ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 463

[FRL-2716-4]

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

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final regulation.

SUMMARY: This regulation establishes effluent limitations guidelines and standards that limit the discharge of pollutants into navigable waters by existing and new sources engaged in plastics molding and forming. The Clean Water Act and a consent decree require EPA to issue this regulation.

EPA is promulgating effluent limitations guidelines attainable by the application of "best practicable technology currently available" (BPT), "best available technology economically achievable" (BAT), and "best conventional pollutant control technology" (BCT) and new source performance standards (NSPS) attainable by the application of "best available demonstrated technology." In addition, the Agency considered whether to promulgate pretreatment standards for existing and new indirect dischargers (PSES and PSNS, respectively).

DATES: The regulations are effective January 30, 1985. In accordance with 40 CFR 100.01 (45 FR 26048), this regulation shall be considered issued for purposes of judicial review at 1:00 p.m. Eastern time on January 2, 1985. Under section 509(b)(1) of the Clean Water Act, judicial review of this regulation can be made only by filing a petition for review in the United States Court of Appeals within 90 days after the regulation is considered issued for purposes of judicial review. Under section 509(b)(2) of the Clean Water Act, the requirements in this regulation may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: The basis for this regulation is detailed in four major documents. See Section XV—Availability of Technical Information for a discussion of those documents. Copies of the technical and economic documents may be obtained from the National Technical Information Service, Springfield, Virginia 22161 (Phone: (703) 487-4600). For additional technical information, contact Mr. Robert M. Southworth, Industrial Technology Division (WH-552), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460 (Phone (202) 382-7150). For additional economic information, contact Ms. Ann M. Watkins, Office of Analysis and Evaluation (WH-586), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460 (Phone (202) 382-5387).

On February 20, 1985, the complete public record for this rulemaking, including the Agency's responses to comments on the proposed regulations, will be available for review in EPA's Public Information Reference Unit, Room 2404 (Rear) (EPA Library), 401 M Street, SW., Washington, D.C. The EPA public information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Robert M. Southworth at (202) 382-7150.

SUPPLEMENTARY INFORMATION:

Overview

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

Organization of This Notice

I. Legal Authority

This regulation is promulgated 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), also referred to as "the Act". It is also promulgated 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; January 6, 1984; and July 5, 1984.

II. Scope of This Rulemaking

This final regulation, which was proposed on February 15, 1984 (49 FR 5862), establishes effluent limitations guidelines and standards for existing and new plastics molding and forming processes. Plastics molding and forming processes (PM&F) include processes that blend mold, form, or otherwise process a wide variety of plastic materials into intermediate or final plastic products.

For the purpose of this final rule, the PM&F category is divided into three subcategories. They are:

Subpart A—Contact Cooling and Heating Water Subcategory
Subpart B—Cleaning Water Subcategory
Subpart C—Finishing Water Subcategory

BPT effluent limitation guidelines are established for each of the three subcategories to control the discharge of conventional pollutants. Biochemical oxygen demand (BOD5), oil and grease (O&G), total suspended solids (TSS), and pH are controlled in the contact cooling and heating water subcategory and in the cleaning water subcategory. For the finishing water subcategory, TSC and pH are controlled by the BPT effluent limitations guidelines.

With the exception of certain toxic pollutants (i.e., phthalates) in the contact cooling and heating water subcategory and in the finishing water subcategory, EPA is promulgating BAT effluent limitations guidelines equal to the BPT effluent limitations for each subcategory. EPA is not promulgating BAT effluent limitations guidelines for phthalates for the contact cooling and heating water subcategory and the

finishing water subcategory at this time. BAT effluent limitations guidelines for those pollutants are reserved pending completion of a treatability study of the phthalates found in wastewaters discharged from processes in the contact cooling and heating water subcategory and in the finishing water subcategory.

The Agency is promulgating BCT effluent limitations guidelines equal to the BPT effluent limitations guidelines for the contact cooling and heating water subcategory because EPA could not identify any technology that further reduces the concentration of conventional pollutants in contact cooling and heating water. BCT effluent limitations guidelines for the cleaning water subcategory and the finishing water subcategory are reserved until the promulgation of the final BCT methodology.

NSPS are established equal to the BPT/BAT effluent limitations guidelines for each subcategory with the exception of NSPS for phthalates for both the contact cooling and heating water subcategory and the finishing water subcategory. NSPS for the phthalates are reserved pending the completion of the phthalate treatability study mentioned above. NSPS for both the contact cooling and heating water subcategory and the cleaning water subcategory control BOD5, O&G, TSS, and pH.

The Agency is not promulgating pretreatment standards for the plastics molding and forming point source category for the reasons discussed below. Pretreatment standards for phthalates are reserved in two subcategories pending completion of the phthalate treatability study. Indirect dischargers in the PM&F category have to comply with 40 CFR Part 403—General Pretreatment Regulations.

III. 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 Water." (Section 101(a)). To implement the Act, EPA was required to issue effluent limitations guidelines, pretreatment standards, and new source performance standards for industrial dischargers.

The Act included a timetable for issuing these standards. However, EPA was unable to meet many of the deadlines and, as a result, in 1976, it was sued by several environmental groups. In settling 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 controlling 65 "priority" toxic compounds and classes of compounds. In carrying out this program, EPA must promulgate BAT effluent limitations guidelines, pretreatment standards, and new source performance standards for 21 major industries. 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; January 6, 1984; and July 5, 1984.

Many of the basic elements of the Settlement Agreement were incorporated into the Clean Water Act of 1977. Like the Agreement, the Act stressed control of toxic pollutants, including the 65 "priority" toxic compounds and classes of compounds. In addition to strengthening the toxic control program, section 304(e) of the Act authorizes the Administrator to prescribe "best management practices" (BMPs) 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 manufacturing or treatment process.

Under the Act, the EPA is to establish several different kinds of effluent limitations guidelines. These are discussed in detail in the preamble and in the technical development document for the proposed regulation. They are summarized briefly below:

1. Best Practicable Control Technology (BPT)

BPT effluent limitations guidelines are generally based on the average of the best existing performance by plants of various sizes, ages, and unit processes within the category or subcategory for control of familiar (i.e., classical) pollutants.

In establishing BPT effluent limitations guidelines, EPA considers the total cost in relation to the effluent reduction benefits, the age of equipment and facilities involved, the processes employed, process changes required, engineering aspects of the control technologies, and non-water quality environmental impacts (including energy requirements). The Agency balances the category-wide cost of applying the technology against the effluent reduction benefits.

2. Best Available Technology Economically Achievable (BAT)

BAT effluent limitations guidelines, in general, represent the best existing performance in the category or subcategory. The Act establishes BAT as the principal national means of controlling the direct discharge of toxic and nonconventional pollutants to navigable waters.

In establishing BAT, the Agency considers the age of the equipment and facilities involved, the processes employed, the engineering aspects of the control technologies, process changes, the cost of achieving such effluent reduction, and non-water quality environmental impacts. The Agency retains considerable discretion in assigning the weight to be accorded these factors.

3. Best Conventional Pollutant Control Technology (BCT)

The 1977 Amendments to the Clean Water Act added section 301(b)(2)(E), establishing "best conventional pollutant control technology" (BCT) for the discharge of conventional pollutants from existing industrial point sources. Section 304(a)(4) designated the following as conventional pollutants: BOD, TSS, fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease a conventional pollutant on July 30, 1979 (44 *FR* 44501).

BCT is not an additional limitation 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 the BCT effluent limitations guidelines be assessed in light of a two part "cost-reasonableness" test. *American Paper Institute* v. *EPA*, 660 F.2d 954 (4th Cir. 1981). The first test compares the cost for private industry to reduce its discharge of 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 limitations are "reasonable" under both tests before establishing them as BCT. 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 make certain revisions. A revised methodology for the general development of BCT effluent limitations guidelines was proposed on October 29, 1982 (47 *FR* 49176). On September 20, 1984, the Agency issued a major notice of data availability for the BCT methodology (49 *FR* 37046).

In today's rulemaking, EPA is establishing BCT effluent limitations guidelines for the contact cooling and heating water subcategory equal to the BPT effluent limitations guidelines for that subcategory because EPA has not identified any technology which further reduces the discharge of conventional pollutants in this subcategory. Therefore, whatever the Agency's final BCT methodology, BCT effluent limitations guidelines for this subcategory would be equal to the BPT effluent limitations guidelines. When the final BCT methodology is promulgated, EPA will use this methodology to determine whether BCT effluent limitations guidelines should be established for the other two subcategories of the plastics molding and forming category.

4. New Source Performance Standards (NSPS)

NSPS are based on the performance of the best available demonstrated technology (BDT). New plants have the opportunity to install the best and most efficient production processes and wastewater treatment technologies,

5. Pretreatment Standards for Existing Sources (PSES)

PSES are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of publicly owned treatment works (POTW). They must be achieved within three years of promulgation. The Clean Water Act of 1977 requires pretreatment standards for toxic pollutants that pass through POTWs in amounts that would violate direct discharger effluent limitations guidelines or interfere with either the POTW's treatment process or chosen sludge disposal method. The legislative history of the 1977 Act indicates that pretreatment standards are to be technology-based, analogous to the BAT effluent limitations guidelines for removal of toxic pollutants. EPA generally determines that there is pass through of toxic pollutants if the nation-wide average percentage of toxic pollutants removed by a well-operated POTW achieving secondary treatment is less than the percent removed by the BAT model treatment system. The General Pretreatment Regulations, which serve as the framework for categorical pretreatment standards, are found at 40 CFR Part 403; 46 FR 9404, January 28, 1981).

6. Pretreatment Standards for New Sources (PSNS)

Like PSES, PSNS are designed to prevent the discharge of pollutants that pass through, interfere with, or are otherwise incompatible with the operation of a POTW. PSNS are to be issued at the same time as NSPS. New indirect dischargers, like new direct dischargers, have the opportunity to incorporate in their plant the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating PSES.

B. Overview of the Industry

The plastics molding and forming industry is a large and diversified industry with many different types of production processes that use 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 throughout the United States. EPA further estimates that 1,898 of the 10,260 plants have 2,587 PM&F processes that use process water (i.e., they are wet.) The 1,898 wet plants have an estimated 810 wet PM&F processes with direct discharges, 1,145 wet processes with indirect discharges, and 632 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 nine generic processes used to process plastic materials. They are: Extrusion, molding, coating and laminating, thermoforming, calendering, casting, foaming, cleaning, and finishing. These processes are described in the preamble to the proposed PM&F regulation (49 FR 5862; February 15, 1984).

Process water is used in PM&F processes to cool or heat the plastic products; to clean the surfaces of both the plastic products and the equipment used to produce those products; and to finish plastic products. The conventional and nonconventional pollutants found in PM&F wastewaters are: (1) Conventional pollutants—biochemical oxygen demand (BOD5), oil and grease (O&G), total suspended solids (TSS), and pH; and (2) nonconventional pollutants—total organic carbon (TOC), chemical oxygen demand (COD); and total phenols. The priority toxic pollutants found in treatable concentrations in PM&F wastewaters are: bis (2-ethylhexyl) phthalate, di-n-butyl phthalate, dimethyl phthalate, phenol, and zinc.

C. Applicability

For the purpose of this final 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 regulation.

Non-contact cooling water (i.e., water that does not contact either the plastic product or equipment surfaces that have contacted the plastic product) is not process water and thus is not controlled by this regulation. Permitting and control authorities will establish effluent limitations for pollutants found in non-contact cooling water and other non-process wastewater on a case-by-case basis.

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 or will establish categorical 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). As explained in the final electroplating and metal finishing regulations, wastewater from these coating operations is specifically excluded from the effluent limitations guidelines and standards for the electroplating and metal finishing point source category. See 40 CFR 433.10(b). Accordingly, it is subject to the PM&F effluent limitations guidelines. Coating of a 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 Part 468 (48 FR 36942; August 15, 1983)), and nonferrous metals forming (40 CFR Part 471 (proposed 49 FR 8112, March 5, 1984)). However, the PM&F regulation applies only to wastewater discharged

from the coating process; wastewater discharged from the prior metal forming operations is 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, plastics 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 are to be regulated under the organic chemicals, plastics, and synthetic fibers category (48 FR 11828; March 21, 1983). Plastics molding and forming processes used by plastic resin manufacturers to process crude intermediate plastic materials, which are then further processed on-site into intermediate or final plastic products by molding and forming, are controlled by the effluent limitations guidelines and standards for the plastics molding and forming category in this Part.

Plants in the PM&F category may have processes that generate only one type of wastewater and thus fit within one subcategory. However, many plants have more than one PM&F process and those processes may be in different subcategories. In this instance, plants must comply with the effluent limitations guidelines and standards that apply to each process.

