ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 432

[FRL–7137–9]

RIN 2040–AD56

Effluent Limitations Guidelines and New Source Performance Standards for the Meat and Poultry Products Point Source Category

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This action presents the Agency's proposed effluent limitations guidelines and standards for wastewater discharges from meat and poultry processing facilities. The proposed regulation revises technology-based effluent limitations guidelines and standards for wastewater discharges associated with the operation of new and existing meat processing and independent rendering facilities, proposes new effluent limitations guidelines for poultry slaughtering and poultry further processing facilities that discharge wastewater, and revises the name of the regulation.

EPA estimates that compliance with this regulation as proposed would reduce the discharge of nutrients by at least 53 million pounds per year and would cost an estimated $80 million (year 1999 $, pre-tax) on an annual basis. In addition, EPA expects that discharges of conventional pollutants would be reduced by at least 32 million pounds per year. EPA has estimated that the annual quantifiable benefits of the proposal would be approximately $37 million.

DATES: EPA must receive comments on the proposal by midnight of April 26, 2002. EPA will conduct two public hearings on March 14, 2002 at 1 p.m. (Kansas City, MO) and April 9, 2002 at 9 a.m. (Washington, DC). For information on the location of the public hearings, see **ADDRESSES**.

ADDRESSES: Submit written comments to Ms. Samantha Lewis, Office of Water, Engineering and Analysis Division (4303T), U.S. EPA, 1200 Pennsylvania Avenue, NW., Washington, DC 20460. For hand-deliveries or Federal Express, please send comments to Ms. Samantha Lewis, Office of Water, Engineering and Analysis Division, Room 6233L, 1201 Constitution Avenue, NW., 6th Floor, Connecting Wing, Washington, DC 20460. Comments may be sent by e-mail to the following e-mail address: ''meatproducts.rule@epa.gov''. For additional information on how to submit comments, see **SUPPLEMENTARY INFORMATION**, How to Submit Comments.

The first public hearing on this proposal will be held at the Hilton KCI Airport Hotel, 8801 NW 112th Street, Kansas City, Missouri. The second public hearing on this proposal will be held at the U.S. EPA auditorium, Waterside Mall, 401 M Street SW., Washington, DC.

The public record for this proposed rulemaking has been established under docket number W–01–06 and is located in the Water Docket East Tower Basement, Room EB57, 401 M St. SW., Washington, DC 20460. The record is available for inspection from 9 a.m. to 4 p.m., Monday through Friday, excluding legal holidays. For access to the docket materials, call (202) 260–3027 to schedule an appointment. You may have to pay a reasonable fee for copying.

FOR FURTHER INFORMATION CONTACT: For technical information concerning today's proposed rule, contact Ms. Samantha Lewis at (202) 566–1058. For economic information contact Dr. William Wheeler at (202) 566–1078.

SUPPLEMENTARY INFORMATION:

Regulated Entities

Entities potentially regulated by this action include:

Category	Examples of regulated entities	Primary SIC and NAICS codes
Industry	Facilities engaged in first processing, further processing, or rendering of meat and poultry products, which may include the following sectors:	
	Meat Packing Plants	2011 (SIC).
	Animal (except Poultry) Slaughtering	311611 (NAICS).
	Meat Processed from Carcasses	311612 (NAICS).
	Sausages and Other Prepared Meat Products	2013 (SIC).
	Poultry Slaughtering and Processing	2015 (SIC).
	Poultry Processing	311615 (NAICS).
	Rendering and Meat By-Product Processing	311613 (NAICS).
	Support Activities for Animal Production	11521 (NAICS).
	Prepared Feed and Feed Ingredients for Animals and Fowls, Except Dogs and Cats	2048 (SIC).
	Dog and Cat Food	2047 (SIC).
	Dog and Cat Food Manufacturing	311111 (NAICS).
	Other Animal Food Manufacturing	311119 (NAICS).
	All Other Miscellaneous Food Manufacturing	311999 (NAICS).
	Animal and Marine Fats and Oils	2077 (SIC).
	Poultry Hatcheries and	11234 (NAICS).
	Livestock Services, Except Veterinary	0751 (SIC).

