

**Development Document for the Proposed Effluent Limitations
Guidelines and Standards for the Meat and Poultry Products Industry
Point Source Category (40 CFR 432)
EPA-821-B-01-007**

January 2002

U.S. Environmental Protection Agency
Office of Water (4303T)
Washington, DC 20460

Complete proposed document available at:

<http://www.epa.gov/ost/guide/mpp/>

The Final Development Document is available as well.

SECTION 12

SELECTED TECHNOLOGY OPTIONS

As discussed in Section 2, EPA must promulgate six types of effluent limitations guidelines and standards for each major industrial category, as appropriate:

- Best Practicable Control Technology Currently Available (BPT)
- Best Control Technology for Conventional Pollutants (BCT)
- Best Available Technology Economically Achievable (BAT)
- New Source Performance Standards (NSPS)
- Pretreatment Standards for Existing Sources (PSES)
- Pretreatment Standards for New Sources (PSNS)

BPT, BCT, BAT, and NSPS limitations regulate only those sources that discharge effluent directly into waters of the United States. PSES and PSNS limitations restrict pollutant discharges for those sources that discharge effluent indirectly through sewers flowing to publicly owned treatment works (POTWs). This section presents the rationale EPA used in selecting technology options to serve as the basis for the proposed effluent limitations guidelines and standards for BPT, BCT, BAT, NSPS, PSES, and PSNS.

12.1 BEST PRACTICABLE CONTROL TECHNOLOGY CURRENTLY AVAILABLE (BPT)

In general, the BPT technology level represents the average of the best existing performances of plants of various processes, ages, sizes, or other common characteristics. Where existing performance is considered uniformly inadequate, BPT may be transferred from a different subcategory or industry. Limitations based on transfer of technology must be supported by a conclusion that the technology is indeed transferable and a reasonable prediction that it will be capable of meeting the prescribed effluent limits. (See *Tanners' Council of America v. Train*, 540 F.2nd 1188 (4th Cir. 1976).) BPT focuses on end-of-pipe treatment rather than process changes or internal controls, except where the process changes or internal controls are common industry practice.

The cost-benefit inquiry for BPT is a limited balancing, committed to EPA's discretion, which does not require the Agency to quantify the benefits in monetary terms. In balancing costs in relation to effluent reduction benefits, EPA considers the volume and nature of existing discharges expected after the application of BPT, the general environmental effects of the pollutants, and the cost and economic impact of the required pollution controls. When setting BPT limitations, EPA is required under Section 304(b) to perform a limited cost-benefit balancing to ensure the costs are not wholly out of proportion to the benefits achieved. (See *Weyerhaeuser Company v. Costle*, 590 F.2d 1011 (D.C. Cir. 1978).)

12.1.1 BPT Requirements for the Meat Subcategories

EPA is retaining the existing BPT limitations (BOD, TSS, fecal coliform, pH, and oil and grease) for all facilities currently covered under 40 CFR Part 432. It should be noted that in the proposed rule for oil and grease in particular, limitations and standards are listed as "O&G (HEM)" to indicate that the parameter should be measured as hexane extractable material (HEM). In contrast, EPA has retained the previous notation of "O&G" for the existing BPT limitations, but has included footnotes that indicate it can be measured as HEM. EPA used the two different notations because the existing BPT limitations and proposed limitations were based on analytical testing methods that used two different extraction solvents: freon and n-hexane, respectively. EPA has determined that the two methods are comparable (see *Approval of EPA Methods 1664, Revision A, and 9071B for Determination of Oil and Grease and Non-polar Material in EPA's Wastewater and Hazardous Waste Programs* [EPA-821-F-98-005, February 23, 1999, located at www.epa.gov/ost/methods/1664fs.html]) and *Analytical Method Guidance for EPA Method 1664A Implementation and Use* [EPA-821-R-00-003, February 2000, located at www.epa.gov/ost/methods/1664guide.pdf]). Because freon is an ozone-depleting agent and becoming more expensive, EPA believes that facilities will prefer to measure oil and grease as HEM for the existing BPT limitations. EPA solicits comments on its notation for the two types of oil and grease limitations and standards in the proposed rule.

EPA is also proposing an additional BPT limitation for COD for larger meat first and further processing facilities to reflect the better design and operation of the existing BPT

treatment technology. EPA is retaining the existing BPT limitations and proposing no new BPT limitations for "small" facilities. EPA used production-based thresholds to subcategorize these small facilities (see related discussion in Section 5). EPA defines small MPP facilities as MPP facilities that produce less than the production-based thresholds defined in Section 5. See also Section 5 for a description of why and how EPA developed these production-based thresholds.

12.1.1.1 BPT for Subcategories A through D (Meat Slaughtering Facilities)

Regulated Pollutants

EPA proposes establishing BPT limitations for COD. These pollutants are characteristic of meat slaughtering wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary biological treatment process, which is the key unit process of the model BPT treatment systems for these subcategories.

Technology Selected

EPA is proposing effluent limitations guidelines based on BPT-2 for Subcategories A through D. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, secondary biological treatment including some degree of nitrification, and chlorination/dechlorination. BPT-2 represents an improved version of the existing BPT technology. EPA has determined that the cost and removal comparison for this option is reasonable.

As presented in the Economic Development Document for the proposed rule, three BPT options were considered. EPA estimated the costs and pollutant reductions that would be achieved if these options were applied to all 71 facilities subject to the proposal. Limitations based on BPT-2 remove at least 12.3 million pounds of pollutants over current discharge at an annualized compliance cost of \$9.9 million (\$1999). Limitations based on BPT-2 result in a cost-to-net income ratio of 0.28 percent, which means that approximately 0.28 percent of a facility's profits would be spent on compliance if it was to implement this option. Also, the estimates of the BPT cost to effluent reductions benefit is \$0.81 (\$1999/pound). Thus, this

option is considered cost-reasonable. Detailed discussions on cost estimates are presented in Section 11.

EPA also evaluated Options 3 and 4 as basis for establishing BPT limitations that would be more stringent than the level of control being proposed. However, EPA believes that Option 2 represents BPT (or “average of the best”) treatment for this industry subcategory. Options 3 and 4 were evaluated in the BCT analysis.

12.1.1.2 BPT for Subpart E—Small Processors

EPA is not proposing new limitations for Small Processors (Subpart E). Small processors are defined as operations that produce up to 2,730 kilograms (6,000 pounds) per day of any type or combination of meat product, and they are currently regulated under Subpart E of 40 CFR Part 432.

12.1.1.3 BPT for Subcategories F through I (Meat Further Processing Facilities)

Regulated Pollutants

EPA proposes establishing BPT limitations for COD, a pollutant characteristic of meat further processing wastewater. EPA considers COD a key indicator of the performance of the secondary biological treatment process, which is the key unit process of the model BPT treatment systems for these subcategories.