Wastewater is 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. It is generated when steam condensate from the solvent casting process is distilled to recover acetone. Data from the analysis of samples of this wastewater indicate that its pollutant characteristics are different from the characteristics of PM&F process wastewaters. 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 are presented in the technical development document for the PM&F proposal and may be used as a guide by the permit writer or control authority.

Commenters on the PM&F proposal indicated that research and development (R&D) laboratories and technical centers may use PM&F processes to produce plastic products. They questioned the applicability of the PM&F regulation to the R&D processes because those processes usually produce a low annual mass of plastic products. This final rule applies to PM&F processes that discharge process water regardless of the mass of plastic products produced by a process. Therefore, PM&F processes at R&D laboratories must meet the PM&F effluent limitations guidelines and standards if those processes discharge process water. Section 463.01 has been revised to add a new paragraph (e) that makes clear the application of this regulation to R&D facilities.

This rule does not apply to wastewater generated during the reticulation of polyurethane foam. Reticulation can be done by either a chemical process or a thermal process. In the chemical process, the foam is passed through a bath of sodium hydroxide and then is quenched in a series of water baths to stop the chemical reaction. In thermal reticulation, the foam is reticulated by controlled explosions inside the foam structure. Products of combustion are removed from the foam by a vacuum pump and are absorbed in the water inside the pump. Process water used in chemical and thermal reticulation is not cooling water because it is not used for heat transfer; it is not cleaning water because it does not clean the surface of either the plastic product or the equipment that contacts the plastic product; and it is not finishing water because the process water is not used to finish a plastic product. For these reasons, the PM&F effluent limitations guidelines and standards do not apply to the processes that reticulate polyurethane foam. Section 463.01 has been revised to add a new paragraph (f) specifically excluding these processes from the PM&F regulation. These processes will be addressed in the effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers category. If the reticulated foam is further processed in a molding and forming process, that process is subject to the PM&F regulation.

This regulation does not apply to processes used to produce regenerated cellulose for two reasons. First, cellulose is a natural organic material, not a "plastic material" as defined by EPA. In this regulation, a plastic material is defined as "a *synthetic* organic polymer . . ." [emphasis added]. See 40 CFR 463.02(f). Second, the final step in the xanthate process used to regenerate cellulose is to wash the regenerated cellulose to remove dissolved salts and sulfur compounds from within the cellulose. Process water used in this final step is not cleaning water as defined in this regulation because it cleans more than just the surface of the regenerated cellulose. See 40 CFR 463.02(d). For these reasons, the manufacturing process for regenerated cellulose is not subject to the PM&F regulation. However, it is subject to the effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers category.

Similarly, this regulation does not apply to molding and forming operations that process regenerated cellulose because regenerated cellulose is not a plastic material as defined in this regulation (40 CFR 463.02(f)). This regulation does apply, however, to molding and forming processes that use cellulose derivations (e.g., cellulose acetate) because cellulose derivatives are plastic materials as defined in this regulation.

IV. Methodology and Data Gathering Efforts

The methodology and data gathering efforts used in developing the proposed PM&F regulation were summarized in the preamble to the proposed regulation (49 FR 5832; February 15, 1984) and were described in detail in the *Development Document for Effluent Limitations Guidelines and Standards for the Plastics Molding and Forming Point Source Category—Proposal* (U.S. EPA, February 1984).

In summary, EPA studied the plastics molding and forming category to determine whether differences in the 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 wastewater. 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 for the PM&F category. The Agency analyzed 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 considered using cost equations based on standard engineering analyses. EPA derived control technology costs for 112 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 112 plants in the data base using information from questionnaire surveys and publicly available data. Using plant specific financial information and compliance cost estimates, the impacts of this final regulation on plants with a direct discharge were determined. Those impacts were extrapolated to the estimated total 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 established by this final rule.

In addition to the data gathering efforts discussed in the preamble and development document for the proposed rule, the Agency collected additional samples of wastewater discharged by contact cooling and heating water processes subsequent to proposal to respond to comments submitted by industry. Contact cooling and heating water samples were collected at nine processes and analyzed for conventional pollutants. The analytical results were then used with data from previous sampling episodes to calculate the average concentration of conventional pollutants in untreated contact cooling and heating water.

Additionally, finishing water samples were collected at two finishing processes and analyzed for conventional, selected nonconventional, and priority toxic pollutants. The analytical results were used with data from a pre-proposal sampling episode to characterize wastewater discharges from finishing processes.

The Agency has also gathered additional information since proposal through a telephone survey of five PM&F plants on the feasibility of 100 percent recycle for low flow rate contact cooling and heating water processes. Results of the evaluation of that information are discussed in the next section of this preamble.

The Agency's post-proposal data gathering activities were intended primarily to obtain information necessary to evaluate fully and respond to industry's comments on the proposed rule. For several aspects of the proposed rule, EPA recognized that additional information may be needed and specifically requested additional data and information. EPA then used the data and information submitted by commenters and collected by EPA to evaluate the regulatory decisions for the proposed rule and to consider whether such decisions were still appropriate for the final rule. To the extent new information confirmed arguments made by commenters, EPA revised certain regulatory options and performed further analyses to evaluate the revised options. Because the new data and information were used primarily to evaluate and respond to public comments, EPA determined that further public notice and comment were unnecessary. For the most part, new information supported the positions taken by commenters and the regulation has been revised accordingly.

V. Summary of Changes to Proposed Regulation

A. Definitions

1. Plastic Material

In the proposed rule, plastic material was defined as:

* * * an organic polymeric material of large molecular weight that can be shaped by flow. The material can be either homogenous polymeric resins or resins combined with fillers, plasticizers, pigments, stabilizers, or other additives.

In response to several comments requesting clarification as to whether this definition included materials like regenerated cellulose, the Agency has revised the definition of plastic material to make it clear that the PM&F regulation does not apply to the processing of natural organic materials. Plastic material is now defined by the final rule as:

* * * a synthetic organic polymer (i.e., a thermoset polymer, a thermoplastic polymer, or a combination of a natural polymer and a thermoset or thermoplastic polymer) that is solid in its final form and that was shaped by flow. The material can be either a homogeneous polymer or a polymer combined with fillers, plasticizers, pigments, stabilizers, or other additives. (40 CFR 463.02).

2. Average Process Water Usage Flow Rate

Average process water usage flow rate was defined in the proposed rule as:

* * * 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 was used to determine which portion of the proposed rule applied to a contact cooling and heating water process. In the proposed regulation, processes in the contact cooling and heating water subcategory with an average process water usage flow rate of 35 gallons per minute (gpm) or less would have had to comply with effluent limitations guidelines and standards that were different from the effluent limitations guidelines and standards for contact cooling and heating water processes with an average process water usage flow rate of greater than 35 gpm. The purpose of the definition was to specify how to calculate an average process water usage flow rate, which, in turn was determinative of the applicable effluent limitations guidelines.

The Agency redefined average process water usage flow rate in this final rule because an average process water usage flow rate is now used in each subcategory to calculate pollutant mass limitations for a process instead of being used to determine which effluent limitations guidelines apply to a contact cooling and heating water process. It is now defined as:

* * * equal to the volume of process water (liters) used per year by a process divided by the number of days per year the process operates.

The permit writer multiplies the average process water usage flow rate, which is obtained from the permittee, by the pollutant concentration promulgated in this final rule to obtain the mass of the pollutant that can be discharged from a process.

B. Industry Subcategorization

In developing the proposed regulation, the Agency, studied 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, raw materials used, manufacturing processes, products manufactured, water use, applicable water pollution control technologies, 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 supporting the proposed rule contains a detailed discussion of these factors.

The PM&F category was subdivided into two subcategories at proposal: (1) Contact cooling and heating water subcategory and (2) cleaning and finishing water subcategory. This

subcategorization scheme was based on water use and wastewater characteristics.

For the final rule, EPA has further subdivided the PM&F category to create a separate subcategory for cleaning water and one for finishing water. At proposal, the Agency had limited data on finishing water characteristics. Accordingly, EPA solicited data from the industry and collected more sampling data to characterize finishing water. Those data indicate that cleaning water and finishing water have different wastewater characteristics. Cleaning water contains treatable concentrations of BOD5, O&G, TSS, COD, TOC, total phenols, phenol, and zinc while only TSS and three phthalates were found in treatable concentrations in finishing water. EPA has determined that these differences require separate subcategories for each type of wastewater.

Accordingly, the subcategorization scheme for the final regulation includes three subcategories. They are:

- Contact cooling and heating water subcategory;
- Cleaning water subcategory; and
- Finishing water subcategory.

The contact cooling and heating water subcategory includes those processes where process water contacts raw materials or plastic products for the purpose of heat transfer during plastics molding and forming. As discussed later in this preamble, the only toxic pollutant found in wastewater discharged by contact cooling and heating water processes in a treatable concentration is bis(2-ethylhexyl)phthalate. No conventional or nonconventional pollutants are found in treatable concentrations.

The cleaning water subcategory includes those processes that use process water to clean the surface of the plastic product or to clean the surfaces of shaping equipment that are or have been in contact with the formed plastic product. Process water used to clean the surfaces of either 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. Pollutants found in cleaning water in treatable concentrations are: BOD5, O&G, TSS, COD, TOC, total phenols, phenol, and zinc.

The finishing water category includes those processes involved in the finishing of a plastic product. Finishing water consists of water used to carry away waste plastic materia[1] or to lubricate the product during the finishing operation. TSS, bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, and dimethyl phthalate are the pollutants identified in finishing water in treatable concentrations.

C. Types of Effluent Limitations Guidelines and Standards

In the PM&F proposal, the effluent limitations guidelines and standards were production-based. They were calculated by multiplying an effluent concentration by a subcategory production-normalized flow (i.e., liters discharged per 1000 kilograms of plastic product produced). Mass of plastic product was selected as the production-normalizing parameter because there is a theoretical correlation between the mass of plastic product produced and the amount of water used to cool, clean, or finish the product. This correlation is supported to a certain extent by the raw wastewater data available to EPA. EPA recognized, however, that other data in the Agency's data base showed a wide variation in the amount of water used to process similar plastic products with no apparent basis for that variation. For this reason, the Agency solicited comments on the use of mass of plastic product produced as the production-normalizing parameter.

Several commenters on the proposed rule stated that production-based effluent limitations guidelines and standards are not appropriate for the PM&F category because water use varies by type of material processed and by product quality requirements. For example, they stated that some processes produce several different types of plastic products with different quality requirements. The amount of water used to process those products depends on the desired quality of the product. Commenters recommended that production-based limitations not be used for the PM&F category.

EPA considered subdividing the PM&F category based on either the plastic materials processed or on product quality to account for the variability in water use caused by the different plastic materials. Such a subcategorization scheme would be extremely complex because of the large number of plastic materials and the combinations of plastic materials that are used. In addition to being extremely complex, the Agency has determined that such an approach is not feasible because many plants produce several different plastic products, each having different individual water use requirements, using the same process equipment. Accordingly, the PM&F category cannot be subcategorized to account for the wide variation in water use and EPA has determined that production-based effluent limitations guidelines and standards are not appropriate for the PM&F category.

The effluent limitations guidelines and standards in this final rule are mass-based. They are calculated using the following equation:

Effluent Mass = (Concentration) (Average Process Water Usage Flow Rate)

The pollutant concentrations are based on the performance of the selected treatment technology and are promulgated in this final rule. The average process water usage flow rate is the process water, including recycle, that flows through a process and contacts the plastic product. A permit writer uses the concentration values established in this rule and the average process water usage flow rate, which is obtained from the permittee, to calculate the effluent pollutant mass that can be discharged.

If a plant has more than one PM&F process in the same subcategory, the average process water usage flow rate for those processes is the sum of the average process water usage flow rates for each process. This sum is used to calculate the allowable pollutant mass discharge level for the processes at the plant in the same subcategory.

Using the above equation to calculate effluent pollutant mass assures that processes with the same average process water usage flow rate, whether water is recycled or used on a once-through basis, have the same mass limitations. If only concentration limitations were employed, EPA believes that facilities that recycle process water may be penalized because their discharges would likely have higher concentrations than the concentrations in discharges from processes that use once-through process water.

D. Subcategory Average Pollutant Concentrations

In response to comments, EPA made several changes with respect to the subcategory average pollutant concentrations calculated for the final rule. Following proposal, EPA reviewed all existing raw waste data, gathered some additional data, and revised its methodology for calculating subcategory average pollutant concentrations. EPA used the average concentrations to determine which pollutants must be regulated and to select the various control and treatment options available to control these pollutants. Changes made with respect to the calculation of average concentrations are discussed below.

First, in its review of existing data, the Agency found that data from one plant process had been incorrectly included in the raw waste data base for the contact cooling and heating water subcategory. Information relative to that plant process indicates that these data were from a cleaning process (i.e., removal of glycerol from the surface of the plastic product) rather than from a contact cooling and heating water process. To correct this error, EPA transferred the data from that process to the cleaning water subcategory data base and deleted it from the contact cooling and heating water subcategory data base. EPA also transferred data for one process from the data base for the finishing water subcategory to the data base for the contact cooling and heating water subcategory because those data were incorrectly placed in the finishing water data base at proposal.