The preceding table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by promulgation of this proposed rule. Other types of entities not listed in the table could also be regulated. To determine whether your facility would be regulated by promulgation of this proposed rule, you should carefully examine the applicability subsection of each proposed subpart of part 432. You should also examine the description of the proposed scope of each subpart in Section VI.B of this document. If you have questions regarding the applicability of this proposed action to a particular entity, please contact the person listed for technical information in the preceding **FOR FURTHER INFORMATION CONTACT** section.

How To Submit Comments

EPA requests an original and three copies of your comments and enclosures (including references). Commenters who want EPA to acknowledge receipt of their comments should enclose a self-addressed, stamped envelope. No facsimiles (faxes) will be accepted.

Please submit any references cited in your comments.

Comments may also be sent via e-mail, see **ADDRESSES.** Electronic comments must specify docket number W–01–06 and must be submitted as an ASCII, Word, or WordPerfect file avoiding the use of special characters and any form of encryption. Electronic comments on this proposal may be filed online at many Federal Depository Libraries. No confidential business information (CBI) should be sent via e-mail.

Protection of Confidential Business Information (CBI)

EPA notes that certain information and data in the record supporting the proposed rule have been claimed as CBI and, therefore, are not included in the record that is available to the public in the Water Docket. Pursuant to EPA regulations at 40 CFR 2.203 and 2.211, EPA treats all information for which a claim of confidentiality is made as confidential unless and until it makes a determination to the contrary under 40 CFR 2.205. Further, the Agency has not included in the docket some data not claimed as CBI because release of this information would indirectly reveal information claimed to be confidential. To provide the public with as much information as possible in support of the proposed rulemaking, EPA is presenting in the public record certain information in aggregated form or, alternatively, is masking facility identities or employing other strategies in order to preserve confidentiality claims. This approach ensures that the information in the public record both explains the basis for today's proposal and allows for a meaningful opportunity for public comment, without compromising CBI claims.

Some tabulations and analyses of facility-specific data claimed as CBI are available to the company that submitted the information. To ensure that all data or information claimed as CBI is protected in accordance with EPA regulations, any requests for release of such company-specific data should be submitted to EPA on company letterhead and signed by a responsible official authorized to receive such data. The request must list the specific data requested and include the following statement, ''I certify that EPA is authorized to transfer confidential business information submitted by my company, and that I am authorized to receive it.''

Supporting Documentation

The rules proposed today are supported by several documents:

1. ''Economic Analysis of Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source Category'' (EPA–821–B–01–006). Hereafter referred to as the MPP Economic Analysis, this document presents the analysis of compliance costs; facility, firm, small business and market impacts; and benefits. In addition, this document presents an analysis of cost-effectiveness.

2. ''Development Document for Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source Category'' (EPA–821–B–01–007). Hereafter referred to as the MPP Development Document, the document presents EPA's technical conclusions concerning the MPP proposal. This document describes, among other things, the data collection activities, the wastewater treatment technology options, effluent characterization, effluent reduction of the wastewater treatment technology options, estimate of costs to the industry, and estimate of effects on non-water quality environmental impacts.

3. ''Environmental Assessment of Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source Category'' (EPA–821–B–01–008). Hereafter referred to as the MPP Environmental Assessment, the document presents the analysis of water quality impacts and potential benefits for each regulatory option.

How to Obtain Supporting Documents

All documents are available from the National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242–2419, (800) 490–9198 and the EPA Water Docket. The supporting technical documentation (*e.g.*, MPP Development Document, Economic Analysis and Environmental Assessment) can be obtained on the Internet, located at *http://www.epa.gov/ost/guide/meatproducts/*. This website also links to an electronic version of today's proposed rule.

Overview

The preamble describes the legal authority for the proposal; a summary of the proposal; background information; the technical and economic methodologies used by the Agency to develop these proposed regulations and, in an appendix, the definitions, acronyms, and abbreviations used in this document. This preamble also solicits comment and data generally, and on specific areas of interest.

