology was transferred from the organic chemicals, plastics, and synthetic fibers category because EPA found that treatment for only PM&F wastewater was uniformly inadequate. The Agency has determined that organic chemicals, plastics, and synthetic fibers process wastewater, particularly wastewater generated by processes in the plastics only subcategory, and PM&F process wastewater have similar conventional pollutant characteristics. EPA requests comments on this approach and information on other treatment processes that may be used to control the pollutants in PM&F wastewaters.

(4) Conventional pollutant performance data for the activated sludge process were also transferred from the organic chemicals, plastics, and synthetic fibers category, particularly the plastics only subcategory. Those data were used along with the production normalized flows derived from PM&F data to calculate the allowable mass of conventional pollutants that can be discharged. The Agency solicits additional conventional pollutant concentration data for PM&F process water prior to treatment and any data on the performance of the activated sludge process on PM&F wastewater with respect to conventional pollutant removals.

(5) To estimate removal of priority toxic pollutants by the activated sludge process, the Agency relied upon percentage removal rates as reported in various literature sources and previous EPA studies. Based on these estimates, the Agency believes that the proposed BPT effluent limitations guidelines for conventional pollutants, which are based on the performance of the activated sludge process, adequately control the priority toxic pollutants in PM&F wastewaters. Further, relying again on these estimates, the Agency is not proposing toxic pollutant effluent limitations guidelines at BAT because there are not significant quantities of toxic pollutants remaining in PM&F wastewater after compliance with the proposed BPT effluent limitations guidelines. As part of any sampling for further study on nonconventional pollutants after proposal, the Agency may also collect additional data on toxic pollutants in PM&F wastewaters. These data will be used to further evaluate the amount of priority toxic pollutants present in PM&F wastewater and the technologies that can be used to treat the wastewater. In addition, since the Agency has no treatment performance data on the activated sludge process on PM&F wastewaters only, EPA will try to identify activated sludge treatment processes that treat only PM&F wastewaters and, if possible, sample the effluent from these processes. In light of any additional data gathered, the Agency will re-evaluate the amount of toxic pollutants generated and the removal of these pollutants by the activated sludge process. The Agency may also consider establishing specific limitations at BAT for toxic pollutants and reconsider the issue of pass-through of toxic pollutants for indirect dischargers depending on the results of further study. The Agency specifically requests any additional information and comment on the amount and presence of priority toxic pollutants in PM&F wastewaters and the removals achieved by the activated sludge process including data on treated effluent from this process.

(6) The production normalized flows used to calculate the allowable discharge mass were obtained for each subcategory by adding the production for plants in the questionnaire data base that currently recycle process water. The total production was divided into the total wastewater discharged by those plants (as reported on the questionnaires) to obtain the production normalized flow (liters/kkg) for each subcategory. The Agency requests comments on this approach for calculating production normalized flows.

(7) The proposed BPT effluent limitations guideline and NSPS for PM&F processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm or less are based on 100 percent recycle of the wastewater. The 35 gpm cut-off was selected because it is the average of the best performance for plants currently achieving 100 percent recycle. Before promulgation the Agency will consider raising this cut-off level and thus requests comments on the appropriate cut-off value. Specifically, should the cut-off be higher since available information suggest 100 percent recycle can be achieved by higher flow rate processes; can all plants, regardless of flow rate, recycle 100 percent of their cooling and heating water; or should the cut-off be lower? Additionally, should a higher cut-off than the cut-off use for BPT be used as the basis for BAT effluent limitations guidelines and new source performance standards?

(8) The mass based effluent limitations guidelines and standards in the proposed regulation require PM&F plants to provide information to the permit writer concerning the amount of plastic material processed. For the contact cooling and heating water subcategory, the amount of plastic material processed by all of the PM&F processes at a plant that use process water for contact cooling or heating is the total plastic material processed by that plant. For the cleaning and finishing water subcategory, the amount of plastic product cleaned is part of the production value used to calculate the allowable mass discharged. The other part is the production related to the PM&F equipment that is cleaned. That production is defined as the amount of plastic material processed in the equipment that is cleaned. The total amount of plastic material processed for cleaning processes where both plastic products and equipment are cleaned is the sum of the two productions. The amount of plastic material processed in a finishing process is the production for that process. EPA requests comments on this approach, particularly on the method used to determine the production associated with cleaning PM&F equipment.