Technology Selected

EPA is proposing to establish effluent limitations based on BPT-2 for Subcategories F through I. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, secondary biological treatment, and chlorination/dechlorination. As discussed previously, the proposed BPT-2 limits for COD reflect an average of the best performance of the existing technology in place at meat processing facilities, which includes secondary biological treatment. EPA has determined that the cost and removal comparison for this option is reasonable.

As presented in the Economic Development Document for the proposed rule, three BPT options were under consideration. BPT-2 removes at least 0.25 million pounds of pollutants over current discharge at an annualized compliance cost of \$0.4 million (\$1999). Option 2 results in a cost-to-net income ratio of 0.14 percent, which means that approximately 0.14 percent of a facility's profits would be spent on compliance if it was to implement this option. Also, the estimates of the BPT cost to effluent reductions benefit is \$1.59 (\$1999/pound). Thus, this option is considered cost-reasonable.

EPA also evaluated Options 3 and 4 as basis for establishing BPT more stringent than the level of control being proposed. However, EPA believes that Option 2 represents BPT (or "average of the best") treatment for this industry subcategory. Options 3 and 4 are considered in the evaluation of BCT controls.

12.1.2 BPT Requirements for the Poultry Subcategories

EPA proposes BPT limitations for conventional pollutants (BOD, TSS, fecal coliform bacteria, pH, and oil and grease) and nonconventional pollutants (ammonia as nitrogen, total nitrogen, and total phosphorus) for poultry first processing and poultry further processing that have not previously been regulated under the current Part 432 regulations.

12.1.2.1 BPT for Poultry First Processing Facilities (Subcategory K)

Regulated Pollutants

EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as nitrogen for facilities that slaughter no more than 10 million pounds per year (small facilities). EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that slaughter more than 10 million pounds per year (large facilities). These pollutants are characteristic of poultry slaughtering wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary and tertiary biological treatment processes, which are the key components of the model BPT treatment systems for the small and large facilities, respectively.

Technology Selected

EPA is proposing to establish effluent limitations based on BPT-1 for small facilities in Subcategory K. This option is based on the current practices in place at facilities as reported to EPA through the MPP detailed surveys. Option 1 assumes a less aggressive nitrification treatment than Option 2. Based on the MPP screener and detailed survey responses the Agency reviewed for proposal, no small poultry first processors exist; however, in the event that a small number of facilities that were not captured through EPA's survey efforts exist, EPA is proposing to establish BPT limits.

The Agency is proposing to establish effluent limitations based on BPT-3 for large facilities in Subcategory K. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and denitrification and chlorination/dechlorination. As presented in the Economic Development Document for the proposed rule, three BPT options were under consideration. EPA has estimated the costs and pollutant reductions associated with each technology option as it would apply to the 95 facilities that would be subject to these proposed requirements. BPT-2 removes at least 1.63 million pounds of pollutants over current discharge at an annualized cost of \$4.8 million (\$1999). BPT-3 removes at least an additional 5.7 million pounds of pollutants over BPT-2, at an additional annualized compliance cost of \$29.7 million. BPT Option 2 results in a cost-to-net income ratio of 0.34 percent, which means that approximately 0.34 percent of a facility's profits would be spent on compliance if it was to implement this option. Also, the estimates of the BPT cost to effluent reductions benefit is \$2.95 (\$1999/pound). Option 3 results in a cost to net income ratio of 2.73 percent, and the BPT cost to effluent reduction benefit is \$4.71 (\$1999/pound). Thus, both of these options are considered cost-reasonable. However, because Option 3 removes more pollutants at a cost that is reasonable, BPT-3 was selected for this subcategory.

EPA also evaluated Option 4 as basis for establishing BPT more stringent than the level of control being proposed. EPA estimates that BPT-4 results in a cost-to-net income ratio of 3.56 percent and the ratio of cost to effluent reduction benefits is 5.46. However, EPA is not

proposing to establish BPT limits based on BPT-4 because it determined that BPT-3 achieves nearly equivalent pollutant reductions at less cost. EPA has determined that BPT-3 would remove at least 7.32 million pounds of pollutants per year at a total annualized cost of \$34.5 million (\$1999). In contrast, BPT-4 would remove an additional 10.7 percent of pollutants at an additional cost of 28 percent. In view of the fact that BPT-4 appears to achieve minimal additional pollutant removal and yet would prompt additional total annualized costs of \$9.7 million (\$1999), EPA has selected BPT-3, not BPT-4, for this subcategory.

12.1.2.2 BPT for Poultry Further Processing Facilities (Subcategory L)

Regulated Pollutants

EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as N for facilities that further process no more than 7 million pounds per year (small facilities). EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that further process more than 7 million pounds per year (large facilities). These pollutants are characteristic of poultry further processing wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary and tertiary biological treatment processes, which are the key components of the model BPT treatment systems for the small and large facilities, respectively.

Technology Selected

EPA is proposing to establish BPT-1 for small facilities in Subcategory L. This is the same technology as described previously for Subcategory K. EPA estimates that four small facilities could be affected by these proposed requirements and these requirements could cost \$2,600.

The Agency is proposing to establish BPT-3 for large facilities in Subcategory L. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and denitrification and chlorination/dechlorination. As presented in the Economic Development

Document for the proposed rule, three BPT options were under consideration. For the 16 facilities that would be subject to these proposed requirements, EPA estimates that BPT-2 removes at least 0.09 million pounds of pollutants over current discharge at an annualized cost of \$0.3 million (\$1999). BPT-3 removes at least an additional 0.22 million pounds of pollutants over BPT-2, at an additional annualized compliance cost of \$1.9 million. BPT Option 2 results in a cost-to-net income ratio of 0.39 percent, which means that approximately 0.39 percent of a facility's profits would be spent on compliance if it was to implement this option. Also, the estimate of the BPT cost to effluent reductions benefit is \$3.28 (\$1999/pound). Option 3 results in a cost-to-net income ratio of 4.23 percent, and the BPT cost to effluent reduction benefit is \$7.11 (\$1999/pound). Thus, both of these options are considered cost-reasonable. However, because Option 3 removes more pollutants at a cost that is reasonable, it was selected for this subcategory.

EPA also evaluated Option 4 as basis for establishing BPT more stringent than the level of control being proposed. EPA estimates that BPT-4 results in a cost-to-net income ratio of 6.04 percent and the BPT cost to effluent reduction benefit is \$9.54 (\$1999/pound). EPA is not proposing to establish BPT limits based on BPT-4 because it determined that BPT-3 achieves nearly equivalent pollutant reductions at less cost. EPA has determined that BPT-3 would remove at least 0.31 million pounds of pollutants per year at a total annualized cost of \$2.2 million (\$1999). In contrast, BPT-4 would remove at least 0.32 million pounds of pollutants at an additional cost of 36 percent. In view of the fact that BPT-4 appears to achieve less pollutant removal and yet would prompt additional total annualized costs of \$1.9 million (\$1999), EPA has selected BPT-3, not BPT-4, for this subcategory.