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I. Legal Authority

These regulations are proposed under the authority of sections 301, 304, 306, 307, 308, 402, and 501 of the Clean Water Act, 33 U.S.C. 1311, 1314, 1316, 1317, 1318, 1342, and 1361.

II. Legislative Background

A. Clean Water Act

Congress adopted the Clean Water Act (CWA) to ''restore and maintain the chemical, physical, and biological integrity of the Nation's waters.'' Section 101(a), 33 U.S.C. 1251(a). To achieve this goal, the CWA prohibits the discharge of pollutants into navigable waters except in compliance with the statute. The Clean Water Act confronts the problem of water pollution on a number of different fronts. Its primary reliance, however, is on establishing restrictions on the types and amounts of pollutants discharged from various industrial, commercial, and public sources of wastewater.

Direct dischargers must comply with effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits; indirect dischargers must comply with pretreatment standards. Effluent limitations in NPDES permits are derived from effluent limitations guidelines and new source performance standards promulgated by EPA, as well as from water quality standards. The effluent limitations guidelines and standards are established by regulation for categories of industrial dischargers and are based on the degree of control that can be achieved using various levels of pollution control technology.

Congress recognized that regulating only those sources that discharge effluent directly into the nation's waters would not be sufficient to achieve the CWA's goals. Consequently, the CWA requires EPA to promulgate nationally applicable pretreatment standards that restrict pollutant discharges from facilities that discharge wastewater indirectly through sewers flowing to publicly owned treatment works (POTWs). See section 307(b) and (c), 33 U.S.C. 1317(b) and (c). National pretreatment standards are established for those pollutants in wastewater from indirect dischargers that may pass through, interfere with or are otherwise incompatible with 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, POTWs are required to implement local treatment limits applicable to their industrial indirect dischargers to satisfy any local requirements. See 40 CFR 403.5.

1. Best Practicable Control Technology Currently Available (BPT)—Sec. 304(b)(1) of the CWA

EPA may promulgate BPT effluent limits for conventional, toxic, and non-conventional pollutants. For toxic pollutants, EPA typically regulates priority pollutants which consist of a specified list of toxic pollutants. In specifying BPT, EPA looks at a number of factors. EPA first considers the cost of achieving effluent reductions in relation to the effluent reduction benefits. The Agency also considers the age of the equipment and facilities, the processes employed, engineering aspects of the control technologies, any required process changes, non-water quality environmental impacts (including energy requirements), and such other factors as the Administrator deems appropriate. See CWA 304(b)(1)(B). Traditionally, EPA establishes BPT effluent limitations based on the average of the best performances of facilities within the industry, grouped to reflect various ages, sizes, processes, or other common characteristics. Where, however, existing performance is uniformly inadequate, EPA may establish limitations based on higher levels of control than currently in place in an industrial category if the Agency determines that the technology is available in another category or subcategory, and can be practically applied.

2. Best Control Technology for Conventional Pollutants (BCT)—Sec. 304(b)(4) of the CWA

The 1977 amendments to the CWA required EPA to identify additional levels of effluent reduction for conventional pollutants associated with BCT technology for discharges from existing industrial point sources. In addition to other factors specified in section 304(b)(4)(B), the CWA requires that EPA establish BCT limitations after consideration of a two part ''cost-reasonableness'' test. EPA explained its methodology for the development of BCT limitations in July 1986 (51 FR 24974).

Section 304(a)(4) designates the following as conventional pollutants: biochemical oxygen demand (BOD_5), total suspended solids (TSS), fecal coliform, pH, and any additional pollutants defined by the Administrator as conventional. The Administrator designated oil and grease as an additional conventional pollutant on July 30, 1979 (44 FR 44501).

3. Best Available Technology Economically Achievable (BAT)—Sec. 304(b)(2) of the CWA

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 employed, potential process changes, and non-water quality environmental impacts including energy requirements, and such other factors as the 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. As with BPT, where existing performance is uniformly inadequate, BAT may reflect a higher level of performance than is currently being achieved based on technology transferred from a different subcategory or category. BAT may be based upon process changes or internal controls, even when these technologies are not common industry practice.