(9) The average process water usage flow rate in the contact cooling and heating water subcategory is calculated by determining the volume of water used in the PM&F process during a one year period. That volume is divided by the total minutes that the process operates during the year to obtain the flow rate in gallons per minute. The flow rate is used to determine which limitations (i.e., 100 percent recycle or allowable mass discharge) apply to a PM&F plant. The Agency requests comments on this methodology. In particular, should the time period used to obtain the volume of water be less than one year? If yes, what is a more appropriate time period?

(10) During the sampling program for this project, wastewater generated during the solvent recovery operation in a solvent casting process was sampled. The Agency proposes not to control that wastewater in this regulation because the process that generates the wastewater is not a PM&F process. Instead, that wastewater would be controlled on a case-by-case basis by the permit writer using data obtained from this study. The Agency requests comments on this approach.

(11) To determine the economic impact of this proposed regulation, the Agency calculated the cost of installing BPT and NSPS. Details of the estimated costs and other impacts are presented in Section IX of the technical development document and in the Economic Impact Analysis. Based on results of these

analyses, the Agency projects that four process lines will close with a loss of 22 jobs as a result of this proposed regulation. The Agency invites comments, supported by appropriate data, on the economic impact analysis and projections. Commenters should provide supporting data not only on the likelihood of plant closures and employment losses, but also on the effects of the regulation on: modernization or expansion of production, production costs, the ability to finance non-environmental investments, product prices, profitability, international competitiveness, and the availability of less costly technology.

(12) The Agency recognizes that because the proposed regulation impacts only direct dischargers, PM&F plants that are direct dischargers may be at a competitive disadvantage compared with indirect dischargers. The Agency therefore solicits comments, supported by appropriate data, from direct dischargers on their ability to incur the estimated compliance costs and still remain competitive and on their ability to pass in any increases in production costs to consumers.

(13) In the Agency's sample of PM&F plants that received a questionnaire, small plants, expecially those with 10 or less employees, may have been underrepresented. Therefore, we solicit comments on the ability of small PM&F plants to incur the estimated compliance costs. These comments should identify the plant, indicate PM&F employment, and include appropriate supporting data on the small plants financial position for 1982 and 1983 as reflected in sales, cost of production, return on investment, and the salvage value of the plant.

XXIV. Availability of Technical Assistance

The major documents on which this regulation is based are: (1) *The Development Document (Proposal) for Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Plastics Point Source Category (Proposal);* and (2) *Economic Impact Analysis of Proposed Effluent Limitations Guidelines and Standards for the Plastics Molding and Forming Industry.*

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comment made by OMB is in the record for this proposed rulemaking.

XXV. List of Subjects in 40 CFR Part 463

Plastic molded and formed products, Waste treatment and disposal, Water pollution control

Dated: February 3, 1984.

William D. Ruckelshaus,

Administrator.

XXVI. Appendices

Appendix A—Abbreviations, Acronyms and Other Terms Used in This Notice

Act—The Clean Water Act.

Agency—The U.S. Environmental Protection Agency.

BAT—The best available technology economically achievable under Section 304(b)(2) of the Act.

BCT—The best conventional pollutant control technology, under Section 304(b)(4) of the Act.

BPM—Best management practices under Section 304(e) of the Act.

BPT—The best practicable control technology currently available under Section 304(b)(1) of the Act.

Clean Water Act—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 *et seq.*), as amended by the Clean Water Act of 1977 (Pub. L. 95–217).

Direct discharger—A facility that discharges or may discharge pollutants into waters of the United States.

Indirect discharger—A facility that introduces or may introduce pollutants into a publicly owned treatment works.

NPDES permit—A National Pollutant Discharge Elimination System permit issued under Section 402 of the Act.

NSPS—New source performance standards under Section 306 of the Act.

POTW—Publicly owned treatment works.

PSES—Pretreatment standards for existing sources of indirect discharges under Section 307(b) of the Act.

PSNS—Pretreatment standards for new sources of indirect discharges under Section 307 (b) and (c) of the Act.

RCRA—Resource Conservation and Recovery Act (Pub. L. 94–589) of 1976, as amended.