12.1.3 BPT Requirements for Independent Rendering Facilities (Subcategory J)

Regulated Pollutants

EPA proposes establishing BPT limitations for COD, a pollutant characteristic of meat rendering wastewater. COD is a key indicator of the performance of the secondary biological treatment process, which is the key component of the model BPT treatment systems for this subcategory.

Technology Selected

EPA is proposing to establish effluent limitations based on BPT-2 for Subcategory J. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and chlorination/dechlorination. Since secondary biological treatment already accomplishes some nitrification, EPA believes that the proposed BPT is an improved version of the existing BPT technology basis, which calls for secondary biological treatment. Option 2 results in a cost-to-net income ratio of 0.68 percent, which means that approximately 0.68 percent of a facility's profits would be spent on compliance if it was to implement this option. Also, estimates of the BPT cost to effluent reductions benefit is \$0.03 (\$1999/pound). Thus, this option is considered cost-reasonable.

EPA also evaluated Options 3 and 4 as basis for establishing BPT more stringent than the level of control being proposed. However, EPA believes that Option 2 represents BPT (or "average of the best") treatment for this industry subcategory. Options 3 and 4 were considered as possible options for revising the BCT limitations.

12.2 BEST CONTROL TECHNOLOGY FOR CONVENTIONAL POLLUTANTS (BCT)

The BCT methodology, promulgated in 1986 (51 FR 24974), discusses the Agency's consideration of costs in establishing BCT effluent limitations guidelines. EPA evaluates the reasonableness of BCT candidate technologies (those that are technologically feasible) by applying a two-part cost test:

1. The POTW test
2. The industry cost-effectiveness test

In the POTW test, EPA calculates the cost per pound of conventional pollutant removed by industrial discharges in upgrading from BPT to a BCT candidate technology and then compares this cost to the cost per pound of conventional pollutant removed in upgrading POTWs

from secondary treatment. The upgrade cost to industry must be less than the POTW benchmark of \$0.25 per pound (in 1976 dollars).

In the industry cost-effectiveness test, the ratio of the incremental BPT to BCT cost divided by the BPT cost for the industry must be less than 1.29 (i.e., the cost increase must be less than 29 percent). The Economic Development Document for the proposed rule provides more details on the calculations of the BCT cost tests.

In developing BCT limits, EPA considered whether there are technologies that achieve greater removals of conventional pollutants than those proposed for BPT, and whether those technologies are cost-reasonable according to the prescribed BCT tests. For subcategories A through D, E through I, K, and L, EPA identified no technologies that can achieve greater removals of conventional pollutants than the BPT standards that also pass the BCT cost test. Accordingly, EPA proposes to establish BCT effluent limitations equal to the current BPT limitations for these subcategories. In the Rendering subcategory (Subcategory J), EPA found that Option 2 would achieve greater removal of conventional pollutants and was cost-reasonable under the BCT cost tests and therefore proposes this technology as BCT.

12.3 BEST AVAILABLE TECHNOLOGY ECONOMICALLY ACHIEVABLE (BAT)

In general, BAT effluent limitations guidelines represent the best economically achievable performance of facilities in the industrial subcategory or category. The CWA establishes BAT as a principal national means of controlling the direct discharge of toxic and nonconventional pollutants. The factors considered in assessing BAT include the cost of achieving BAT effluent reductions, the age of equipment and facilities involved, the process(es) employed, potential process changes, and non-water quality environmental impacts including energy requirements, and such other factors as the EPA Administrator deems appropriate. The Agency retains considerable discretion in assigning the weight to be accorded these factors. An additional statutory factor considered in setting BAT is economic achievability. Generally, EPA determines economic achievability on the basis of total costs to the industry and the effect of compliance with BAT limitations on overall industry and subcategory financial conditions.

For purposes of the proposed rule, EPA has determined that each proposed model technology is technically available. EPA has also determined that each is economically achievable for the segment to which it applies. Further, EPA has determined, for the reasons set forth in Section 10, that none of the proposed technology options has unacceptable adverse non-water quality environmental impacts. EPA also considered the age, size, processes, and other engineering factors pertinent to facilities in the proposed segments for the purpose of evaluating the technology options. EPA is proposing to establish separate limits for facilities on the basis of size. As discussed in more detail in Section 5, EPA is not proposing to establish more stringent limitations for small meat slaughterers, nor is the Agency proposing to revise the limitations for the small meat processors subcategory (Subpart E). EPA survey data indicate that approximately 107 small meat processing facilities would have been subject to any new limitations. EPA estimates that the additional pollutant reductions achieved by establishing more stringent limitations for these small facilities would be minimal. For example, under Option 3, the pollutant load reduction attributable to small facilities is less than 0.1 percent of the total expected pollutant load reduction.

12.3.1 BAT Requirements for the Meat Subcategories

12.3.1.1 BAT for Subcategories A through D (Meat Slaughtering Facilities)

Regulated Pollutants

EPA proposes establishing BAT limitations for ammonia-N, total nitrogen, and total phosphorus. These pollutants are characteristic of meat slaughtering wastewater. These proposed regulated pollutants are key indicators of the performance of the tertiary biological treatment process, which is the technology basis for the BAT and NSPS requirements for these subcategories.

Technology Selected

EPA is proposing effluent limitations guidelines based on BAT-3 for Subcategories A through D. The treatment technologies that serve as the basis for the development of the proposed BAT limits are equalization, dissolved air flotation, and secondary biological treatment

with nitrification and denitrification and chlorination/dechlorination. EPA has determined that the cost for nutrient removal for this subcategory is cost-effective (i.e., is less than the cost for nutrient removal performed at a POTW). The Economic Development Document for the proposed rule presents the methodology for evaluating cost-effectiveness for nutrient pollutants. As presented in the Economic Development Document for the proposed rule, three BAT options were considered. Effluent limitations based on BAT-2 remove approximately 2.0 million pounds of phosphorus over current discharge at an annualized compliance cost of \$9.9 million (\$1999). BAT-3 removes an additional 40 million pounds of nitrogen and phosphorus over BAT-2 at an additional annualized compliance cost of \$32.3 million (\$1999). Both of these options result in a cost-to-net income ratio of less than 1.5 percent, so both are considered economically achievable. However, because BAT-3 removes more pounds of nutrients at a cost that is economically achievable, EPA has chosen to propose effluent limitations based on BAT-3.

EPA also evaluated BAT-4 as a basis for establishing BAT more stringent than the level of control being proposed. As was the case for BAT-3, the cost-to-net income ratio of less than 2.4 percent shows that the option is economically achievable. However, EPA is not proposing to establish limits based on BAT-4 because BAT-3 achieves nearly equivalent reductions in nitrogen and phosphorus for much less cost. EPA has determined that BAT-3 would remove 42.8 million pounds of nitrogen and phosphorus per year at a total annualized cost of \$42.2 million (\$1999). In contrast, BAT-4 would remove 44.9 million pounds of nitrogen and phosphorus per year at a total annualized cost of \$73.5 million (\$1999). In view of the fact that BAT-4 appears to achieve an increase in removals of only 5.0 percent and yet would prompt annualized costs to increase by 74 percent, EPA has determined that BAT-3, not BAT-4, is the “best available” technology economically achievable for Subcategories A, B, C, and D.