Second, as explained above, EPA further divided the category for the final rule to include three subcategories, thus establishing a separate subcategory for cleaning process wastewaters and another for finishing process wastewaters. Accordingly, the Agency recalculated average pollutant concentrations for each subcategory. Subsequent to proposal, the Agency collected additional finishing water samples at two plants. These new data, together with existing finishing water data that were previously combined with cleaning water data, form the data base for the finishing water subcategory average pollutant concentrations used to develop this final rule.

Third, the Agency revised its method of calculating the subcategory average pollutant concentrations. For development of the proposed rule, the Agency calculated subcategory average pollutant concentrations by obtaining an arithmetic average of the pollutant concentrations found in PM&F process water during several sampling episodes without regard to the process water flow rate at the time of sampling. Several commenters stated that the Agency's estimated average pollutant concentrations derived by this method tended to overstate the actual concentration of pollutants found in PM&F wastewaters. Also, in reviewing the data used at proposal to calculate subcategory average pollutant concentrations, the Agency observed wide variation in the amount of water discharged by the sampled processes. Therefore, to account for the wide variation in discharge rates and thus obtain (as suggested by commenters) more accurate subcategory average pollutant concentration estimates, EPA recalculated the estimates on a flow-weighted basis. These flow-weighted estimates give more weight to high flow rate processes than to low rate processes. EPA then relied on the flow-weighted pollutant averages to estimate the average pollutant concentrations found in wastewater discharged from processes in each subcategory.

Similarly, the Agency proportioned the flow-weighted concentrations for the contact cooling and heating water subcategory by the number of types of contact cooling and heating water processes in the Agency's questionnaire data base. This gave more weight to extrusion processes because the largest number of processes in the data base for this subcategory are extrusion processes. As asserted by commenters, extrusion processes have the highest water use in that subcategory and the wastewater generated by those processes does not contain pollutants in high concentrations. By adjusting the average pollutant concentrations for the contact cooling and heating water subcategory to reflect the large number of extrusion processes in the subcategory, the Agency believes its average pollutant concentrations more accurately reflect the nature of the wastewaters discharged by processes in this subcategory.

VI. Control and Treatment Options and Technology Basis for the Final Regulation

Prior to publication of the proposed PM&F regulation, EPA considered a wide range of control and treatment technology options including both in-process controls and end-of-pipe treatment. These options are discussed in detail in the preamble to the proposed PM&F regulation and in the technical development document suppporting the proposed rule. EPA made changes in both the in-process controls and end-of-pipe treatment options considered as the basis for this final rule based on information obtained subsequent to the proposal, including data supplied by commenters on the proposed regulation.

A. Contact Cooling and Heating Water Subcategory

1. Control and Treatment Options

The proposed effluent limitations guidelines and standards for this subcategory were based on: (1) 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; and (2) 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.

Based on EPA's review of all available data and evaluation of these data in light of comments, the only technologies identified as appropriate for the basis for the final effluent limitations guidelines and standards for the contact cooling and heating water subcategory are good housekeeping practices and the activated carbon process. As discussed above, subsequent to proposal, the Agency calculated flow-weighted subcategory average pollutant concentrations. Our analysis indicates that only one pollutant, bis(2-ethylhexyl)phthalate, is present in contact cooling and heating water in treatable concentrations. The only technology identified to control bis(2-ethylhexyl)phthalate, is the activated carbon process. To maintain the low concentrations of other pollutants currently discharged in contact cooling and heating water, the Agency considered effluent limitations guidelines based on the application of good housekeeping practices.

The Agency rejected the package activated sludge plant as a technology basis for the final effluent limitations guidelines and standards for this subcategory because the typical BOD5 concentrations in contact cooling and heating water are too low to support operation of biological treatment. The average concentration of BOD5 in contact cooling and heating water is 1 mg/l.

The Agency rejected zero discharge as the basis for the final effluent limitations guidelines and standards for this subcategory because it has determined that it is unlikely that 100 percent recycle is feasible for processes in the contact cooling and heating water subcategories even for low flow rate processes. EPA made this determination based, in part, on comments that 100 percent recycle cannot be achieved by low flow rate contact cooling and heating water processes because the increase in the dissolved solids concentrations in the recycle water may affect the quality of the plastic product. Commenters explained that the amount of process water that can be recycled, if any, depends on the desired quality of the PM&F product. Commenters also stated that EPA incorrectly assumed that 100 recyle was feasible because all recycle units have to be cleaned periodically, thus resulting in some discharge from the recycle unit. Several commenters asserted that, given the many different products and raw materials that may be processed in the

same equipment at the same plant, 100 percent recycle is not feasible.

To evaluate the comments regarding the feasibility of 100 percent recycle, the Agency contacted eight PM&F plants to verify whether they did in fact have 100 percent recycle units as reported on their survey questionnaires. EPA found that in all cases there was a discharge from the recycle unit. Thus, based on this information and information submitted in comments, EPA rejected 100 percent recycle as a basis for the final effluent limitations guidelines and standards for this subcategory.

EPA also rejected recycle at less than 100 percent as the basis for this final regulation. The selected technologies on which the proposed effluent limitations guidelines and standards for the high flow rate processes were based included flow reduction by recycle. A range of recycle percentages was selected and flows for processes in the Agency's data base that had a recycle percentage within that range were used to calculate the subcategory production-normalized flow (PNF). The PNF was subsequently used to calculate the mass of a pollutant that could be discharged.

Several commenters stated that a subcategory recycle percentage could not be established for this subcategory because of the wide variation in the amount of water used by contact cooling and heating water processes, the different types of materials processed, and the varying requirements for product quality. They asserted that some processes can recycle process water to varying degrees while others cannot.

The Agency reviewed available flow data and agrees that there is wide variation in recycle rates within this subcategory. EPA considered subdividing this subcategory based on the type of plastic material processed to account for the variation in recycle rates. This approach is not feasible because of the large number and the many combinations of plastic materials processed. This is particularly true for plants that produce many different products (i.e., a custom PM&F plant) using the same process equipment.

Because the Agency cannot subdivide this subcategory to account for the variation in recycle percentages, EPA has determined that recycle should not be part of the technology basis for the final effluent limitations guidelines and standards for this subcategory. Accordingly, the Agency did not include recycle as part of the technology option on which the final regulation for this subcategory is based.

2. Technology Basis for the Final Regulation

A brief summary of the technology basis for the final regulation for the contact cooling and heating water subcategory is presented below. A more more detailed discussion is presented in the final technical development document.

BPT: The BPT effluent limitations guidelines are based on the application of good housekeeping practices. During plant visits and various sampling episodes, the agency found that good housekeeping practices are commonly employed within this subcategory. Raw materials and lubricating oils are routinely segregated from the cooling and heating water, which keeps pollutants not generated during the PM&F operation out of the cooling and heating water. The final BPT effluent limitations guidelines ensure continuation of those practices because they are based on the pollutant concentrations currently discharged by processes at plants employing good housekeeping techniques.

EPA is promulgating BPT effluent limitations guidelines for this subcategory on the basis of a statistical evaluation of the raw waste concentrations of BOD5, O&G, and TSS in contact cooling and heating water samples collected during several sampling episodes. A detailed discussion of this evaluation is presented in Appendix D of the final development document. One day maximum concentrations are promulgated for BOD5, O&G, and TSS. Monthly maximum concentrations are not being promulgated for this subcategory because there is no effluent variability attributed to the performance of a treatment technology since effluent limitations guidelines and standards are based on raw waste concentrations when good housekeeping techniques are employed rather than the application of a treatment technology.

EPA anticipates that implementation of the final BPT effluent limitations guidelines for this subcategory will result in only minimal removal of conventional, nonconventional, or priority toxic pollutants. All of the contact cooling and heating water processes in the Agency's data base can meet the BPT effluent limitations guidelines in this final rule either incurring only minimal costs or without incurring any incremental costs. The agency has determined that the costs, if any, are justified by the effluent reduction benefits.

BAT: Except for bis(2-ethylhexyl)phthalate, there are no toxic pollutants present in treatable concentrations in the raw wastewaters discharged by contact cooling and heating water processes. Therefore, EPA is promulgating BAT equal to BPT for this subcategory, except for bis(2-ethylhexyl)phthalate. The BAT effluent limitations guidelines for all pollutants except bis(2-ethylhexyl)phthalate are the same as the BPT effluent limitations guidelines.

The toxic pollutant bis(2-ethylhexyl) phthalate was found in treatable concentrations (ranging from 0.017 mg/l to 1.008 mg/l) in about 50 percent of the contact cooling and heating water samples collected and analyzed. However, the only technology considered during development of the proposed rule that would control this pollutant was the activated sludge process. EPA has determined that this technology cannot be applied to contact cooling and heating water because of the low concentrations of organic pollutants in the process water. Accordingly, EPA is reserving the BAT effluent limitations guidelines for bis(2-ethylhexyl)phthalate pending further study.

The Agency has identified one technology (i.e., the activated carbon process) that it believes will effectively control bis(2-thylhexyl)phthalate, but at this time does not have phthalate treatability data for that treatment process. EPA plans to study the treatment of phthalates by the activated carbon process and, after reviewing the results of that study, to propose and promulgate BAT effluent limitations guidelines for bis(2-ethylhexyl)phthalate, if they are warranted. During the period prior to promulgation of BAT effluent limitations guidelines for bis(2-ethylhexyl)phthalate, the permit writer should determine whether that pollutant warrants control on a case-by-case basis. The permit writer can use information presented in the technical development document for this final rule to help make that determination.

Because the BAT effluent limitations guidelines for all pollutants except bis(2-ethylhexyl)phthalate are the same as the BPT effluent limitations guidelines for those pollutants, there are no additional pollutant removals achieved by implementation of the final BAT effluent limitations guidelines and no additional costs.

BCT: The Agency was unable to identify a technology that reduces the concentrations of conventional pollutants found in contact cooling and heating water. For this reason, EPA is promulgating BCT effluent limitations

guidelines equal to the BPT effluent limitations guidelines. Since there are no technologies available to reduce conventional pollutants in this subcategory, EPA has no reason to await promulgation of the final BCT methodology before promulgating BCT effluent limitations guidelines for this subcategory.

NSPS: The Agency is promulgating NSPS for this subcategory equal to the BPT effluent limitations guidelines. The NSPS control BOD5, O&G, TSS, and pH.

NSPS are being promulgated equal to the BPT effluent limitations guidelines because the Agency believes that the characteristics of wastewaters generated by new sources will be substantially the same as the characteristics of wastewaters generated by existing sources in this subcategory. Accordingly, the Agency considered the same technologies as the basis for NSPS that were considered for BPT/BAT. EPA was unable to identify additional technologies that are capable of reducing the concentrations of pollutants found in raw wastewater discharges from contact cooling and heating water processes at new sources. The technology on which the proposed NSPS were based (i.e., the activated sludge process) was rejected because the extremely low BOD5 levels (i.e., average concentration of 1 mg/l) in raw contact cooling and heating water will not support the operation of biological treatment.

The Agency believes that the concentrations of bis(2-ethylhexyl) phthalate in contact cooling and heating water that would be discharged by new sources will be similar to the concentrations of that pollutant discharged by existing sources. As discussed earlier, the Agency found treatable concentrations of bis(2-ethylhexyl)phthalate in about 50 percent of the contact cooling and heating water samples collected. Because no previously-studied technologies effectively control this pollutant, NSPS for bis(2-ethylhexyl)phthalate are reserved pending completion of the phthalate treatability study discussed above.

NSPS were derived based on a statistical evaluation of the conventional pollutant concentrations in raw wastewaters discharged by existing contact cooling and heating water processes. They ensure that the same good housekeeping practices employed at existing sources will be employed at new sources.

EPA has defined a "normal" new source plant for this subcategory as a plant that only contains a contact cooling and heating water process. The average process water usage flow rate for the contact cooling and heating water process at this "normal" plant is 35 gpm and the pollutant concentrations in the wastewater discharged from that process are assumed to be equal to the subcategory average pollutant concentrations. The Agency anticipates that 14 kilograms per year of toxic pollutants will be discharged from a "normal" new source plant. A "normal" new source plant is described in detail in Section XII of the technical development document for this final regulation.

Although implementation of NSPS will result in only minimal pollutant removals, they will assure that only low levels of pollutants are discharged from plants employing contact cooling and heating water processes. New sources are expected to achieve the NSPS without incurring additional costs. Because existing sources must comply with effluent limitations guidelines that are the same as NSPS, the Agency does not believe that applying these standards to new sources, including major modifications of existing sources, creates a barrier to entry into the category.