Appendix B—Toxic Pollutants Not Regulated at BAT Because They are Effectively Controlled by Technologies Upon Which are Based Other Effluent Limitations Guidelines

Contact Cooling and Heating Water Subcategory

4. benzene
6. carbon tetrachloride (tetrachloromethane)
11. 1,1,1-trichloroethane
22. parachlorometa cresol
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
65. phenol
66. bis(2-ethylhexyl) phthalate
67. di-n-butyl phthalate
85. tetrachloroethylene
86. toluene
89. aldrin
90. dieldrin
93. 4,4'-DDE(p,p'DDX)
100. heptachlor
102. α-BHC
103. β-BHC
104. γ-BHC
105. δ-BHC
108. cadmium
119. chromium (Total)
120. copper
122. lead
123. mercury
124. nickel
128. zinc

Cleaning and Finishing Water Subcategory

4. benzene
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
62. N-nitrosodiphenylamine
65. phenol
66. bis(2-ethylhexyl)phthalate
86. toluene
89. aldrine
100. heptachlor
102. α-BHC
104. γ-BHC
105. δ-BHC
119. chromium (Total)
120. copper
124. nickel
125. selenium
128. zinc

Appendix C—Toxic Pollutants With A Concentration Greater in the Source Water than the Concentration in the Wastewater Samples

Contact Cooling and Heating Water Subcategory

47. bromoform (tribromomethane)
87. trichloroethylene

Cleaning and Finishing Water Subcategory

22. parachlorometa cresol
121. cyanide (Total)

Appendix D—Toxic Pollutants Not Detected or Detected at or Below the Analytical Detection Limit

PM&F Point Source Category

1. acenaphthene
2. acrolein
3. acrylonitrile
5. benzidene
7. chlorobenzene

8. 1,2,4-trichlorobenzene
9. hexachlorobenzene
10. 1,2-dichloroethane
13. 1,1-dichloroethane
14. 1,1,2-trichloroethane
15. 1,1,2,2-tetrachloroethane
16. chloroethane
18. bis(2-chloroethyl) ether
19. 2-chloroethyl vinyl ether (mixed)
20. 2-chloronaphthalene
21. 2,4,6-trichlorophenol
24. 2-chlorophenol
25. 1,2-dichlorobenzene
26. 1,3-dichlorobenzene
27. 1,4-dichlorobenzene
28. 3,3'-dichlorobenzidine
29. 1,1-dichloroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,3-dichloropropene)
34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
38. ethylbenzene
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-choroethoxy) methane
45. methyl chloride (chloromethane)
46. methyl bromide (bromomethane)
51. chlorodibromomethane
52. hexachlorobutadiene
53. hexachlorocyclopentadiene
54. isophorone
56. nitrobenzene
57. 2-nitrophenol
58. 4-nitrophenol
59. 2,4-dinitrophenol
60. 4,6-dinitro-o-cresol
61. N-nitrosodimethylamine
63. N-nitrosodi-n-propylamine
64. pentachlorophenol
67. butyl benzyl phthalate
72. benzo (a)anthracene (1,2-benzanthracene)
74. 3,4-benzofluoranthene
75. benzo(k)fluoranthane (11,12-benzofluroanthene)
76. chrysene
77. acenaphthylene
78. anthracene
79. benzo(ghi)perylene (1,11-benzoperylene)
80. fluorene
81. phenanthrene
82. dibenzo (a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno (1,2,3-cd)pyrene (w,e,-o-phenylenepyrene)
84. pyrene
88. vinyl chloride (chloroethylene)
91. chlordane (technical mixture and metabolites)
95. α-endosulfan
106. PCB–1242 (Arochlor 1242)
107. PCB–1254 (Arochlor 1254)
108. PCB–1221 (Arochlor 1221)
109. PCB–1232 (Arochlor 1232)
110. PCB–1248 (Arochlor 1248)
111. PCB–1260 (Arochlor 1260)
112. PCB–1016 (Arochlor 1016)
113. toxaphene
116. asbestos
129. 2,3,7,8-tetra chlorodibenzo-p-dioxin (TCDD)

Contact Cooling and Heating Water Subcategory

48. dichlorobromomethane
62. N-nitrosodiphenylamine
98. endrin
114. antimony
115. arsenic
121. cyanide (Total)
125. selenium

Cleaning and Finishing Water Subcategory

6. carbon tetrachloride (tetrachloromethane)
12. hexachlorethane
30. 1,2-trans-dichloroethylene
47. bromoform (tribromomethane)
55. naphthalene
69. di-n-octyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
73. benzo (a)pyrene (3,4-benzopyrene)
85. tetrachloroethylene
87. trichloroethylene
90. dieldrin
92. 4,4'-DDT
93. 4,4'-DDE(p,p'DDX)
94. 4,4'-DDD(p,p'TDE)
96. β-endosulfan
97. endosulfan sulfate
99. endrin aldehyde
101. heptachlor epoxide
117. beryllium
118. cadmium
122. lead
127. thallium