12.3.1.2 BAT for Subcategories F through I (Meat Further Processing Facilities)

Regulated Pollutants

EPA proposes establishing BAT limitations for ammonia-N, total nitrogen, and total phosphorus. These pollutants are characteristic of meat further processing wastewater. These proposed regulated pollutants are key indicators of the performance of the tertiary biological

treatment process, which is the key component of the model BAT and NSPS treatment system for these subcategories.

Technology Selected

EPA is proposing to establish effluent limitations based on BAT-3 for Subcategories F, G, H, and I. The treatment technologies that serve as the basis for the development of the proposed BAT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and denitrification and chlorination/dechlorination. EPA has determined that the cost for nutrient removal for this subcategory is cost-effective and less than the cost for nutrient removal performed at a POTW. As presented in the Economic Development Document for the proposed rule, three BAT options were considered. EPA estimates that the 20 facilities in Subparts F through I would achieve a removal of approximately 0.04 million pounds of phosphorus over current discharge at an annualized compliance cost of \$0.4 million (\$1999) with BAT-2. BAT-3 removes an additional 2.08 million pounds of nitrogen and phosphorus over BAT-2 at an additional annualized compliance cost of \$0.1 million (\$1999). Both of these options result in a cost-to-net income ratio of less than 0.5 percent, so both are considered economically achievable. However, because BAT-3 removes more pounds of nutrients at a cost that is economically achievable, EPA has chosen to propose effluent limitations based on BAT-3.

The Agency also evaluated BAT-4 as a basis for establishing BAT more stringent than the level of control being proposed. As was the case for BAT-3, the cost-to-net income ratio of less than 1.4 percent shows that the option is economically achievable. However, EPA is not proposing to establish limits based on BAT-4 because it determined that BAT-3 achieves nearly equivalent reductions in nitrogen and phosphorus for much less cost. EPA has determined that BAT-3 would remove 2.12 million pounds of nitrogen and phosphorus per year at a total annualized cost of \$0.5 million (\$1999). In contrast, BAT-4 would remove only 4,530 additional pounds of nitrogen and phosphorus per year at a total annualized cost of \$3.5 million (\$1999). In view of the fact that BAT-4 appears to achieve an increase in removals of only 0.2 percent and yet would prompt annualized costs to increase by 600 percent, EPA has determined that BAT-3,

not BAT-4, is the “best available” technology economically achievable for Subcategories F, G, H, and I.

12.3.2 BAT Requirements for the Poultry Subcategories

12.3.2.1 BAT for Poultry First Processing Facilities (Subcategory K)

Regulated Pollutants

EPA proposes to regulate the same pollutants for BAT as those for BPT. EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as N for facilities that slaughter no more than 10 million pounds per year (small facilities). EPA proposes establishing BPT limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that slaughter more than 10 million pounds per year (large facilities). These pollutants are characteristic of poultry slaughtering wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary and tertiary biological treatment process, which are the key components of the model BPT treatment systems for the small and large facilities, respectively.

Technology Selected

EPA is proposing to set BAT equal to BPT for small facilities in Subcategory K. EPA was unable to determine whether there is an economically achievable BAT treatment technology more stringent than that proposed for BPT because no small poultry first processors were identified. EPA based its decision on the fact that there is no economically achievable BAT treatment technology more stringent than that proposed for BPT for poultry first processors.

EPA is proposing to set BAT equal to BPT for large facilities in Subcategory K because it has determined that there is no economically achievable BAT treatment technology more stringent than the proposed BPT treatments. Also, EPA has determined that the cost for nutrient removal for this subcategory is cost-effective; it is less than the cost for nutrient removal performed at a POTW. As presented in the Economic Development Document for the proposed rule, three BAT options were under consideration. BAT-2 removes approximately 810,000

pounds of phosphorus over current discharge at an annualized compliance cost of \$4.8 million (\$1999). BAT-3 removes an additional 7.7 million pounds of nitrogen and phosphorus over BAT-2 at an additional annualized compliance cost of \$29.7 million (\$1999). BAT-2 results in a cost-to-net income ratio of less than 0.4 percent, so this option is considered economically achievable. Because BAT-3 results in a cost-to-net income ratio of less than 2.8 percent, which is also economically achievable, EPA has chosen to set BAT equal to BPT for Subcategory K.

EPA also evaluated BAT-4 as a basis for establishing BAT more stringent than the level of control being proposed. The cost-to-net income ratio of more than 3.6 percent for BAT-4 shows that the option is economically achievable. However, EPA is not proposing to establish BAT limits based on BPT-4 because it has determined that BPT-3 achieves nearly equivalent pollutant reductions at less cost. EPA has determined that BPT-3 would remove at least 8.37 million pounds of total nitrogen and total phosphorus per year at a total annualized cost of \$34.5 million (\$1999). In contrast, BPT-4 would remove only 8.87 pounds of total nitrogen and total phosphorus at an additional cost of 28 percent. In view of the fact that BPT-4 achieves similar pollutant removals and yet would prompt additional total annualized costs of \$9.7 million (\$1999), EPA has selected BPT-3, not BPT-4, for this subcategory. Thus, EPA has determined that BAT-3, not BAT-4, is the “best available” technology economically achievable for large facilities in Subcategory K.

12.3.2.2 BAT for Poultry Further Processing Facilities (Subcategory L)

Regulated Pollutants

EPA proposes to regulate the same pollutants for BAT as those for BPT. EPA proposes establishing BAT limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as N for facilities that further process no more than 7 million pounds per year (small facilities). EPA proposes establishing BAT limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that further process more than 7 million pounds per year (large facilities). These pollutants are characteristic of poultry further processing wastewater. These proposed regulated pollutants are also key indicators of the performance of the secondary and tertiary biological treatment

processes, which are the key components of the model BAT treatment systems for the small and large facilities, respectively.

Technology Selected

EPA is proposing to set BAT equal to BPT for small facilities in Subcategory L because it has determined that there is no economically achievable BAT treatment technology more stringent than the proposed BPT treatment. BAT-2 results in a cost-to-net income ratio of greater than 20 percent, which would cause significant economic impacts for these facilities, so EPA has chosen to set BAT equal to BPT for small facilities in Subcategory L.

The Agency is proposing to establish effluent limitations based on BAT-3 for large facilities in Subcategory L. The treatment technologies that serve as the basis for the development of the proposed BAT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and denitrification. EPA has determined that there is no economically achievable BAT treatment technology more stringent than the proposed BPT treatment. As presented in the Economic Development Document for the proposed rule, three BAT options were considered. BAT-2 removes approximately zero pounds of phosphorus over current discharge at an annualized compliance cost of \$0.3 million (\$1999). BAT-3 removes an additional 0.32 million pounds of nitrogen and phosphorus over BAT-2 at an additional annualized compliance cost of \$1.9 million (\$1999). BAT-2 results in a cost-to-net income ratio of less than 0.4 percent, so this option is considered economically achievable. BAT-3 results in a cost-to-net income ratio of less than 4.25 percent, which is also economically achievable, so EPA has chosen to set BAT equal to BPT for Subcategory L.