PSES: For all pollutants except bis(2-ethylhexyl)phthalate, the Agency is not promulgating PSES; PSES for bis(2-ethylhexyl)phthalate are being reserved pending further study. EPA has determined that the average percentage of toxic pollutants removed nation-wide by well-operated POTWs meeting secondary treatment requirements (ranging from 35 to 99 percent) is greater than the percentage of pollutant removals achieved by direct dischargers meeting BAT (i.e., zero percent removal). Therefore, the pollutants do not pass through a POTW. Even though categorical pretreatment standards are not being promulgated, indirect dischargers in this subcategory must comply with the General Pretreatment Regulations—40 CFR Part 403.

PSES for bis(2-ethylhexyl)phthalate are reserved pending proposal and promulgation of the BAT effluent limitations guidelines for bis(2-ethylhexyl)phthalate. When BAT is selected, EPA will determine if that pollutant passes through a POTW.

PSNS: For all pollutants except bis(2-ethylhexyl)phthalate, the Agency is not promulgating PSNS; PSNS for bis(2-ethylhexyl)phthalate are being reserved. The Agency believes that new and existing indirect discharge sources in this subcategory will discharge the same pollutants in similar amounts. As discussed in the preceding section, the average percentage of removals of toxic pollutants (ranging from 35 to 99 percent) nation-wide by well-operated POTWs meeting secondary treatment requirements is greater than the average percent removal by direct dischargers complying with BAT/NSPS for this subcategory (i.e., zero percent). Therefore, the toxic pollutants do not pass through a POTW. Even though the Agency is not promulgating categorical pretreatment standards, indirect discharging new sources in this subcategory must comply with the General Pretreatment Regulations—40 CFR Part 403.

The Agency believes that the concentrations of bis(2-ethylhexyl)phthalate in contact cooling and heating waters discharged from new indirect sources will be similar to the concentrations of that pollutant discharged from existing indirect sources. For this reason, the Agency is reserving PSNS for bis(2-ethylhexyl)phthalate until completion of the phthalate treatability study. When the technology basis for NSPS for that pollutant is selected, EPA will determine if bis(2-ethylhexyl)phthalate passes through a POTW.

B. Cleaning Water Subcategory

1. Control and Treatment Options

EPA proposed effluent limitations guidelines and standards for cleaning water processes based on in-process controls consisting of recycle of process water through a sedimentation tank and end-of-pipe treatment of the discharge from the recycle unit in a package activated sludge plant. The package plant included an equalization unit and pH adjustment. The sedimentation tank was designed to remove the suspended solids so the process water could be recycled.

EPA considered the same end-of-pipe treatment technology (i.e., the package activated sludge plant) as the basis for the final effluent limitations guidelines and standards for cleaning water processes that was selected for the proposed rule. As discussed earlier, the Agency made two significant changes to the raw waste data base for cleaning water. First, EPA further subdivided the PM&F category to create a separate subcategory for cleaning water and another for finishing water. Accordingly, to select a treatment option for this subcategory, the Agency considered only data from cleaning water processes. Second, the Agency recalculated flow-weighted average pollutant concentrations for the cleaning water subcategory. Notwithstanding these changes, the data indicate that there are three conventional, three

nonconventional, and two priority pollutants present in treatable concentrations in cleaning water. The conventional pollutants (i.e., BOD5, O&G, and TSS) and the nonconventional pollutants (i.e., COD, TOC, and total phenols) are the same as the conventional and nonconventional pollutants considered for control at proposal. Furthermore, the conventional pollutants were found in concentrations sufficiently high to support biological treatment. For this reason, the activated sludge process, on which the proposed effluent limitations guidelines and standards were based, is the only technology the Agency relied on for this subcategory in this final rule.

Based on further evaluation of existing data and comments on the proposed rule, EPA rejected recycle of process water as part of the final treatment technology option. Commenters asserted that a subcategory recycle percentage could not be established for the cleaning water subcategory because, as with the contact cooling and heating water subcategory, the amount of water that can be recycled varies widely. They suggested two reasons for this variation: (1) The type of cleaning process used dictates water use; and (2) product quality considerations require some products to be cleaned with potable water to achieve the desired quality while others can be cleaned with recycled water. EPA reviewed the data and agrees there is wide variation in recycle flows.

The Agency considered subdividing the cleaning water subcategory based on either the type of cleaning process or the type of plastic material processed to account for the variation in recycle rates. However, if the subcategory was subdivided based on the type of cleaning process, it would have to be further subdivided to account for the different plastic materials used. The Agency believes that neither approach is feasible because of the large number and the many combinations of plastic materials that can be processed in the different cleaning processes. For these reasons, EPA has determined that recycle is not feasible as part of the technology basis for the final effluent limitations guidelines and standards for this subcategory.

2. Technology Basis for the Final Regulation

A brief summary of the technology basis of the final regulation for the cleaning water subcategory is presented below. A more detailed discussion is presented in the technical development document for the final regulation.

BPT: The Agency is promulgating BPT effluent limitations guidelines for this subcategory based on the performance of a package activated sludge plant with pH adjustment. The final BPT effluent limitations guidelines control BOD5, O&G, TSS, and pH. This is the same end-of-pipe treatment technology selected as the basis for the proposed effluent limitations guidelines for this subcategory. However, the selected technology for the final regulation does not include recycle. As discussed earlier in this preamble, the Agency has determined that a subcategory recycle percentage is not feasible for the cleaning water subcategory.

EPA has determined that treatable concentrations of BOD5, O&G, and TSS are discharged in cleaning water. These are the same pollutants considered during development of the proposed BPT effluent limitations guidelines. Unlike the contact cooling and heating water subcategory, BOD3 levels are sufficient in cleaning water to support the operation of biological treatment.

Data available to the Agency indicate that, where cleaning waters are treated by biological treatment, wastewaters from other manufacturing processes are commingled with the cleaning water discharges. Therefore, data are not available on the application of biological treatment to cleaning waters only. As at proposal, EPA found that treatment at plants that treat cleaning waters separately is uniformly inadequate because those plants indicated in their questionnaire responses that they use only sedimentation and oil skimming to treat cleaning water. These technologies do not remove the dissolved pollutants in the cleaning water. Thus, the Agency has determined that the PM&F industry has uniformly inadequate treatment of wastewater discharges resulting from only cleaning processes. Accordingly, the Agency has relied on the transfer of biological treatment (i.e., the activated sludge process) from the organic chemicals, plastics, and synthetic fibers category to establish effluent limitations guidelines for this subcategory. The Agency believes that such a transfer is appropriate because of the similarities between wastewaters discharged by the PM&F category and wastewaters discharged by the organic chemicals, plastics, and synthetic fibers category. As at proposal, to evaluate fully these two types of wastewaters, the Agency conducted a statistical comparison of the raw wastewater conventional pollutant concentrations in PM&F wastewaters and the concentrations of those pollutants in raw wastewaters generated at plants in the plastics only subcategory in the organic chemicals, plastics, and synthetic fibers category. This comparison was revised to support the final rule using the flow-weighted subcategory average concentrations discussed earlier in the preamble. After reviewing the results of the updated analysis, the Agency has concluded that the raw wastewater conventional pollutant concentrations in PM&F cleaning waters are neither significantly greater nor more variable than the conventional pollutant concentrations characteristic of the raw wastewaters discharged by plants in the plastics only subcategory. This conclusion supports the Agency's determination that the activated sludge treatment technology can be transferred from the organic chemicals, plastics and synthetic fibers category and that the technology will perform at the same level on PM&F cleaning waters.

Performance data for the activated sludge process were also transferred from the organic chemicals, plastics, and synthetic fibers category to the PM&F category. The transferred concentration values in this final rule are the same as the concentration values used to calculate the proposed production-based limits. One day maximum and monthly maximum concentrations for BOD5, O&G, and TSS are established in the final rule. The transfer of the activated sludge process and performance data for that process are discussed in more detail in Appendix D of the technical development document for this final rule. The Agency believes the toxic pollutants found in treatable concentrations in cleaning water are effectively controlled when the effluent limitations guidelines for the above pollutants are met.

The model technology basis for the final BPT effluent limitations guidelines does not include recycle. As discussed earlier, information submitted by commenters indicates that recycle at an established percentage is not feasible for this subcategory because of diverse product quality requirements and because of specific product water use considerations. Therefore, recycle of process water is not part of the final BPT model treatment technology. To account for this change, the Agency sized the package activated sludge plant to handle the entire discharge from a production process instead of just the discharge from the recycle unit. Cost estimates were developed on a plant-by-plant basis for these larger treatment systems.

Implementation of the BPT effluent limitations guidelines for this

subcategory is expected to result in an annual removal of 217,500 kilograms of conventional pollutants, 136,700 kilograms of nonconventional pollutants, and 155 kilograms of priority toxic pollutants. EPA estimates that investment costs for the plants that will incur costs to implement these effluent limitations guidelines are $6.9 million and that annual costs will be $4.4 million in 1984 dollars, including depreciation and interest. The Agency has determined that the costs of compliance are justified by the effluent reduction benefits.

BAT: The Agency is establishing BAT effluent limitations guidelines based on the same treatment technology option as the basis for the final BPT effluent limitations guidelines. This technology (i.e., the activated sludge process) is discussed in the preceding section of this preamble. Recycle was not considered as part of this technology for the reasons discussed earlier.

The Agency is not promulgating BAT effluent limitations guidelines for this subcategory more stringent than the BPT effluent limitations guidelines because there are insignificant quantities of toxic pollutants remaining in cleaning water discharges after compliance with the final BPT effluent limitations guidelines. The Agency estimates that the BPT effluent limitations guidelines will result in the removal of 155 kilograms per year of toxic pollutants from the current discharge of 237 kilograms per year of toxic pollutants by plants in this subcategory. Thus, 83 kilograms per year of toxic pollutants would be discharged after application of the BPT effluent limitations guidelines. This equates to less than 0.01 kilograms per day of toxic pollutants discharged 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, for this subcategory, EPA is excluding toxic pollutants from further national regulation under paragraph 8(a)(i) of the Settlement Agreement in *NRDC* v. *Train, supra.*

No additional toxic pollutant removals are achieved by the BAT effluent limitations guidelines for this subcategory and there are no additional costs.

BCT: The Agency has identified at least one technology (i.e., filtration) that can reduce the concentration of conventional pollutants remaining after the application of BPT for this subcategory. Thus, EPA Is reserving promulgation of BCT effluent limitations guidelines for this subcategory pending promulgation of the final BCT methodology. Once that methodology is promulgated, EPA will apply it to the filtration technology to determine if additional controls for conventional pollutants are justified.

NSPS: The Agency believes that characteristics of wastewaters discharged by new sources in the cleaning water subcategory will be the same as the characteristics of wastewaters discharged by existing sources. Thus, the technology option considered for new sources is the same as the technology option considered for existing sources in this final rule.

The Agency is promulgating NSPS for this subcategory based on the model treatment technology for the final BPT/BAT effluent limitations guidelines. EPA is not promulgating 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 technology do not justify more stringent controls. EPA estimates that after application of BPT/BAT, less than 0.01 kilograms per day of toxic pollutants per direct discharger will be discharged.

The model treatment technology for NSPS for this subcategory is a package activated sludge plant with pH adjustment. As discussed earlier in this preamble, the activated sludge process and performance data for that process were transferred from the organic chemicals, plastics, and synthetic fibers category.

Pollutants controlled by NSPS includes BOD5, O&G, TSS, and pH. The Agency believes that the toxic pollutants in cleaning water (i.e., phenol and zinc) are effectively controlled when the NSPS for the above controlled pollutants are met.

The Agency anticipates that 2,100 kilograms per year of conventional pollutants will be removed from the discharges from a "normal" new source plant. EPA defines a "normal" plant as one that employs a cleaning process only. The cleaning process has an average process water usage flow rate of 13.5 gpm and the pollutant concentations in the cleaning water are assumed to be the same as the average pollutant concentrations for this subcategory.

The Agency considered a model treatment technology for NSPS for this subcategory that included a package activated sludge plant followed by a filter. However, EPA did not propose NSPS based on this more stringent technology and the Agency has no performance data for the treatment of cleaning water only using that technology. Also, EPA did not receive any comments on the proposed PM&F regulation suggesting that a filter should be included in the model technology for NSPS. This may be because, based on the normal plant, the Agency estimates that 2180 kilograms per year of conventional pollutants would be removed by the activated sludge process followed by a filter. This is only 80 kilograms per year or 0.32 kilograms per day per direct discharger more than would be removed by a package activated sludge plant without a filter. For these reasons, EPA is not including a filter in the NSPS model technology for this subcategory at this time. However, after further study of filtration technology for the BCT effluent limitations guidelines, if the Agency finds that additional conventional pollutant removals based on the application of a filter are justified for NSPS, EPA may revise NSPS for this subcategory using a model technology that consists of a package activated sludge plant with pH adjustment and a filter.