Appendix E—Toxic Pollutants Detected in the Effluent From Only a Small Number of Sources

Contact Cooling and Heating Water Subcategory

12. hexachloroethane
30. 1,2–trans-dichloroethylene
55. naphthalene
69. di-n-octyl phthalate
70. diethyl phthalate
71. dimethyl phthalate
73. benzo (a)pyrene (3,4-benzopyrene)
92. 4,4'-DDT
94. 4,4'-DDD(p,p'TDE)
96. β-endosulfan
97. endosulfan sulfate
99. endrin aldehyde
101. heptachlor epoxide
117. beryllium
126. silver
127. thallium

Cleaning and Finishing Water Subcategory

11. 1,1,1-trichlorethane
48. dichlorobromomethane
68. di-n-butyl phthalate
98. endrin
103. β-BHC
114. antimony
115. arsenic
123. mercury
126. silver

Appendix F—Toxic Pollutants Excluded From Pretreatment Standards for Processes in the Contact Cooling and Heating Water Subcategory With an Average Process Water Usage Flow Rate of 35 gpm or Less Because the Amount and Toxicity Do Not Justify Category Pretreatment Standards

4. Benzene
6. carbon tetrachloride (tetrachloromethane)
11. 1,1,1-trichloroethane
22. parachlorometa cresol
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
65. phenol
66. bis(2-ethylhexyl) phthalate
68. di-n-butyl phthalate
85. tetrachloroethylene
86. toluene
89. aldrin
90. dieldrin
93. 4,4'-DDE(p,p'DDX)
100. heptachlor
102. α-BHC
103. β-BHC
104. λ-BHC
105. δ-BHC
118. cadmium
119. chromium (Total)
120. copper
122. lead
123. mercury
124. nickel
128. zinc

It is proposed to add a new Part 463 to read as set forth below:

PART 463—PLASTICS MOLDING AND FORMING POINT SOURCE CATEGORY

General Provisions

Sec.

Subpart A—Contact Cooling and Heating Water Subcategory

Authority: Secs. 301, 304 (b), (c), (e), and (g), 306 (b) and (c), 307, 308, and 501, Clean Water Act (Federal Water Pollution Control Act Amendments of 1972, as amended by Clean Water Act of 1977) (the "Act"); 33 U.S.C. 1311, 1314 (b), (c), (e) and (g), 1316 (b) and (c), 1317 (b) and (c), 1318, and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217.

General Provisions

§ 463.01 Applicability.

(a) This part applies to any plastics molding and forming process that discharges or may discharge pollutants to waters of the United States or that introduces pollutants into a publicly owned treatment works. Plastic molding and forming includes processes that blend, mold, form, or otherwise process plastic materials into intermediate or final plastic products. They include commonly recognized processes such as extrusion, molding, coating and laminating, thermoforming, calendering, casting, foaming, and cleaning and finishing.

(b) Plastics molding and forming processes (e.g., extrustion and pelletizing) used by plastics resin manufacturers to process crude intermediate plastic material for shipment off-site are excluded from this regulation and regulated under the organic chemicals, plastics, and synthetic fibers category. Plastics molding and forming processes used by plastic resin manufacturers to process plastic materials on-site into intermediate or final plastics products by further molding and forming are controlled by the effluent limitations guidelines and standards for the plastics molding and forming category in this Part.

(c) Processes that coat a plastic material onto a substrate may fall within the definition of electroplating and metal finishing as defined in 40 CFR Parts 413 and 433 (see, 48 FR 32485; July 15, 1983). These coating processes are excluded from the effluent limitations guidelines and standards for the electroplating and metal finishing point source categories and are included in the plastics molding and forming category in this Part.

(d) Coating of plastic material on a formed metal substrate is also covered by the plastics molding and forming effluent limitations guidelines and standards and is not covered by the specific metal forming guidelines such as aluminum forming (40 CFR Part 467 (48 FR 49126; October 24, 1983)), copper forming (40 CFR Part 468 (48 FR 36992; August 15, 1983)), and nonferrous metals forming. However, the plastics molding and forming effluent limitations guidelines and standards in this Part apply only to the coating process; the metal forming operations are subject to the specific metal forming regulation.