EPA also evaluated BAT-4 as a basis for establishing BAT more stringent than the level of control being proposed. The cost-to-net income ratio of more than 6 percent for BAT-4 shows that the option would cause significant economic impacts. Also, EPA is not proposing to establish BAT limits based on BPT-4 because it determined that BAT-3 achieves nearly equivalent pollutant reductions at less cost. EPA has determined that BAT-3 would remove at least 0.32 million pounds of total nitrogen and total phosphorus per year at a total annualized cost of \$2.2 million (\$1999). In contrast, BPT-4 would remove only 0.318 pounds of total nitrogen

and total phosphorus at an additional cost of 36 percent. In view of the fact that BPT-4 appears to achieve no additional pollutant removals and yet would prompt additional total annualized costs of \$0.8 million (\$1999), EPA has selected BPT-3, not BPT-4, for this subcategory. Thus, EPA has determined that BAT-3, not BAT-4, is the “best available” technology economically achievable for large facilities in Subcategory L.

12.3.3 BAT Requirements for Independent Rendering Facilities (Subcategory J)

Regulated Pollutants

EPA proposes to revise BAT limitations for ammonia-N. This pollutant is characteristic of meat rendering wastewater. The proposed regulated pollutant is a key indicator of the performance of the secondary biological treatment process, which is the key component of the model BPT, BAT, and NSPS treatment system for this subcategory.

Technology Selected

The Agency is proposing to establish effluent limitations based on BAT-2 for Subcategory J. The treatment technologies that serve as the basis for the development of the proposed BPT limits are equalization, dissolved air flotation, and secondary biological treatment with nitrification and chlorination/dechlorination. EPA has determined that this option is cost-effective and economically achievable. As presented in the Economic Development Document for the proposed rule, three BAT options were considered. EPA estimates that the 23 existing facilities that would be subject to the proposed rule would achieve removals of approximately 87,000 pounds of nitrogen and phosphorus over current levels discharged at an annualized compliance cost of \$0.6 million (\$1999) under BAT-2. BAT-3 removes an additional 396,000 pounds of phosphorus over BAT-2 at an additional annualized compliance cost of \$3.7 million (\$1999). BAT-2 results in a cost-to-net income ratio of less than 0.7 percent, so this option is considered economically achievable. BAT-3 results in a cost-to-net income ratio of greater than 5.5 percent, which is also considered economically achievable. However, because EPA has determined that the cost for nutrient removal for BAT-3 is not cost-effective and is more than the

cost for nutrient removal performed at a POTW, EPA has chosen to propose effluent limitations based on BAT-2 for Subcategory J.

EPA also evaluated BAT-4 as a basis for establishing BAT more stringent than the level of control being proposed. The cost-to-net income ratio of more than 6.7 percent for BAT-4 is even greater than the ratio for Option 3. Since the Agency is not proposing Option 3 on the basis of the potential economic impact, EPA is not proposing Option 4, which has an even greater potential impact. Thus, EPA has determined that BAT-2 is the “best available” technology economically achievable for Subcategory J.

12.4 NEW SOURCE PERFORMANCE STANDARDS (NSPS)

New Source Performance Standards reflect effluent reductions that are achievable based on the best available demonstrated control technology. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies. As a result, NSPS should represent the most stringent controls attainable through the application of the best available demonstrated control technology for all pollutants (that is, conventional, nonconventional, and priority pollutants). In establishing NSPS, EPA is directed to take into consideration the cost of achieving the effluent reduction and any non-water quality environmental impacts and energy requirements.

In selecting its proposed NSPS technology for these segments and subcategories, EPA considered all of the factors specified in CWA section 306, including the costs of achieving effluent reductions and the effect of costs on new projects (barrier to entry). The Agency also considered energy requirements and other non-water quality environmental impacts for the proposed NSPS options and concluded that these impacts were no greater than those for the proposed BAT technology options and are acceptable. EPA therefore concluded that the NSPS technology basis proposed constitutes the best available demonstrated control technology for those segments.

12.4.1 NSPS Requirements for Meat Subcategories

12.4.1.1 NSPS for Subcategories A through D (Meat Slaughtering Facilities)

Regulated Pollutants

EPA proposes to regulate the same pollutants for NSPS as those for BAT (ammonia-N, total nitrogen, and total phosphorus), with the addition of BOD, TSS, oil and grease (measured as HEM), and fecal coliform bacteria.

Technology Selected

The treatment technologies that serve as the basis for the development of the proposed NSPS limits are the same as the BAT for these subcategories. As was the case for BAT, EPA did not pursue additional, more stringent options for NSPS because as with existing sources Option 4 is not expected to achieve significant incremental pollutant reductions. Further, EPA does not expect that the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than it would be for an existing source to retrofit its existing system. Therefore, EPA proposes BAT-3 as the technology basis for NSPS for subcategories A through D because the Agency believes BAT-3 represents the best demonstrated technology for this subcategory.

12.4.1.2 NSPS for Subpart E—Small Processors

EPA is not proposing new limitations for Small Processors (Subpart E). Small processors are defined as operations producing up to 2730 kilograms (6000 pounds) per day of any type or combination of meat product, are currently regulated under Subpart E of 40 CFR Part 432.

12.4.1.3 NSPS for Subcategories F through I (Meat Further Processing Facilities)

Regulated Pollutants

EPA proposes to regulate the same pollutants for NSPS as those for BAT (ammonia-N, total nitrogen, and total phosphorus), with the addition of BOD, TSS, oil and grease (measured as HEM), and fecal coliform bacteria.

Technology Selected

As was the case for BAT, EPA did not pursue additional, more stringent, options for NSPS because as with existing sources Option 4 is not expected to achieve significant incremental pollutant reductions. Further, EPA does not expect that the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than it would be for an existing source to retrofit its existing system. Therefore, EPA proposes BAT-3 as the technology basis for NSPS for Subcategories F through I because EPA believes it represents the best demonstrated technology for this subcategory.

12.4.2 NSPS Requirements for Poultry Subcategories

12.4.2.1 NSPS for Poultry First Processing Facilities (Subcategory K)

Regulated Pollutants

EPA proposes to regulate the same pollutants for NSPS as those for BAT. EPA proposes establishing NSPS limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as N for facilities that slaughter no more than 7 million pounds per year (small facilities). EPA proposes establishing NSPS limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that slaughter more than 7 million pounds per year (large facilities). These pollutants are characteristic of poultry first processing wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary and tertiary biological treatment processes, which are the key components of the model NSPS treatment systems for the small and large facilities, respectively.