Data relied on for selection of NSPS were primarily data developed for existing sources, which include costs on a plant-by-plant basis along with retrofit costs, where applicable. The estimated total investment costs and total annual costs for a "normal" treatment facility at a new source are $267,000 and $83,000, respectively.

The Agency does not believe that applying the BPT/BAT level of treatment to new sources, either greenfield operations or existing sources making major modifications to their PM&F processes, 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 final rule.

PSES: EPA is not promulgating PSES for the cleaning water subcategory because the priority toxic pollutants (i.e., phenol and zinc) found in cleaning water in treatable concentrations do not pass through a POTW. The Agency compared the percent removals of phenol and zinc (i.e., 75 percent and 62 percent, respectively) by a direct discharger applying BAT to the average percentage removal of those pollutants nation-wide by well-operated POTWs meeting secondary treatment requirement (99 percent for phenol and 77 percent for zinc). Because the percent removals in a POTW are greater than the BAT percent removals, phenol and zinc do not pass through a POTW. Therefore, categorical pretreatment standards are not required for phenol and zinc.

Even though no categorical pretreatment standards are being promulgated for existing sources for this subcategory, indirect dischargers must comply with the General Pretreatment Regulations—40 CFR Part 403.

PSNS: The Agency is not promulgating PSNS for this subcategory. The Agency believes that new and existing indirect discharging sources will discharge the same pollutants in similar amounts. As discussed in the preceding section, the average toxic pollutant percentage removals achieved by well-operated POTWs nation-wide meeting secondary treatment requirements is greater than the percentage of toxic pollutants removed by a direct discharger in this subcategory in compliance with BAT/NSPS. Therefore, the toxic pollutants do not pass through a POTW.

Even though new indirect dischargers are not subject to categorical pretreatment standards, they must comply with the General Pretreatment Regulations—40 CFR Part 403.

C. Finishing Water Subcategory

1. Control and Treatment Options

In the proposed PM&F regulations, cleaning processes and finishing processes were in the same subcategory. The technology basis for the proposed effluent limitations guidelines and standards for that subcategory was recycle and treatment of the discharge from the recycle unit in a package activated sludge plant.

As discussed earlier, EPA has gathered additional data and reviewed existing data for finishing water since proposal and has determined that finishing water processes should be considered in a separate subcategory. Accordingly, using all available finishing water data, EPA calculated flow-weighted average pollutant concentrations for the finishing water subcategory. The calculations indicate that the only pollutants present in treatable concentrations in finishing water are total suspended solids (TSS) and three phthalates. The only technology the Agency identified in this final rule for the removal of TSS was a settling unit. This technology was considered and discussed in the preamble and technical development document for the proposed rule, but was not selected because it does not remove dissolved pollutants (e.g., BOD5). However, because EPA has further divided the PM&F category to provide a separate subcategory for finishing water and because finishing water alone does not contain treatable concentrations of BOD5, settling for removal of TSS was considered as the basis for the final effluent limitations guidelines and standards for this subcategory.

The only technology identified for removal of the phthalates present in finishing water is activated carbon. The activated sludge process (which was the basis for the combined cleaning and finishing water subcategory effluent limitations guidelines and standards in the proposed rule) does remove phthalates, but was rejected as the basis for the final rule for finishing water because the typical BOD5 concentrations found in finishing water alone will not support the operation of biological treatment.

EPA rejected recycle as part of the treatment technology options considered for the finishing water subcategory because, as discussed earlier with respect to the other subcategories, the Agency does not believe that all processes can reduce flows by any given regulatory percentage. Again, this conclusion is based on the wide variation in recycle rates as noted by commenters. Commenters stated that potable water must be used in some finishing processes to achieve the product quality, while recycled water can be used to finish other products. In addition, commenters pointed out that plants may process a variety of products, each having different product quality specifications, through one set of process equipment at different times, thus making the establishment of a single process recycle rate impossible.

As with the cleaning water subcategory, the Agency considered subdividing the finishing water subcategory based on the plastic material processed to account for the variability in attainable recycle rates. The Agency has determined that this approach is not feasible because of the large number and the many combinations of plastic materials processed.

2. Technology Basis for the Final Rule

A brief summary of the technology basis for the finishing water subcategory is presented below. A more detailed discussion is presented in the technical development document for the final rule.

BPT: The Agency is promulgating BPT effluent limitations guidelines for this subcategory based on the performance of a settling unit. The BPT effluent limitations guidelines control TSS and pH.

The selected technology for the proposed BPT effluent limitations guidelines for this subcategory was recycle, pH adjustment, and treatment of the recycle unit discharge in a package activated sludge plant. The package activated sludge plant was not selected as the technology basis for this final rule because, when the Agency estimated the pollutant concentrations in finishing water, only TSS was found at treatable concentrations. The BOD5 concentration (averaging 6 mg/l) is very low and will not support the operation of biological treatment. Recycle was not included as part of the option that serves as the basis for this final rule for the reasons discussed earlier in this preamble.

The Agency selected a settling unit as the technology basis for the final BPT effluent limitations guidelines because it effectively removes TSS from the wastewater. This technology is demonstrated in the PM&F category. Based on questionnaire responses, EPA has determined that at least nine plants in this category have settling/clarification units in place to treat PM&F wastewaters. A settling unit was considered for the proposed rule and was discussed in the technical development document for the proposal. It has been used as the technology basis for the final rule because it effectively removes TSS, which is the only conventional pollutant found in treatable concentrations in finishing waters.

The effluent limitations guidelines for TSS in this final rule were obtained using the subcategory average concentration for TSS (i.e., 91 mg/l) and a TSS percent removal (i.e., 82 percent) reported in the technical development document for the proposed rule. The long-term average TSS value was obtained by applying this removal percentage to the subcategory average raw wastewater concentration. Variability factors, which are based on the variability of the raw wastewater TSS concentrations for finishing water processes sampled to develop this regulation, were applied to the long-term average to obtain the one day maximum and monthly maximum concentration values. Calculation of the variability factors is discussed in detail in Appendix D of the technical development document for this final rule.

The Agency estimates that the BPT effluent limitations guidelines for this subcategory will remove 2,529 kilograms per year of conventional pollutants from the raw wastewater. The estimated total investment costs and total annual costs for the BPT effluent limitations guidelines for this subcategory are $91,000 and $67,500 in 1984 dollars, respectively. The Agency has determined that the costs are justified by the effluent reduction benefits.

BAT: Except for three phthalates, EPA is promulgating BAT equal to BPT for this subcategory. The BAT effluent limitations guidelines are the same as the BPT effluent limitations guidelines. There are no additional pollutant removals achieved by implementation of the BPT/BAT effluent limitations guidelines for this subcategory.

EPA was only able to identify one technology (i.e., the activated carbon process) for the removal of the three phthalates found in treatable concentrations in finishing water. However, the Agency does not have treatability data for phthalates for the activated carbon process. As discussed in the contact cooling and heating water subcategory section, the Agency plans to study the treatment of phthalates by the activated carbon process. After reviewing the results of that study, EPA will propose and promulgate BAT effluent limitations guidelines for the three phthalates in finishing water, if they are warranted. For this reason, the BAT effluent limitations guidelines for this subcategory for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved. During the period prior to promulgation of BAT effluent limitations guidelines for the three phthalates, permit writers should determine whether those pollutants need to be controlled on a case-by-case basis. The permit writer can use information presented in the technical development document for this final rule to help make that determination.

BCT: EPA was able to identify at least one technology (i.e., filtration) that could reduce the concentration of TSS in finishing water after the application of BPT. Accordingly, BCT effluent limitations guidelines for this subcategory are reserved pending promulgation of the final BCT methodology. That methodology will be used to determine if additional controls for conventional pollutants are justified. During the phthalate treatability study, EPA intends to obtain additional conventional pollutant data for the finishing water subcategory.

NSPS: The Agency believes that characteristics of wastewaters discharged from finishing processes at new sources will be the same as the characteristics of wastewaters discharged by those processes at existing sources. Thus, the technology option considered for new sources is the same as the one considered for existing sources.

The Agency is promulgating NSPS based on the same model treatment technology as for the BPT effluent limitations guidelines. EPA is not establishing NSPS more stringent than the effluent limitations guidelines for existing sources because, except for three phthalates, there are no toxic pollutants found in finishing waters in treatable concentrations. The Agency believes that the concentrations of the three phthalates in finishing waters discharged by new sources will be similar to the concentrations of those phthalates found in finishing waters discharged by existing sources. For this reason, the Agency is reserving NSPS for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate for this subcategory.

The model technology basis for NSPS for this subcategory is a settling unit. The Agency did not select the proposed technology basis for NSPS (i.e., the activated sludge process) as the technology basis for this final rule because the flow-weighted subcategory average BOD5 concentration for finishing waters is not high enough to support the operation of biological treatment.

Pollutants and pollutant properties controlled by new sources include TSS and pH. The one day maximum and monthly maximum NSPS for TSS are the same as the one day maximum and monthly maximum BPT effluent limitations guidelines.

The Agency anticipates that 363 kilograms per year of conventional pollutants will be discharged by a "normal" new source plant. A "normal" plant is one that has a finishing process with an average process water usage flow rate of 3.15 gpm. The pollutant concentrations in the finishing water are assumed to be the same as the average pollutant concentrations for this subcategory. Implementation of NSPS is expected to result in the removal of 252 kilograms per year of conventional pollutants.

The Agency considered a filter as the model technology for NSPS for this subcategory, However, EPA did not propose NSPS based on this technology and the Agency has only limited performance data for the treatment of finishing waters only by the application of filtration technology. Also, EPA did not receive any comments suggesting that a filter should be included in the model technology for NSPS (cleaning water processes and finishing water processes were in the same subcategory at proposal). This may be because, based on the "normal" plant, the Agency estimates that 272 kilograms per year of conventional pollutants would be removed by a settling unit followed by a filter. This is only 20 kilograms per year or 0.08 kilograms per day per direct discharger more than would be removed by a settling unit. For these reasons, EPA is not using a filter as the model technology for NSPS for this subcategory at this time. If the Agency finds, however, after further study of filtration for the BCT effluent limitations guidelines, that additional conventional pollutant removals based on the application of a filter are justified for NSPS, EPA may revise NSPS for this subcategory using filtration as the model treatment technology.

Data relied on for the selection of NSPS were primarily data developed for existing sources, which includes costs on a plant-by-plant basis along with retrofit costs, where applicable. The estimated total investment costs and total annual costs for a "normal" treatment facility at a new source are $9,100 and $6,800, respectively.

The Agency does not believe that applying this level of technology to new sources, including existing sources making major modifications to their finishing processes, 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 final rule.

PSES: Except for three phthalates, the Agency is not promulgating PSES at this time for any pollutant; PSES for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved. EPA has determined that the average percentage (ranging from 35 to 99 percent) of the toxic pollutants removed nation-wide by well-operated POTWs meeting secondary treatment requirements is greater than the average percent removal by direct dischargers complying with the BAT effluent limitations guidelines (i.e., zero percent). Therefore, the toxic pollutants do not pass through a POTW. Even though the Agency is not promulgating categorical pretreatment standards, indirect discharges at existing sources in this subcategory must comply with the General Pretreatment Regulations—40 CFR Part 403.

PSES for bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved pending proposal and promulgation of the BAT effluent limitations guidelines for these pollutants. When BAT is selected, EPA will determine if these three pollutants pass through POTWs.

PSNS: For all pollutants except three phthalates, the Agency is not promulgating PSNS; PSNS for bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved. The Agency believes that new and existing indirect discharging sources in this subcategory will discharge the

same pollutants in similar amounts. As discussed in the preceding section, the average percentage of removals of toxic pollutants (ranging from 35 to 99 percent) nation-wide by well-operated POTWs meeting secondary treatment requirements is greater than the average percent removal by direct dischargers complying with BAT/NSPS for this subcategory. Therefore, the toxic pollutants do not pass through a POTW. Even though the Agency is not promulgating categorical pretreatment standards, indirect dischargers at new sources in this subcategory must comply with the General Pretreatment Regulation—40 CFR Part 403.

The Agency believes that the concentration of the three phthalates in finishing waters discharged from new sources will be similar to the concentrations of those pollutants discharged from existing indirect sources. For this reason, the Agency is reserving PSNS for bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, and dimethyl phthalate until completion of the phthalate treatability study.

VII. Pollutants 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 9, 1979. See *NRDC* v. *Costle,* 12 ERC 1833 (D.D.C. 1979).

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). One hundred and twenty-three of the other 126 priority pollutants are being excluded from regulation for the PM&F category 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 effluent limitations guidelines, new source performance standards, or pretreatment standards 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.