4. New Source Performance Standards (NSPS)—Sec. 306 of the CWA

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.

5. Pretreatment Standards for Existing Sources (PSES)—Sec. 307(b) of the CWA

Pretreatment Standards for Existing Sources 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). Categorical pretreatment standards are technology-based and are analogous to BAT effluent limitations guidelines.

The General Pretreatment Regulations, which set forth the framework for the implementation of categorical pretreatment standards, are found at 40 CFR part 403. These regulations establish pretreatment standards that apply to all non-domestic dischargers. See 52 FR 1586 (Jan. 14, 1987).

6. Pretreatment Standards for New Sources (PSNS)—Sec. 307(c) of the CWA

Section 307(c) of the Act requires EPA to promulgate pretreatment standards for new sources at the same time it promulgates new source performance standards. Such pretreatment standards must prevent the discharge of any pollutant into a POTW that may interfere with, pass through, or may otherwise be incompatible with the POTW. EPA promulgates categorical pretreatment standards for existing sources based principally on BAT technology for existing sources. EPA promulgates pretreatment standards for new sources based on best available demonstrated technology for new sources. New indirect dischargers have the opportunity to incorporate into their facilities the best available demonstrated technologies. The Agency considers the same factors in promulgating PSNS as it considers in promulgating NSPS.

B. Section 304(m) Consent Decree

Section 304(m) requires EPA to publish a plan every two years that consists of three elements. First, under section 304(m)(1)(A), EPA is required to establish a schedule for the annual review and revision of existing effluent guidelines in accordance with section 304(b). Section 304(b) applies to effluent limitations guidelines for direct dischargers and requires EPA to revise such regulations as appropriate. Second, under Section 304(m)(1)(B), EPA must identify categories of sources discharging toxic or nonconventional pollutants for which EPA has not published BAT effluent limitations guidelines under 304(b)(2) or new source performance standards under section 306. Finally, under 304(m)(1)(C), EPA must establish a schedule for the promulgation of BAT and NSPS for the categories identified under subparagraph (B) not later than three years after being identified in the 304(m) plan. Section 304(m) does not apply to pretreatment standards for indirect dischargers, which EPA promulgates pursuant to Sections 307(b) and 307(c) of the Clean Water Act.

On October 30, 1989, Natural Resources Defense Council, Inc., and Public Citizen, Inc., filed an action against EPA in which they alleged, among other things, that EPA had failed to comply with CWA Section 304(m). Plaintiffs and EPA agreed to a settlement of that action in a consent decree entered on January 31, 1992. The consent decree, which has been modified several times, established a schedule by which EPA is to propose and take final action for eleven point source categories identified by name in the decree and for eight other point source categories identified only as new or revised rules, numbered 5 through 12. EPA selected the meat and poultry products industry as the subject for New or Revised Rule #11. Under the decree, as modified, the Administrator was required to sign a proposed rule for the meat and poultry products industry no later than January 30, 2002, and must take final action on that proposal no later than December 31, 2003.

III. Scope/Applicability of Proposed Regulation

EPA solicits comments on various issues specifically identified in the preamble as well as any other applicability issues that are not specifically addressed in today's notice. The following discussion of applicability begins with the proposed revisions to the existing subcategories. Section III.B presents the applicability for two new subcategories for poultry facilities.

A. Facilities Subject to 40 CFR Part 432

EPA is proposing new or revised effluent limitations guidelines and standards for nine of the ten subcategories of the meat and poultry products industry including: simple slaughterhouse, complex slaughterhouse, low processing packinghouse, high processing packinghouse, meat cutter, sausage and luncheon meats processor, ham processor, canned meats processor, and renderer. EPA is also proposing to change the name of the category since poultry processing facilities are covered by the proposed requirements. No new or revised effluent limitations guidelines or pretreatment standards are being proposed for the small processor category.

The technology options which serve as the basis for the proposed effluent limitations guidelines and standards for the meat subcategories are summarized in Table III.A–1. For descriptions and discussion of the subcategories, see Section VI; for the technologies, see Section VII.D; and for a discussion of the process wastewater generated by these subcategories, see Section VII.B.