Technology Selected

EPA did not pursue additional, more stringent options for small facilities in Subcategory K for NSPS because the Agency does not expect that the cost to construct the treatment system to achieve Option 2 performance would be significantly less for a new source than it would be for an existing source to retrofit its existing system. Therefore, EPA proposes BAT-1 as the

technology basis for NSPS for small facilities in Subcategory K because EPA believes it represents the best demonstrated technology for this subcategory.

As was the case for BAT, EPA did not pursue additional, more stringent options for large facilities in Subcategory K for NSPS because, as with existing sources, Option 4 is not expected to achieve significant incremental pollutant reductions. Further, EPA does not expect that the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than it would be for an existing source to retrofit its existing system. Therefore, EPA proposes BAT-3 as the technology basis for NSPS for large facilities in Subcategory K because EPA believes it represents the best demonstrated technology for this subcategory.

12.4.2.2 NSPS for Poultry Further Processing Facilities (Subcategory L)

Regulated Pollutants

EPA proposes to regulate the same pollutants for NSPS as those for BAT. EPA proposes establishing NSPS limitations for BOD, TSS, oil and grease (measured as HEM), and ammonia as N for facilities that further process no more than 7 million pounds per year (small facilities). EPA proposes establishing NSPS limitations for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, ammonia as N, total nitrogen, and total phosphorus for facilities that further process more than 7 million pounds per year (large facilities). These pollutants are characteristic of poultry further processing wastewater. These proposed regulated pollutants are key indicators of the performance of the secondary and tertiary biological treatment processes, which are the key components of the model NSPS treatment systems for the small and large facilities, respectively.

Technology Selected

EPA did not pursue additional, more stringent options for small facilities in Subcategory L for NSPS because the Agency does not expect that the cost to construct the treatment system to achieve Option 2 performance would be significantly less for a new source than it would be for an existing source to retrofit its existing system. Therefore, EPA proposes BAT-1 as the

technology basis for NSPS for small facilities in Subcategory L because the Agency believes it represents the best demonstrated technology for this subcategory.

The treatment technologies that serve as the basis for the development of the proposed NSPS limits are the same as the BAT for this subcategory. As was the case for BAT, EPA did not pursue additional, more stringent options for NSPS because, as with existing sources, Option 4 is not expected to achieve significant incremental pollutant reductions. Further, EPA does not expect that the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than it would be for an existing source to retrofit its system. Therefore, EPA proposes BAT-3 as the technology basis for NSPS for subcategory L because EPA believes it represents the best demonstrated technology for this subcategory.

12.4.3 NSPS Requirements for Independent Rendering Facilities (Subcategory J)

Regulated Pollutants

EPA proposes to revise the new source performance standards for BOD, TSS, oil and grease (measured as HEM), fecal coliform bacteria, and ammonia.

Technology Selected

The treatment technologies that serve as the basis for the development of the proposed NSPS limits are the same as the BAT and BPT for this subcategory. EPA does not expect a substantial cost savings for new facilities to design and construct a treatment system to achieve more stringent effluent standards consistent with either Option 3 or 4. Thus, EPA believes Options 3 and 4 could pose a barrier to entry for new sources in this subcategory. Therefore, EPA proposes BAT-2 as the technology basis for NSPS for Subcategory J because the Agency believes BAT-2 represents the best demonstrated technology economically achievable for this subcategory.

12.5 PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES) AND NEW SOURCES (PSNS)

National pretreatment standards are established for those pollutants in wastewater from indirect dischargers that might pass through, interfere with, or otherwise be incompatible with publicly owned treatment works (POTW) operations. Generally, pretreatment standards are designed to ensure that wastewaters from direct and indirect industrial dischargers are subject to similar levels of treatment. In addition, many POTWs are required to develop and implement local discharge limits applicable to their industrial indirect dischargers to satisfy any local requirements (see 40 CFR 403.5). POTWs that are not required to implement approved programs and have not had interference or pass through issues are not required to develop and implement local limits. Nationwide there are approximately 1500 POTWs with approved Pretreatment Programs and 13,500 small POTWs that are not required to develop and implement approved Pretreatment Programs.

National pretreatment standards have three principal objectives: (1) prevent the wide-scale introduction of pollutants into POTWs that will interfere with POTW operations, including use or disposal of municipal sludge; (2) prevent the introduction of pollutants into POTWs that will pass through the treatment works or will otherwise be incompatible with the treatment works; and (3) improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

Currently there are no categorical pretreatment standards for the MPP point source category. EPA is not proposing new pretreatment standards for existing or new MPP indirect dischargers. Although EPA has some information regarding effluents from MPP indirect dischargers that may pass through, interfere with, or otherwise be incompatible with POTW operations, it is not clear that the particular information justifies categorical pretreatment standards for this industry. The following sections discuss the information EPA was able to collect for this proposal and plans to collect after proposal.

12.5.1 POTW Interference

As noted earlier, there are no categorical pretreatment standards for MPP indirect dischargers; however, the national pretreatment standards prohibit the discharge of “Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW” (see 40 CFR 403.5(b)(4)). All indirect dischargers are prohibited from introducing into a POTW any pollutant(s) which cause pass through or interference regardless of whether categorical pretreatment standards or any national, state, or local pretreatment requirements apply (see 40 CFR 403.5(a)(1)). POTWs are required to develop and enforce Pretreatment Programs and/or set local limits to ensure renewed and continued compliance with the POTW's NPDES permit or sludge use or disposal practices (see 40 CFR 403.5(c)). According to data provided in the MPP detailed surveys, approximately one-third of the MPP facilities discharge to POTWs that discharge less than 5 MGD. These POTWs are often not required through their NPDES permits to develop and implement local Pretreatment Programs.

EPA typically does not establish pretreatment standards for conventional pollutants (e.g., BOD₅, TSS, oil and grease) because POTWs are designed to treat such pollutants, but EPA has exercised its authority to establish categorical pretreatment standards for conventional pollutants. For example, EPA established categorical pretreatment standards for new and existing sources with a 1-day maximum concentration of 100 mg/L oil and grease in the Petroleum Refining Point Source Category (40 CFR Part 419). This standard is based on the performance of one of two technologies (primary oil removal or dissolved air flotation). EPA identified this pretreatment standard as necessary to “minimize the possibility of slug loadings of oil and grease being discharged to POTW” (Docket No. W-01-06, Record No. 00167). EPA notes that oil and grease from Petroleum Refineries is not the same material as oil and grease from MPP facilities. EPA is considering the use of a similar 100 mg/L standard for preventing POTW interference by vegetable/animal oil and grease discharges.

EPA previously identified that high organic loadings and grease remaining in the MPP facility effluent might cause difficulty in the POTW treatment system and that the performance

of trickling filters appears to be particularly sensitive (Docket No. W-01-06, Record No. 00162; Record No.00140). High loadings of oil and grease can also clog pipes and promote the growth of filamentous bacteria, which can inhibit the performance of the POTW (especially trickling filters, which are more often used at small POTWs) (Docket No. W-01-06, Record No. 00085). A concentration of 100 mg/L for oil and grease is often cited as a local limit, and compliance with this limit may require an effective dissolved air flotation device in addition to a catch basin and other primary treatment system (Docket No. W-01-06, Record No. 00162; Record No. 00140). EPA recognizes that much of this data was developed in the 1970s but believes that the data is still relevant today.