Paragraph 8(a)(iii) allows the Administrator to exclude from regulation toxic pollutants present in amounts too small to be effectively reduced by technologies known to the Administrator. Appendix F lists, for each subcategory, toxic pollutants that were excluded from regulation for this reason.

VIII. Economic Considerations

A. Introduction

The Agency's economic impact assessment of this regulation is presented in the report entitled *Economic Impact Analysis of Effluent Limitations and Standards for the Plastics Molding and Forming Industry* (U.S. EPA, Washington, D.C., December 1984). This report details the investment and annualized costs of compliance with this regulation for the plastics molding and forming industry. The compliance costs are based on engineering estimates of capital and operating and maintenance costs for the effluent control systems described earlier in this preamble and in detail in Section IX of the technical development document. 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 economic impact analysis reflects revisions in estimates of treatment costs that have occurred since proposal as discussed in Section IX of the technical development document.

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 rulemaking, and is entitled "Cost Effectiveness Analysis of Effluent Limitations and Standards for the Plastics Molding and Forming Industry." (Refer to the address section at the beginning of this preamble for information on obtaining copies of these reports.)

B. Impacts

1. Universe

EPA estimates there are 10,260 plastics molding and forming plants. The Agency also estimates that 1,893 of those plants have plastics molding and forming processes that use process water. Of the plants that use water, 553 are estimated to be direct dischargers. Because EPA is not establishing pretreatment standards for reasons discussed earlier in this preamble, direct facilities are the only facilities that will incur costs.

2. Aggregate Costs and Impacts

Total investment for the final BPT effluent limitations guidelines for all three subcategories is projected to be $7.0 million with annual costs of $4.5 million, including depreciation and interest. These costs, as well as subsequent costs, are expressed in 1984 dollars and take into account treatment-in-place. No plant closures are projected as a result of compliance costs for this regulation. However, the regulation is projected to result in 25 job losses due to the closure of the PM&F process lines at five plants. The PM&F operations at these five plants include both cleaning and finishing PM&F processes. The closures occur because of the impact of the costs of treating the cleaning process wastewater. However, the PM&F process lines in these five plants are secondary to other manufacturing operations. Thus, although the PM&F process lines are projected to close, the plants are projected to remain open. Production cost increases would be less than 0.3 percent. If all costs were passed on to consumers, price increases would

be less than 0.3 percent. Balance of trade effects are insignificant.

Because EPA is not promulgating 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 promulgating PSES or PSNS at this time. Thus, there is no economic impact on indirect dischargers as a result of the 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 four groups of direct dischargers in the plastics molding and forming industry: (1) Those plants that have only contact cooling and heating water processes; (2) those plants that have only cleaning water processes; (3) those plants that have cleaning water processes and contact cooling and heating water processes; and (4) those plants that have cleaning water processes and finishing water processes.

Economic and financial data were available for 381 of the plants that completed survey questionnaires. Data from 112 direct discharging plants were used in the closure analysis. Of the remaining 269 plants in the economic data base, data were not used in the closure analysis for 100 plants because they do not discharge wastewater and for another 169 plants because they are indirect dischargers and are not affected by this regulation. A financial profile was developed for each of the 112 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 regulation were estimated for each of the 112 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's current cash flow exceeds the annual treatment costs, it was assumed that the plant could afford the pollution control. Implicitly, then, that plant could obtain financing for the pollution control investment. In the plant closure analysis, closures were assumed to occur if the expected discounted cash flow of the plant, less the investment cost of the pollution control equipment, was less than the terminal salvage value of the plant's assets. If the PM&F employees were less than 50 percent of the total employees at a plant, the closure was assumed to affect only the PM&F operation, not the entire plant. If PM&F employees were 50 percent or more of the total plant employment, the entire plant was assumed to close. The results of the closure analysis on 112 plants responding to the questionnaire surveys were extrapolated to the estimated 558 plastics molding and forming plants that are direct dischargers.

C. BPT

The final BPT effluent limitations guidelines are expected to affect all direct discharging plants in all three subcategories. However, costs for plants in the contact cooling and heating water subcategory to comply with the BPT effluent limitations guidelines will be minimal; EPA has found that good housekeeping practices are already commonly employed at plants in this subcategory. The costs to comply with the BPT effluent limitations guidelines for the cleaning water subcategory and finishing water subcategory are projected to be $7.0 million for investment and $4.5 million in annual costs (including depreciation and interest).

Based on EPA's analysis of economic impacts, no plant closures are expected to result from compliance with the BPT effluent limitations guidelines. However, 25 job losses are expected to result from the closure of only the PM&F operations in five plants that employ both cleaning and finishing PM&F processes as secondary operations to other manufacturing processes (e.g., a plant that makes both glass and plastic lenses, most of which are glass). Production costs are expected to increase less than 0.3 percent. If all costs were passed on to consumers, price increases would be less than 0.3 percent. The Agency has determined that the effluent reduction benefits associated with compliance with the BPT effluent limitations guidelines justify the costs.

D. BAT

Because the Agency is promulgating BAT effluent limitations guidelines equal to BPT effluent limitations guidelines (except for the phthalates in the contact cooling and heating water subcategory and in the finishing water subcategory), there are no additional costs or impacts associated with the BAT effluent limitations guidelines for this category. The BAT effluent limitations guidelines for the phthalates in the contact cooling and heating water subcategory and in the finishing water subcategory are reserved.

E. NSPS

The versatility of molded and formed plastics products and the availability of relatively inexpensive oil supplies, from which plastic resins are synthesized, contributed to the rapid growth of the plastics 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 promulgating NSPS (except for phthalates in the contact cooling and heating water subcategory and in the finishing water subcategory, which are reserved) based on the performance of BPT/BAT for each subcategory. The Agency developed a "normal" plant for each of the three 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 subcategory. 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 costs for the normal plant with only cleaning processes will be $267,000 in investment costs and $83,000 in annual costs; for the normal plant with finishing processes only, $9,100 in investment costs and $6,800 in annual costs. As a result of NSPS, production costs at new sources are estimated to increase 1.3 percent for plants with cleaning processes only and 0.6 percent for plants with finishing processes only. These estimated costs apply to all new sources regardless of whether the new sources result from major modifications of existing facilities or are constructed as greenfield sites. The Agency believes that the NSPS will not deter entry into the plastics molding and forming industry because new sources will incur costs equal to or less than those costs incurred by existing plants to comply with the final PM&F regulation.

F. Special Impacts

No plant closures in the plastics molding and forming industry are projected to result from this regulation. However, the PM&F operations in five plants that use process water in both cleaning and in finishing PM&F processes are projected to close. (As discussed previously, the PM&F operations are the secondary

manufacturing operations of these five plants.) The closure of these PM&F operations is expected to result in 25 associated job losses. The community impact of these 25 jobs losses will be minimal.

G. Regulatory Flexibility Analysis

Public Law 95-354 requires EPA to prepare and Initial Regulatory Flexibility Analysis for all 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 the purchase of pollution control equipment. The three basic programs are: (1) The Pollution Control Bond Program (tax exempt), (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 Administration, Office of Pollution Control Financing, 4040 North Fairfax Drive, Suite 500, Arlington, 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-backed 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 financial assistance coordinator at EPA headquarters is Ms. Frances A. Desselle who may be reached at (202) 382-5373.

In addition to the SBA programs described above, the EPA has developed a series of fact sheets (entitled "Assistance Program for Pollution control Financing") on available assistance programs for long-term financing of pollution control equipment. Federal, State and private financing programs are described in this series of fact sheets. Copies may be obtained from Ms. Frances A. Desselle at the following:

U.S. Environmental Protection Agency, 401 M Street, SW. (WH-586), Washington, D.C. 20460

or

(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 $4.5 million is less than $100 million and it meets none of the other criteria specified in section 1 paragraph (b) of the Executive Order. The economic impact analysis prepared for this rulemaking meets the requirements for non-major rules.

IX. 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 regulation on air pollution, solid waste generation, water scarcity, and energy consumption. This 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 promulgating 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 this final regulation:

A. Air Pollution

Technologies used as the basis for the effluent limitations guidelines and standards settle or biologically oxidize pollutants 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 effluent limitations guidelines and standards will not create any substantial air pollution problems.

B. Solid Waste

EPA believes that only very small amounts of wastewater treatment sludges are currently generated by PM&F plants because of the limited use of treatment technologies in the PM&F category. EPA estimates that the BPT effluent limitations guidelines will increase the production of solid wastes by 7,300 metric tons (or kkg) per year beyond that now generated by plants in this category. These wastes are comprised of treatment process sludges containing biological solids, skimmed oil, and, in some cases, settled solids that may contain toxic metals. The BAT effluent limitations guidelines result in no additional solids production because BAT is the same as BPT.

EPA believes that the amount of solid wastes generated by a new source will be approximately the same as the amount generated by an equal-sized existing source at BPT. Therefore, for equal-sized facilities, the estimated annual average plant production of solid wastes generated in compliance with NSPS would be about the same as the annual average plant production for BPT. EPA projects that this would be about 40 metric tons per year per new source in the cleaning water subcategory and about 10 metric tons per year per new source in the finishing water subcategory. EPA anticipates that only minimal quantities of solid wastes would be generated at new sources in the contact cooling and heating water subcategory because of the characteristically low levels of TSS contained in raw wastewater discharges from existing sources in this subcategory. Because the Agency is not promulgating categorical pretreatment standards at this time, no additional solid wastes will be generated by indirect dischargers as a result of this regulation.

The Agency examined the solid wastes that would be generated by PM&F processes using the 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 a review of the results of the Extraction Procedure (EP) toxicity tests that were conducted on PM&F solid

wastes. None of the pollutants for which the extracts in the EP test are analyzed were found in PM&F sludges above the allowable concentration (i.e., the concentration that makes the waste hazardous). PM&F wastes are also not currently listed as hazardous under 40 CFR 261.11 (45 FR 33121, May 19, 1980; as amended by 45 FR 76624, November 19, 1980). For the above reasons, EPA has not developed estimates of the costs to dispose of solid wastes generated in treating plastics molding and forming wastewaters 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 determine if they meet any of the characteristics of hazardous wastes. See 40 CFR 262.11 (45 FR 12732–12733, February 26, 1980). As more information becomes available, it is possible that certain sludges could be listed as hazardous pursuant to 40 CFR 261.11.

If any plastics molding and forming 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 the point of final disposition. EPA's generator standards require generators of hazardous wastes to meet containerization, labeling, recordkeeping, 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 an appropriate off-site treatment, storage, or disposal facility. See 40 CFR 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 263.20 (45 FR 33142, May 19, 1980; as amended at 45 FR 86973, December 31, 1980). Finally, RCRA regulations establish standards for hazardous waste treatment, storage, and disposal facilities allowed to receive such wastes. See 40 CFR 264 and 265 (46 FR 2802, January 12, 1981; 47 FR 32274, July 26, 1982).

Even if plastics molding and forming wastes are not identified as hazardous, they still must be disposed of in a manner that will not violate the open dumping prohibition of section 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

The selected treatment technologies are not expected to cause a water loss. Therefore, this final regulation is not expected to result in a 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 4.1 million kw-hr/yr, which is significantly less than one percent of the estimated total current energy usage for the PM&F category. Because the Agency is not promulgating BAT or BCT effluent limitations guidelines more stringent than BPT, no additional electrical energy is required to comply with BAT and BCT effluent limitations guidelines. There is no additional electrical energy consumption associated with pretreatment standards because the Agency is not promulgating PSES and PSNS at this time.

EPA believes that the energy used by a new direct discharging plant will be approximately the same amount as that used by an equal-sized existing source at BPT. Therefore, for equal-size plants, the estimated annual plant energy use for NSPS would be about the same as the annual average energy use of BPT. EPA projects that this would be about 83,000 kw-hr/yr per new source in the cleaning water subcategory and about 12,000 kw-hr/yr per new source in the finishing water subcategory. EPA anticipates that only minimal quantities of energy will be required at new sources in the contact cooling and heating water subcategory because the technology basis of NSPS (the application of good housekeeping practices) would not involve the use of significant levels of energy. These uses do 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 effluent limitations guidelines and standards is insignificant and that effluent reduction benefits outweigh the increased energy use.

X. Best Management Practices (BMPs)

Section 304(e) of the Clean Water Act authorizes the Administrator to prescribe "best management practices" (BMP). EPA is not promulgating BMPs specific to the plastics molding and forming category.

XI. Upset and Bypass Provisions

A recurring issue of 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 an 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 even in properly operated control equipment. Because technology-based effluent limitations guidelines 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 excursion incidents may be handled through EPA's exercise of enforcement discretion. Compare, *Marathon 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 facilities are circumvented in emergency situations. Bypass provisions have, in the past, been included in NPDES permits.

EPA has determined that both upset and by-pass 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 final regulation does not address these issues.