§ 463.02 General definitions.

In addition to the definitions set forth in 40 CFR Part 401, the following definitions apply to this part:

(a) "Plastic molding and forming" is a manufacturing process in which plastic materials are blended, molded, formed, or otherwise processed into intermediate or final plastic products.

(b) "Process water" is any raw, service, recycled, or reused water that contacts the plastic product or contacts shaping equipment surfaces such as molds and mandrels that are, or have been, in contact with the plastic product.

(c) "Contact cooling and heating water" is process water that contacts the raw materials or plastic product for the purpose of heat transfer during the plastic molding and forming process.

(d) "Cleaning water" is process water used to clean an intermediate or final plastic product or to clean equipment used in plastic molding and forming that contacts an intermediate or final plastic product. It includes water used in both the detergent wash and rinse cycles of a cleaning process.

(e) "Finishing" water is process water used to remove waste plasic material generated during a finishing process or to lubricate a plastic product during a finishing process. It includes water used to machine, to decorate, or to assemble intermediate or final plastic products.

(f) "Plastic material" is an organic polymeric material of large molecular weight that can be shaped by flow. The material can be either homogeneous polymeric resins or resins combined with fillers, plasticizers, pigments, stabilizers, or other additives.

§ 463.03 Monitoring and reporting requirements.

The "monthly average" regulatory values shall be the basis for the monthly average discharge limitations in direct discharge permits. Compliance with the monthly average discharge limitations is required regardless of the number of samples analyzed and averaged.

Subpart A—Contact Cooling and Heating Water Subcategory

§ 463.10 Applicability; description of the contact cooling and heating water subcategory.

This subpart applies to discharges of pollutants from processes in the contact cooling and heating water subcategory to waters of the United States and the introduction of such pollutants into publicly owned treatment works. Processes in the contact cooling and heating water subcategory are processes where process water comes in contact with plastic materials or plastic products for the purpose of heat transfer during plastics molding and forming.

§ 463.11 Specialized definitions.

For the purpose of this subpart:

(a) The "average process water usage flow rate" of a process in gallons per minute is equal to the volume of process water (gallons) used per year by a process divided by the total time (minutes) per year the process operates. The "average process water usage flow rate" for a plant with more than one plastics molding and forming process that uses contact cooling and heating water is the sum of the "average process water usage flow rates" for those plastics molding and forming processes.

(b) The "volume of process water used per year" is the volume of process water that flows through a process and comes in contact with the plastic product over a period of one year.

(c) "Mass of plastic material processed (kg or lbs)" when used to determine effluent limitations is the mass of plastic material that process water comes in contact with for cooling or heating purposes. If the same unit mass of plastic undergoes more than one molding and forming process (for example, it is compounded and pelletized, extruded, and blow molded), the mass of plastic material processed in each process is added to obtain the total mass of plastic material processed.

§ 463.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available:

(a) There shall be no discharge of wastewater pollutants from existing processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm (132 liters per minute) or less.

(b) The mass of pollutants in process water discharged from existing processes in the contact cooling and heating water subcategory with an average process water usage flow rate greater than 35 gpm (132 liters per minute) shall not exceed the following values:

SUBPART A

[Contact cooling and heating water]

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	78	35
Oil & Grease	113	27
TSS	186	57
pH	[1]	[1]

[1] Within the range of 6.0 to 9.0 at all times.

§ 463.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The Agency has determined that there are insignificant quantities of toxic pollutants in contact cooling and heating wastewaters after compliance with applicable BPT effluent limitations guidelines. Accordingly, since the BPT level of treatment provides adequate control, the Agency is not proposing more stringent BAT effluent limitations quidelines.

§ 463.14 New source performance standards.

Any new source subject to this subpart must achieve the following performance standards:

(a) There shall be no discharge of wastewater pollutants from new sources with processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm (132 liters per minute) or less.

(b) The mass of pollutants in process water discharged from new sources in the contact cooling and heating water subcategory having processes with an average process water usage flow rate greater than 35 gpm (132 liters per minute) shall not exceed the following values:

SUBPART A

[Contact cooling and heating water]

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	78	35
Oil & Grease	113	27
TSS	186	57
pH	[1]	[1]

[1] Within the range of 6.0 to 9.0 at all times.

§ 463.15 Pretreatment standards for existing sources.

Any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403—General Pretreatment Regulations.