EPA also previously identified that oil and grease of petroleum origin has been reported to interfere with the aerobic processes of POTWs (Docket No. W-01-06, Record No. 00167). It is believed that the principal interference is caused by the attachment of oil and grease of petroleum origin onto floc particles, resulting in a slower settling rate, loss of solids by carryover out of the settling basin, and excessive release of BOD from the POTW to the environment. Additionally, EPA identified that oil and grease of petroleum origin may coat the biomass in activated sludge treatment units, thereby interfering with oxygen transfer and reducing treatment efficiency.

EPA regional and state permit writers and pretreatment coordinators identified approximately 20 cases where MPP indirect dischargers interfered with POTW operations (Docket No. W-01-06, Record No. 10037). Although some specific details are lacking, these cases generally describe how overloadings of various parameters (e.g., BOD₅, oil and grease, TSS, ammonia) and unequalized flows from MPP indirect dischargers have resulted in POTW interference incidents and POTW NPDES permit violations.

It is not clear, however, whether these identified interference incidents represent an industry-wide problem or are site-specific and more appropriately addressed by the general pretreatment prohibitions and local limits, or by POTW upgrades. Some of these instances do involve violations of local limits or were resolved by POTW upgrades, and therefore the general pretreatment prohibitions and local limits did work. EPA does not know, however, how

frequently this was the case. More detailed information will be gathered to determine whether these facilities were in violation of the local limits, POTWs have upgraded since the incident, or these were one-time problems. EPA will collect more information from EPA and state pretreatment program coordinators, POTWs, and MPP indirect dischargers after proposal (1) to understand whether the general pretreatment prohibition is sufficient to address POTW interference and pass through incidents for this industry and (2) to determine if reoccurrences of these POTW interference and pass through incidents necessitate categorical pretreatment standards at the time of the final rule for non-small facilities.

Many POTWs are capable of controlling MPP indirect discharges through local limits or sufficient dilution with domestic wastewaters. Most of the approximately 1,500 POTWs with approved Pretreatment Programs have numeric oil and grease limits and many POTWs without approved Pretreatment Programs also have oil and grease limits. For example, EPA identified approximately two dozen Pretreatment Programs with local limits on oil and grease (Docket No. W-01-06, Record No. 10037). Oil and grease limits were most often in the range of 50 mg/L to 450 mg/L with 100 mg/L as the most common reported limit. Other Pretreatment Programs use descriptive requirements to limit interference from high oil and grease concentrations.

While most POTWs are not significantly affected by MPP indirect discharges, EPA notes that some, primarily smaller POTWs, including those not required to implement approved Pretreatment Programs, may have difficulty in properly treating MPP indirect discharges or in setting local limits. Some POTWs may be particularly susceptible to high and variable organic and oil and grease loadings. If MPP indirect dischargers are unable to reduce or equalize their high organic and oil and grease concentrations, some small POTWs receiving these discharges may be unable to dampen the peak loadings or equalize high organic and oil and grease concentrations from MPP indirect dischargers with domestic wastewater. MPP indirect discharges range from 3 to 20 times in organic concentrations than typical domestic wastewater (Docket No. W-01-06, Record No. 10038). Small POTW facilities are generally more susceptible to high and variable loadings from large MPP indirect dischargers. Small POTWs often use less sophisticated wastewater treatment systems (e.g., trickling filters, simple anaerobic lagoons), which may not be able to operate properly during periods of high flow or handle slug

loads discharged by MPP facilities after a shut-down period (e.g., no or low MPP indirect loadings during weekend operations when no or limited MPP operations are taking place). Trickling filters at small POTW facilities may be unable to effectively process high organic and oil and grease concentrations and may allow unacceptable amounts of BOD and oil and grease concentrations to pass through if MPP indirect dischargers are not properly controlled. Anaerobic lagoons at small POTW facilities may be unable to convert ammonia to nitrate (a less toxic form of nitrogen) and are therefore unsuitable as a treatment step to ensure that the receiving water does not receive toxic amounts of ammonia. In one such instance, an MPP facility was directed to establish biological pretreatment (by installing a biological sequencing batch reactor) in order to discharge to the local POTW, which has a simple anaerobic lagoon system (Docket No. W-01-06, Record No.10039).

Representatives of the MPP industry and the Association of Metropolitan Sewerage Agencies (AMSA) stated to EPA that cases of POTW interference from MPP indirect dischargers are relatively infrequent occurrences and that they are best handled through local limits and proper enforcement (Docket No. W-01-06, Record No. 10040). AMSA is a membership organization that represents approximately 10 percent of the largest POTWs in the United States (about 150 of the 1,500 POTWs with Pretreatment Programs) and some small POTWs; however, none of the approximately 20 cases of interference incidents identified in the record involve AMSA members. EPA would collect additional information on other potential positive and negative impacts on POTW operations if the Agency were to set national categorical pretreatment standards for the prevention of interference with POTW operations. AMSA has stated that any attempt to reduce organic loadings from MPP facilities would also reduce the amount of revenue collected by their POTWs and have a detrimental effect on their operations. (Docket No. W-01-06, Record No. 10040). EPA will collect additional information on whether MPP indirect dischargers are causing interference issues on a national, ongoing basis and whether POTWs are addressing these interference issues in a timely manner once they are identified. Finally, EPA also will examine information on whether increased attention from federal and state Pretreatment Programs and/or Total Maximum Daily Load (TMDL) programs

would sufficiently deal with MPP indirect discharges that might cause POTW interference in lieu of national categorical pretreatment standards.

12.5.2 POTW Pass Through

As noted above, federal categorical pretreatment standards are also designed to prevent the introduction into POTWs of pollutants that will pass through the treatment works or will otherwise be incompatible with the treatment works. Generally, to determine whether pollutants pass through POTWs, EPA compares the percentage of the pollutant removed by well-operated POTWs achieving secondary treatment with the percentage of the pollutant removed by each of the indirect technology options. As shown in Tables 12-1 and 12-2, EPA identified the MPP pollutants, based on EPA sampling efforts, that EPA would normally determine to pass through using EPA’s standard methodology (i.e., the indirect technology option has a percent removal higher than the POTW percent removal).

Table 12-1. Removal Efficiencies for Meat Pollutants of Concern

MPP Pollutant of Concern	CAS Number	PSES Indirect Option 1 Treatment Efficiency	POTW Treatment Efficiency ^a
Oil and grease	C036	95	86
Copper	7440508	91	84
Molybdenum	7439987	82	19
Zinc	7440666	91	79

^a These POTW removal efficiencies are from the 50-POTW study (Docket No. W-01-06, Record No. 00180).