XII. 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.*

XIII. Relationship to NPDES Permits

The BPT, BAT, and BCT effluent limitations guidelines and NSPS in this regulation will be applied to individual plastics molding and forming processes 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 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

XIV. Public Participation and Response to Major Comments

Industry groups and individual plastics molding and forming companies participated during the development of these effluent limitations guidelines and standards. Following the publication of the proposed rule in the Federal Register on February 15, 1984, the Agency provided the technical development document and the economic impact analysis that supported the proposed rule to industry, government agencies, and the public sector. On April 3, 1984, a public hearing was held in Fort Mitchell, Kentucky, on the proposed rule. Five people attended the hearing and, although no one presented testimony or comments, EPA informally answered questions on the proposed rule.

All comments received on the proposed regulation have been carefully considered and appropriate changes in the regulations have been made whenever available data and information supported those changes. Major comments on the proposal are addressed in this and other sections of the preamble. A summary of all comments received and detailed responses to those comments are included in a document entitled *Response to Public Comments, Proposed Plastics Molding and Forming Effluent Limitations Guidelines and Standards,* which is in the public record for this rulemaking.

The following is a discussion of the Agency's response to the major comments.

1. Research and Development Laboratories

Comment: Some commenters stated that research and development (R&D) laboratories that have PM&F processes should be exempted from the PM&F regulation because they generally develop products for test marketing at quantities less than 10,000 pounds per year for each product line.

Response: The PM&F regulation is applicable to all PM&F processes that discharge process water. See, 40 CFR 463.01. The mass of plastic product produced is not considered when determining the applicability of the PM&F regulation to a process. Therefore, PM&F processes at a R&D laboratory are subject to the PM&F effluent limitations guidelines and standards if those processes discharge process water.

2. Reticulated Foam Process

Comment: Commenters requested clarification that reticulated foam processes are not subject to the PM&F regulation because reticulation operations do not use process water either to cool, clean, or finish the product. In chemical reticulation, water is used to quench (i.e. stop) the chemical reaction and, in thermal reticulation, combustion products are removed by a vacuum pump and are absorbed by the water in that pump.

Response: The Agency agrees with the commenters that the reticulated foam process does not use water to cool, clean, or finish the plastic product. Therefore, the PM&F regulation does not apply to the processes that involve the reticulation of foam. Further discussion relative to this issue is found in section III, *supra.*

3. Regenerated Cellulose

Comment: Several commenters stated that the PM&F regulation should not be applied to the processing of regenerated cellulose because regenerated cellulose is not a plastic material, as defined in the regulation. They also stated that the process used to regenerate cellulose is

not a PM&F process because process water is not used to cool, clean, or finish a plastic material.

Response: The Agency agrees with the comments that regenerated cellulose is not a plastic material. Regenerated cellulose is a natural organic material, whereas plastic materials are synthetic organic polymers. Therefore, processes that use regenerated cellulose (e.g., the manufacture of sausage casings) are not subject to the PM&F regulation. In response to this comment, the Agency has revised the proposed definition of "plastic material" to make it clear that natural organic materials are not covered by this regulation. See Section V, *supra*, and 40 CFR 463.02.

The Agency also agrees with the commenters that the process used to produce regenerated cellulose is not a PM&F process because process water is not used to cool, clean, or finish the product. That process is subject to the regulation for the organic chemicals, plastics, and synthetic fibers (OCPSF) category.

4. Subcategorization Scheme

Comment: The subcategorization scheme for the PM&F regulation is too broad. PM&F processes employ many different plastic materials and combinations of plastic materials. As a result, the characteristics of the wastewaters generated by those processes are different. The current subcategorization scheme does not consider these different wastewater characteristics.

Response: The Agency agrees that the PM&F category encompasses a wide range of processes and many different plastics materials are processed in those processes. However, this diversity does not lead to random inequities in the application of the regulation.

The major factor considered when the Agency developed the subcategorization scheme for the proposed regulation was water use. The Agency looked at data from many processes that used water for the same purpose (e.g., cooling) and found that wastewaters discharged by those processes had similar characteristics. Therefore, the subcategorization scheme for this regulation does consider the characteristics of wastewaters discharged from different PM&F processes that use water for the same purpose (i.e., cooling and heating, cleaning, or finishing).

Although the Agency does not believe that separate subcategories for different products or processes are necessary or appropriate, EPA has revised the subcategorization scheme since proposal. For purposes of the final rule, EPA has further subdivided the category to include a separate subcategory for cleaning water processes and another for finishing water processes. The reasons for this decision are fully explained in Section V.B., *supra*, of this preamble.

5. Data Averaging Methodology

Comment: Several commenters urged revisions of the methodology used by EPA to calculate subcategory average concentrations. Commenters suggested that EPA calculate flow-weighted subcategory averages as opposed to arithmetic averages.

Comments also stated that, for the contact cooling and heating water subcategory, separate flow-weighted pollutant concentrations should be calculated for the extrusion processes because those processes generate most of the wastewater discharged by processes in that subcategory.

Response: EPA reviewed the variation in the amount of water discharged by contact cooling and heating water processes. As a result of that review, EPA agrees that there is a wide variation in the amount of water discharged by processes sampled during the development of this regulation. EPA also agrees that flow-weighted pollutant averages address the impact of that variation better than the arithmetic averages calculated for the proposed rule. Flow-weighted averages give more weight to high flow processes and less weight to low flow processes. An arithmetic average gives the same weight to all processes regardless of their flow rate. The Agency used flow-weighted averages in this final rule to estimate the average pollutant concentrations for each subcategory.

To respond to the comment about separate flow-weighted concentrations for extrusion processes, the Agency proportioned the subcategory average concentrations for the contact cooling and heating water subcategory by the number of the types of PM&F processes. This gave more weight to extrusion processes because extrusion processes represent the largest number of processes in the Agency's data base for that subcategory.

Additional changes to the average pollutant concentrations since proposal are discussed in Section V.D. of this preamble.

6. Production-Based Effluent Limitations Guidelines and Standards

Comment: Several commenters suggested that production-based effluent limitations guidelines and standards are not appropriate for the PM&F category because of the wide variation in the amount of water used to process the various plastic materials and because of varying requirements for product quality.

Response: On the basis of information submitted by commenters and further review of existing data, the Agency has determined that production-based mass limitations cannot be applied to this category. Although some data support a correlation between the mass of product processed and the amount of wastewaster generated, this correlation could not be consistently demonstrated. Information submitted by commenters indicates that variations in water use and mass of plastic products produced can be attributed to several factors, such as product quality requirements and type of products being produced. The Agency considered the option of further subcategorization to account for these factors as a means of retaining production-based mass limitations. However, given the number of possible products, product quality requirements and water use variations, and the complexity of a subcategorization based on these variations, the Agency does not believe further subcategorization is feasible. Thus, absent a consistent correlation between water use and mass of plastic products produced, the Agency is unable to establish production-based limitations in this final rule.

The final rule does require, however, that permit limitations be expressed in terms of mass. EPA is today promulgating a concentration basis for each pollutant and a formula by which permit writers use process water use flow rates, which are obtained from the permittee, and the promulgated concentration value to calculate a mass limitation for each pollutant.

7. 100 Percent Recyle

Comment: Several commenters asserted that zero discharge by 100 percent recycle is not feasible for contact cooling and heating water processes with a flow rate of 35 gpm or less as required by the proposed rule because they stated that the increase in dissolved solids concentrations in the recycled water may affect the quality of the plastic product. Additionally, they asserted that there are no 100 percent recycle units because all recycle units have to be cleaned periodically, which results in a discharge.

Response: In response to this comment, EPA conducted a survey of eight plants that reported zero discharge by 100 percent recycle of contact cooling and heating water. EPA found that all eight of the plants that reported 100

percent recycle on their questionnaires actually discharged wastewater. In most cases, the discharge resulted from cleaning the recycle unit.

The Agency agrees with the comment that product quality may be affected by the increase in dissolved solids in recycled water. The number of times that water can be recycled depends on the desired quality of product and the dissolved solids concentration in the recycle water and in any make-up water.

Because zero discharge by 100 percent recycle requires that all of the process water be recycled regardless of the product quality requirements and because results of our investigation indicated that plants that reported 100 percent recycle actually had a discharge, the Agency has determined that 100 percent recycle is not feasible for the low flow rate contact cooling and heating water processes. Therefore, 100 percent recycle was not considered as a basis for final regulations for the contact cooling and heating water subcategory.

8. Subcategory Recycle Percentage

Comment: Several commenters stated that recycle percentages cannot be established for the PM&F subcategories because of the large variation in the water used to process different plastic materials and because of varying product quality requirements. They asserted that this is particularly true for a process that employs many different plastic materials or combinations of plastic materials.

Response: As discussed earlier in this preamble, the Agency considered subdividing the PM&F category based on plastic material processed to account for the variation in the amount of water used. This is an extremely complex approach for subcategorization and is not considered feasible by the Agency. For this reason, the Agency has determined that subcategory recycle percentages cannot be established for the PM&F category. Recycle was rejected as a basis for the technology options considered for this final rule.

XV. Availability of Technical Information

The major documents on which this regulation is based are: (1) *Development Document for Effluent Limitations Guidelines, New Source Performance Standards, and Pretreatment Standards for the Plastics Molding and Forming Point Source Category (Final)* (USEPA, Washington, D.C., December 1984), (2) *Economic Impact Analysis of Effluent Limitations and Standards for the Plastics Molding and Forming Industry* (USEPA, Washington, D.C., December 1984), (3) *Response to Public Comments, Proposed Plastics Molding and Forming Effluent Limitations Guidelines and Standards* (USEPA, Washington, D.C., December 1984), and (4) *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants* (USEPA, Cincinnati, Ohio, April 1977).

On January 31, 1985, copies of the technical development document and the economic analysis will be available for public review in EPA's Public Information Reference Unit, Room 2404 (Rear) (EPA Library), 401 M Street, SW., Washington, D.C. On February 20, 1985, the complete Record, including the Agency's responses to comments on the proposed regulation, will be available for review at the Public Information Reference Unit. The EPA information regulation (40 CFR Part 2) allows the Agency to charge a reasonable fee for copying.

Copies of the technical development document and the economic analysis may also be obtained from the National Technical Information Service (NTIS), Springfield, Virginia 22161 (703/487-6000). A notice will be published in the Federal Register announcing the availability of these documents from NTIS. (This should occur within 60 days of publication of this regulation.)

XVI. Office of Management and Budget (OMB) Review

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Written comments made by OMB are in the record for this final rulemaking.

List of Subjects in 40 CFR Part 463

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

Dated: December 4, 1984.

William D. Ruckelshaus,

Administrator.

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.

BMP—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 plant that discharges or may discharge pollutants into waters of the United States.

Indirect Discharger—A plant 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. 94-580) 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

Cleaning Water Subcategory

65. phenol
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 Water Subcategory

23. chloroform
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. benzidine
6. carbon tetrachloride
7. chlorobenzene
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
29. 1,1-dicholoroethylene
31. 2,4-dichlorophenol
32. 1,2-dichloropropane
33. 1,2-dichloropropylene (1,2-dichloropropene)

34. 2,4-dimethylphenol
35. 2,4-dinitrotoluene
36. 2,6-dinitrotoluene
37. 1,2-diphenylhydrazine
39. fluoranthene
40. 4-chlorophenyl phenyl ether
41. 4-bromophenyl phenyl ether
42. bis(2-chloroisopropyl) ether
43. bis(2-chloroethoxy) 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)fluoranthene (11,12-benzofluoranthene)
76. chrysene
77. acenaphthylene
78. anthracene
79. benzo(ghi)perylene (1,12-benzoperylene)
80. flourene
81. phenanthrene
82. dibenzo(a,h)anthracene (1,2,5,6-dibenzanthracene)
83. indeno(1,2,3-cd)pyrene(2,3-o-phenylenepyrene)
84. pyrene
88. vinyl chloride (chloroethylene)
91. chlordane (technical mixture and metabolites)
95. a-endosulfan (Alpha)
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-tetrachlorodibenzo-p-dioxin (TCDD)

Contact Cooling and Heating Water Subcategory

8. 1,2,4-trichlorobenzene
28. 3,3'-dichlorobenzidine
38. ethylbenzene
48. dichlorobromomethane
62. N-nitrosodiphenylamine
114. antimony
115. arsenic
121. cyanide (total)
125. selenium

Cleaning Water Subcategory

8. 1,2,4-trichlorobenzene
12. hexachloroethane
28. 3,3'-dichlorobenzidine
30. 1,2-trans-dichloroethylene
38. ethylbenzene
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. b-endosulfan-Beta
97. endosulfan sulfate
99. endrin aldehyde
101. heptachlor epoxide
117. beryllium
118. cadmium
122. lead
127. thallium