§ 463.16 Pretreatment standards for new sources.

Any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403—General Pretreatment Regulations.

§ 463.17 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology:

(a) There shall be no discharge of conventional pollutants from existing processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gpm (132 liters per minute) or less.

(b) The mass of conventional pollutants in process water discharged from existing processes in the contact cooling and heating water subcategory with an average process water usage flow rate greater than 35 gpm (132 liters per minute) shall not exceed the following values:

SUBPART A

[Contact Cooling and Heating Water]

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	78	35
Oil & Grease	113	27
TSS	186	57
pH	[1]	[1]

[1] Within the range of 6.0 to 9.0 at all times.

Subpart B—Cleaning and Finishing Water Subcategory

§ 463.20 Applicability; description of the cleaning and finishing water subcategory.

This subpart applies to discharges of pollutants from processes in the cleaning and finishing water subcategory to waters of the United States and the introduction of such pollutants into publicly owned treatment works. Processes in the cleaning and finishing water subcategory are processes where water comes in contact with the plastic product for the purpose of cleaning the product; where water comes in contact with shaping equipment, such as molds and mandrels, that contact the plastic material for the purpose of cleaning the equipment; and where water comes in contact with the plastic product during finishing.

§ 463.21 Specialized definitions.

For the purpose of this subpart:

(a) "Mass of plastic material processed (kg or lbs)" when used to determine effluent limitations is the mass of plastic material that process water comes in contact with for product cleaning or finishing purposes. If the same unit mass of plastic material undergoes more than one cleaning or finishing process (for example, it is cleaned and finished), the mass of plastic material processed in each process is added to obtain the total mass of plastic material processed. For the purpose of calculating limitations for water used to clean shaping equipment,

such as molds and mandrels, "mass of plastic material processed" refers to the mass of plastic material that was molded or formed by the shaping equipment being cleaned.

§ 463.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of best practicable control technology currently available.

Except as provided in 40 CFR 125.30-125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) The mass of pollutants in process water discharged from existing cleaning processes subject to this subpart shall not exceed the following values:

SUBPART B

[Cleaning water]

Pollutant or pollutant property	*BPT effluent limitations*	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	220	99
Oil & Grease	318	76
TSS	524	161
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

(b) The mass of pollutants in process water discharged from existing finishing processes subject to this subpart shall not exceed the following values:

SUBPART B

[Finishing water]

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	52	23
Oil & Grease	76	18
TSS	125	38
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

§ 463.23 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The Agency has determined that there are insignificant quantities of toxic pollutants in cleaning and finishing process wastewaters after compliance with applicable BPT effluent limitations guidelines. Accordingly, since the BPT level of treatment provides adequate control, the Agency is not proposing more stringent BAT effluent limitations guidelines.

§ 463.24 New source performance standards.

Any new source subject to this subpart must achieve the following performance standards.

(a) The mass of pollutants in process water discharged from cleaning processes subject to this subpart at new sources shall not exceed the following values:

SUBPART B

[Cleaning water]

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	220	99
Oil & Grease	318	76
TSS	524	161
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

(b) The mass of pollutants in process water discharged from finishing processes subject to this subpart at new sources shall not exceed the following values:

SUBPART B

[Finishing water]

Pollutant or pollutant property	NSPS	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	52	23
Oil & Grease	76	18
TSS	125	38
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

§ 463.25 Pretreatment standards for existing sources.

Any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR 403—General Pretreatment Regulations.

§ 463.26 Pretreatment standards for new sources.

Any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403—General Pretreatment Regulations.

§ 463.27 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in 40 CFR 125.30–125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

(a) The mass of conventional pollutants in process water discharges from existing cleaning processes subject to this subpart shall not exceed the following values:

SUBPART B

[Cleaning water]

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	220	99
Oil & Grease	318	76
TSS	524	161
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

(b) The mass of conventional pollutants in process water discharged from existing finishing processes subject to this subpart shall not exceed the following values:

SUBPART B

[Finishing water]

Pollutant or pollutant property	BCT effluent limitations	
	Maximum for any 1 day	Maximum for monthly average
	mg/kg (pounds per million pounds) of plastic material processed	
BOD5	52	23
Oil & Grease	76	18
TSS	125	38
pH	(1)	(1)

[1] Within the range of 6.0 to 9.0 at all times.

[FR Doc. 84-4037 Filed 2-14-84; 8:45 am]
BILLING CODE 6560-50-M