Table 12-2. Removal Efficiencies for Poultry Pollutants of Concern

MPP Pollutant of Concern	CAS Number	PSES Indirect Option 1 Treatment Efficiency	POTW Treatment Efficiency ^a
Oil and grease	C036	90	87
Total Kjeldahl nitrogen (TKN)	C021	73	57
Total phosphorus	14265442	67	57
Barium	7440393	78	16
Manganese	7439965	60	36
Nickel	7440020	65	51
Zinc	7440666	53	79

^a These POTW removal efficiencies are from the 50-POTW study (Docket No. W-01-06, Record No.00180).

PSES Indirect Option 1 (PSES1) is a physical-chemical treatment system (dissolved air flotation [DAF] with chemical flocculant addition, equalization tank) that primarily targets conventional pollutants including oil and grease. As the tables above indicate, PSES1 shows some metal and nutrient removals but it is not clear why a technology designed to control conventional pollutants also affects the level of other pollutants. EPA notes that many of these pollutants of concern that would normally be determined to exhibit pass through do so in low concentrations. For example, metal concentrations in MPP indirect dischargers are relatively low in comparison with conventional pollutant concentrations (e.g., BOD, TSS, and oil and grease). EPA will further investigate the data and potential mechanisms behind the removals of metals and nutrients by PSES1 to confirm the PSES1 treatment efficiencies. At the final regulation EPA may issue pretreatment standards based on pass through for all or a subset of these pollutants.

Further, EPA has received comments from AMSA that the database used to characterize POTW removal efficiencies is outdated and current POTW performance has improved. EPA is considering different options on how to examine current POTW performance. One option is to evaluate removal efficiencies based on a subset of the 50-POTW database that mainly includes those POTWs that receive large amounts of industrial and/or MPP indirect discharges. EPA will also continue to collect information on any cases of significant pass through from MPP indirect dischargers where the local limits were not set or exceeded and evaluate whether EPA should promulgate pretreatment standards for certain parameters (e.g., nutrients, TDS) based on their potential passage through POTWs and into receiving waters.

Although some pollutants may pass through POTWs following fairly limited treatment, current information available to EPA suggests that the overall levels of these pollutants in MPP raw wastewater do not justify establishing numeric categorical pretreatment standards. EPA is not proposing to establish pretreatment standards based on the difference between MPP pretreatment options and POTW removal efficiencies because the Agency is uncertain that the difference accurately reflects the incidences of pass through for this industry as a whole.

12.5.3 MPP Pretreatment Options Considered

Before determining no pass through or interference that justifies proposing additional regulations, EPA considered four pretreatment options for both existing and new sources. Table 12-3 details the summary of EPA’s economic analysis of the PSES1 pretreatment option for the various MPP subcategories. If information that shows that there is sufficient interference or pass through to justify categorical pretreatment standards for this industry is provided to EPA, EPA will promulgate pretreatment standards in the final rule. With respect to preventing interference incidents, EPA will evaluate comments and additional information to determine whether another annual production size cutoff for MPP indirect dischargers should be established. Additionally, EPA is considering whether it should exempt from categorical pretreatment standards MPP indirect discharges that are below 5 percent of the dry weather hydraulic or organic capacity of the POTW treatment or another percentage level that is appropriate to prevent interference incidents if EPA decides to set categorical pretreatment standards for non-small facilities in the final rule.

Table 12-3. Economic Impacts and Toxic Cost-Effectiveness Summary Table for PSES Option 1, Non-Small Facilities

MPP Industry Sector (40 CFR Part 432, Subcategory)	Cost/Net Income (%)	Pre-Tax Annualized Cost (\$1999 M)	PSES Option 1 Toxic Cost-Effectiveness	
			Removals (lb-eq)	\$1981/lb-eq
Meat First Processors (A-D)	\$0.6	\$7.0	240,421	17
Meat Further Processors (F-I)	\$0.8	\$18.8	76,890	143
Independent Renderers (J)	\$0.5	\$1.3	3,918	198
Poultry First Processors (K)	\$0.6	\$10.8	377,651	17
Poultry Further Processors (L)	\$1.5	\$15.3	49,950	178

EPA notes that the PSES1 pretreatment option cost is generally at or below 1 percent of the facility’s net income (profit). Also, based on MPP detailed surveys received in time for EPA’s analysis, EPA notes that PSES1 is widely used in non-small MPP pretreatment operations to reduce BOD and oil and grease concentrations. Results from the MPP detailed survey used in estimating compliance costs indicate that 26 of the 103 indirect MPP facilities use PSES1. The

MPP detailed survey also identified the following breakdown of treatment-in-place: (1) 64 facilities use no pretreatment or pretreatment less effective than PSES1 (e.g., catch basins); (2) 12 facilities use PSES2; (3) one facility use PSES3; and (4) none of the facilities use PSES4. Based on MPP detailed survey data, the average oil and grease concentration from MPP indirect facilities using PSES1 technology (equalization basin, DAF) is 99.5 mg/L.

As previously stated, EPA is not proposing new pretreatment standards for existing or new MPP indirect dischargers because the Agency did not have sufficient information to demonstrate that effluents from MPP indirect dischargers interfere with, are incompatible with, or pass through POTW operations on a scale wide enough to justify national categorical pretreatment standards. Further, EPA has received comments from AMSA that the database used to characterize POTW removal efficiencies is outdated and current POTW performance has improved. EPA will work with states and pretreatment control authorities to collect additional data on a more systematic basis to determine whether national categorical pretreatment standards are necessary. If the additional and existing data indicate that MPP indirect dischargers interfere with or pass through POTW operations, one or more of the following options may be used to establish national categorical pretreatment standards in the final rule for non-small indirect dischargers.

- Establish numeric pretreatment standards for oil and grease and/or ammonia as nitrogen based on PSES1 (equalization and DAF) to prevent POTW interference.
- Establish numeric pretreatment standards for oil and grease and/or ammonia based on equalization alone to reduce MPP indirect discharge variable loads which can, in some cases, prevent POTW interference.
- Establish numeric pretreatment standards to prevent POTW pass through (e.g., oil and grease, nutrients, and/or metals).
- Establish narrative pretreatment standards for oil and grease and/or ammonia as nitrogen based on PSES1 (equalization and DAF) or equalization alone to prevent POTW interference.

- Allow POTWs to waive national categorical pretreatment standards for MPP indirect dischargers that do not interfere with POTW operation (e.g., MPP indirect discharger below 5 percent of dry weather hydraulic or organic capacity of the POTW treatment plant).
- Allow a POTW to waive national categorical pretreatment standards for ammonia for any MPP indirect discharges it receives when that POTW has nitrification capability (see 40 CFR Part 439 as an example of this type of waiver).
- Allow MPP indirect dischargers to demonstrate compliance with either numeric pretreatment standards or with EMS/BMP voluntary alternatives (see Section 8.8).
- Establish national categorical pretreatment standards for MPP indirect dischargers based on compliance with BMPs or a regulatory BMP alternative.