Finishing Water Subcategory

4. benzene
12. hexachloroethane
22. parachlorometa cresol
23. chloroform (trichloromethane)
30. 1,2-trans-dichloroethylene
44. methylene chloride (dichloromethane)
47. bromoform (tribromomethane)
48. dichlorobromomethane
55. naphthalene
62. N-nitrosodiphenylamine
69. di-n-octyl phthalate
70. diethyl phthalate
73. benzo(a)pyrene (3,4-benzopyrene)
85. tetrachloroethylene
86. toluene
89. aldrin
90. dieldrin
92. 4,4'-DDT
93. 4,4'-DDE (p,p'-DDX)
94. 4,4'-DDD (p,p'-TDE)
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
99. endrin aldehyde
100. heptachlor
101. heptachlor epoxide
102. alpha-BHC
103. beta-BHC
104. gamma-BHC (lindane)
105. delta-BHC
117. beryllium
118. cadmium
126. silver
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)
85. tetrachloroethylene
92. 4,4'-DDT
93. 4,4'-DDE (p,p'-DDX)
94. 4,4'-DDD (p,p'-TDE)
96. b-endosulfan-Beta
97. endosulfan sulfate
98. endrin
100. heptachlor
101. heptachlor epoxide

Cleaning Water Subcategory

11. 1,1,1-trichlorethane
48. dichlorobromomethane
68. di-n-butyl phthalate
98. endrin

Appendix F—Toxic Pollutants Present in Amounts Too Small To Be Effectively Reduced by Technologies Known to the Administrator

Contact Cooling and Heating Water Subcategory

4. benzene
11. 1,1,1-trichloroethane
22. parachlorometa cresol
23. chloroform (trichloromethane)
44. methylene chloride (dichloromethane)
65. phenol
68. di-n-butyl phthalate
86. toluene
89 aldrin
90. dieldrin
99. endrin aldehyde
102. alpha-BHA
103. beta-BHC
104. gamma-BHC (lindane)
105. delta-BHC
117. beryllium
118. cadmium
119. chromium
120. copper
122. lead
123. mercury
124. nickel
126. silver
127. thallium
128. zinc

Cleaning Water Subcategory

4. benzene
22. parachlorometa cresol
44. methylene chloride (dichloromethane)
62. N-nitrosodiphenylamine
68. bis(2-ethylhexyl) phthalate
86. toluene
114. antimony
115. arsenic
119. chromium
120. copper
123. mercury
124. nickel
125. selenium
126. silver

Finishing Water Subcategory

8. 1,2,4-trichlorobenzene
11. 1,1,1-trichloroethane
28. 3,3'-dichlorobenzidine
38. ethylbenzene
65. phenol
87. trichloroethylene
89. aldrin
100. heptachlor
102. alpha-BHC
103. beta-BHC
104. gamma-BHC
105. delta-BHC
114. antimony
115. arsenic
119. chromium
120. copper
121. cyanide (total)
122. lead

123. mercury
124. nickel
125. selenium
128. zinc

Accordingly, Title 40, Chapter I, of the Code of Federal Regulations is amended by adding new Part 463 to read as set forth below:

PART 463—PLASTICS MOLDING AND FORMING POINT SOURCE CATEGORY

General Provisions

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

§ 463.1 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. Plastics molding and forming processes include 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, cleaning, and finishing.

(b) Plastics molding and forming processes (e.g., extrusion 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 crude intermediate plastic materials, which are further processed on-site into intermediate or final plastics products in molding and forming processes, 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. These coating processes are excluded from the effluent limitations guidelines and standards for the electroplating and metal finishing point source categories and are subject to the plastics molding and forming regulation in this part.

(d) Coating of plastic material onto 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) copper forming (40 CFR Part 468) and nonferrous metals forming (40 CFR Part 471). 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.

(e) Research and development laboratories that produce plastic products using a plastics molding and forming process are subject to the effluent limitations guidelines and standards in this part if the plastics molding and forming process discharges process water. The mass of plastic product produced in the plastics molding and forming process is not considered when determining the applicability of the plastics molding and forming regulation in this part to plastics molding and forming processes at research and development laboratories.

(f) Chemical and thermal reticulation processes for polyurethane foam are not subject to the effluent limitations guidelines and standards in this part. Water used in those processes is not considered to be process water as defined in this regulation. Processes used to further mold or form the reticulated foam are subject, however, to this regulation if they discharge process water.

(g) Processes used to regenerate cellulose and to produce a product (e.g., rayon) from the regenerated cellulose are not subject to the effluent limitations guidelines and standards in this part. They are subject to the effluent limitations guidelines and standards for the organic chemicals, plastics, and synthetic fibers category. Processes that mold or form cellulose derivatives (e.g., cellulose acetate) are subject to the effluent limitations guidelines and standards in this part if they discharge process water.

§ 463.2 General definitions.

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

(a) "Plastics molding and forming" is a manufacturing process in which plastic

materials are blended, molded, formed, or otherwise processed into intermediate or final 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 plastics molding and forming process.

(d) "Cleaning water" is process water used to clean the surface of an intermediate or final plastic product or to clean the surfaces of equipment used in plastics molding and forming that contact 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 processed water used to remove waste plastic material generated during a finishing process or to lubricate a plastic product during a finishing process. It includes water used to machine or to assemble intermediate or final plastic products.

(f) "Plastic material" is a synthetic organic polymer (i.e., a thermoset polymer, a thermoplastic polymer, or a combination of a natural polymer and a thermoset or thermoplastic polymer) that is solid in its final form and that was shaped by flow. The material can be either a homogeneous polymer or a polymer combined with fillers, plasticizers, pigments, stabilizers, or other additives.

(g) "Crude intermediate plastic material" is plastic material formulated in an on-site polymerization process.

(h) "Mass of pollutant that can be discharged" is the pollutant mass calculated by multiplying the pollutant concentration times the average process water usage flow rate.

§ 463.3 Monitoring and reporting requirements.

The "monthly average" regulatory values shall be the basis for the monthly average effluent limitations guidelines and standards in direct discharge permits. Compliance with the monthly average effluent limitations guidelines and standards 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 contact cooling and heating water process in liters per day is equal to the volume of process water (liters) used per year by a process divided by the number of days 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 the contact cooling and heating processes.

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

§ 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 effluent limitations guidelines (i.e., mass of pollutant discharged) representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available, which are calculated by multiplying the average process water usage flow rate for the contact cooling and heating water processes at a point source times the following pollutant concentrations:

SUBPART A

[Contact cooling and heating water]

Concentration used to calculate BPT effluent limitations	
Pollutant or pollutant property	Maximum for any 1 day (mg/l)
BOD5	26
Oil and grease	29
TSS	19
pH	(1)

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

The permit authority will obtain the average process water usage flow rate for the contact cooling and heating water processes from the permittee.

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

(a) The BAT effluent limitations guidelines for bis(2-ethylhexyl) phthalate are reserved.

(b) The Agency has determined that, with the exception of bis(2-ethylhexyl) phthalate, there are no toxic pollutants in treatable concentrations in contact cooling and heating water. Accordingly, the Agency is promulgating BAT effluent limitations guidelines equal to the BPT effluent limitations guidelines.

§ 463.14 New source performance standards.

(a) NSPS for bis(2-ethylhexyl) phthalate are reserved.

(b) Any new source subject to this subpart must achieve performance standards (i.e., mass of pollutant discharged), which are calculated by multiplying the average process water usage flow rate for the contact cooling and heating water processes at a new source times the following pollutant concentrations:

SUBPART A

[Contact cooling and heating water]

Concentration used to calculate NSPS	
Pollutant or pollutant property	Maximum for any 1 day (mg/l)
BOD5	26
Oil and grease	29
TSS	19
pH	(1)

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

The permit authority will obtain the average process water usage flow rate for the new source contact cooling and heating water processes from the permittee.

§ 463.15 Pretreatment standards for existing sources.

(a) PSES for bis(2-ethylhexyl) phthalate are reserved.

(b) 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.

(a) PSNS for bis(2-ethylhexyl)phthalate are reserved.

(b) 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 effluent limitations guidelines (i.e., mass of pollutant discharged) representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology, which are calculated by multiplying the average process water usage flow rate for the contact cooling and heating water processes at a point source times the following pollutant concentrations:

SUBPART A

[Contact cooling and heating water]

Concentration used to calculate BCT effluent limitations	
Pollutant or pollutant property	Maximum for any 1 day (mg/l)
BOD5	26
Oil and grease	23
TSS	19
pH	(1)

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

The permit authority will obtain the average process water usage flow rate for the contact cooling and heating water processes from the permittee.

Subpart B—Cleaning Water Subcategory

§ 463.20 Applicability; description of the cleaning water subcategory.

This subpart applies to discharges of pollutants from processes in the cleaning water subcategory to waters of the United States and the introduction of such pollutants into publicly owned treatment works. Processes in the cleaning water subcategory are processes where water comes in contact with the plastic product for the purpose of cleaning the surface of the product and 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 surfaces.

§ 463.21 Specialized definitions.

For the purpose of this subpart:

(a) The "average process water usage flow rate" of a cleaning water process in liters per day is equal to the volume of process water (liters) used per year by a process divided by the number of days 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 cleaning water is the sum of the "average process water usage flow rates" for the cleaning processes.

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

§ 463.22 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 effluent limitations guidelines (i.e., mass of pollutant discharged) representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available, which are calculated by multiplying the average process water usage flow rate for the cleaning water processes at a point source times the following pollutant concentrations:

SUBPART B

[Cleaning water]

Concentration used to calculate BPT effluent limitations		
Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Maximum for monthly average (mg/l)
BOD5	43	22
Oil and grease	71	17
TSS	117	33
pH	(1)	(1)

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

The permit authority will obtain the average process water usage flow rate for the cleaning water processes from the permittee.

§ 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 process wastewaters after compliance with applicable BPT effluent limitations guidelines. Accordingly, because the BPT level of treatment provides adequate control, the Agency is establishing BAT effluent limitations guidelines equal to the BPT effluent limitations guidelines.

§ 463.24 New source performance standards.

Any new source subject to this subpart must achieve performance standards (i.e., mass of pollutant discharged) calculated by multiplying the average process water usage flow rate for cleaning processes at a new source times the following pollutant concentrations:

SUBPART B

[Cleaning water]

Concentration used to calculate NSPS		
Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Maximum for monthly average (mg/l)
BOD5	43	22
Oil and Grease	71	17
TSS	117	33
pH	(1)	(1)

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

The permit authority will obtain the average process water usage flow rate for the new source cleaning water processes from the permittee.

§ 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 403 CFR Part 403—General Pretreatment Regulations.

§ 463.26 Pretreatment 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. [Reserved]

Subpart C—Finishing Water Subcategory

§ 463.30 Applicability; description of the finishing water subcategory.

This subpart applies to discharges of pollutants from processes in the finishing water subcategory to waters of the United States and the introduction of such pollutants into publicly owned treatment works. Processes in the finishing water subcategory are processes where water comes in contact with the plastic product during finishing.

§ 463.31 Specialized definitions.

For the purpose of this subpart:

(a) The "average process water usage flow rate" of a finishing water process in liters per day is equal to the volume of process water (liters) used per year by a process divided by the number of days 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 finishing water is the sum of the "average process water usage flow rates" for the finishing processes.

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

§ 463.32 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 effluent limitations guidelines (i.e., mass of pollutant discharged) representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available, which are calculated by multiplying the average process water usage flow rate for the finishing water processes at a point source times the following pollutant concentrations:

SUBPART C

[Finishing water]

Concentration used to calculate BPT effluent limitations		
Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Maximum for monthly average (mg/l)
TSS	130	37
pH	(1)	(1)

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

The permit authority will obtain the average process water usage flow rate for the finishing water processes from the permittee.

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

(a) The BAT effluent limitations guidelines for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved.

(b) The Agency has determined that, with the exception of bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate, there are no toxic pollutants in treatable concentrations in finishing waters. Accordingly, the Agency is promulgating BAT effluent limitations guidelines equal to BPT effluent limitations guidelines.

§ 463.34 New source performance standards.

(a) NSPS for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved.

(b) Any new source subject to this subpart must achieve performance standards (i.e., mass of pollutant discharged), which are calculated by multiplying the average process water usage flow rate for the finishing water processes at a new source times the following pollutant concentrations:

SUBPART C

[Finishing water]

Concentration used to calculate NSPS		
Pollutant or pollutant property	Maximum for any 1 day (mg/l)	Maximum for monthly average (mg/l)
TSS	130	37
pH	(1)	(1)

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

The permit authority will obtain the average process water usage flow rate for the new source finishing water processes from the permittee.

§ 463.35 Pretreatment standards for existing sources.

(a) PSES for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved.

(b) 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.

§ 463.36 Pretreatment standards for new sources.

(a) PSNS for bis(2-ethylhexyl) phthalate, di-n-butyl phthalate, and dimethyl phthalate are reserved.

(b) 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.

§ 463.37 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology. [Reserved]

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