TABLE III.A–1.—SUMMARY OF REVISIONS TO MEAT AND POULTRY PRODUCTS EFFLUENT LIMITATIONS GUIDELINES AND STANDARDS

Subcategory	Regulatory level	Technology option [1]	Technical components [2]
Subpart A: Simple Slaughterhouse; Subpart B: Complex Slaughterhouse; Subpart C: Low-Processing Packinghouse; and Subpart D: High-Processing Packinghouse.	BPT	2	Equalization, dissolved air flotation, secondary biological treatment with nitrification.
	BAT; NSPS	3	Equalization, dissolved air flotation, secondary biological treatment with nitrification and denitrification.
	BCT	No Action	No revised limitations are proposed.
	PSES; PSNS	No Action	No pretreatment standards are proposed.
Subpart E: Small Processors	BPT; BCT; BAT; NSPS.	No Action	No revised limitations or standards are proposed.
	PSES;PSNS	No Action	No pretreatment standards are proposed.
Subpart F: Meat Cutter; Subpart G: Sausage and Luncheon Meats Processor; Subpart H: Ham Processor; and Subpart I: Canned Meats Processor.	BPT	2	Equalization, dissolved air flotation, secondary biological treatment with nitrification.
	BAT; NSPS	3	Equalization, dissolved air flotation, secondary biological treatment with nitrification and denitrification.
	BCT	No Action	No revised limitations are proposed.
	PSES; PSNS	No Action	No pretreatment standards are proposed.
Subpart J: Renderer	BPT; BCT	2	Equalization, dissolved air flotation, secondary biological treatment with nitrification.
	BAT; NSPS	2	Equalization, dissolved air flotation, secondary biological treatment with nitrification.
	PSES; PSNS	No Action	No pretreatment standards are proposed.

[1] See Section VII.D for a discussion of the technology options.
[2] See Section XI.C and XI.D for a discussion of the Agency's rationale on selecting options.

1. Meat (or Red Meat) Facilities

EPA established regulations which apply to the meat (or red meat) slaughterhouses and packinghouses (40 CFR part 432 subcategories A through D) in 1974. EPA established regulations which apply to meat further processing facilities (40 CFR part 432 subcategories E through I) in 1975. Although there is no definition of ''red meat'' or ''meat'' in the existing 40 CFR part 432 regulations, EPA defined these terms in the previous technical development documents associated with these prior rules as all animal products from cattle, calves, hogs, sheep, and lambs and any meat that is not listed under the definition of poultry. EPA is using the term ''meat'' as synonymous with the term ''red meat.'' EPA proposes to include a similar definition in the revised regulations (*see* Appendix A of this document).

The current regulations for meat cover all aspects of producing meat products from the slaughter of the animal to producing final consumer products (*e.g.* cooked, seasoned or smoked products, such as luncheon meat or hams.) For subparts F, G, H and I of the existing regulations, EPA established a production rate threshold of greater than 6,000 pounds of finished product per day, below which the regulations do not apply. Subpart E of the existing regulations (Small Processors) applies to meat further processors that produce up to 6,000 pounds of finished product per day.

EPA is not proposing to change the existing production rate thresholds in subparts E through I in this proposed rule for existing limitations and standards. Also, EPA is proposing new production rate thresholds in Subparts A through D and F through I for the proposed limitations and standards based on current data collected for this rulemaking (*see* Section III of the MPP Development Document). These new production rate thresholds do not affect subpart E (Small Processors) meat facilities as these proposed new production rate thresholds are all higher than the subpart E production rate threshold (i.e., 6,000 pounds of finished product per day). EPA defines the following facilities which are currently covered under 40 CFR part 432 as small:

- Facilities in Subcategories A, B, C and D that slaughter less than 50 million pounds (LWK) per year;
- All facilities in Subcategory E;
- Facilities in Subcategories F, G, H and I that produce less than 50 million pounds of finished product per year; and
- Facilities in Subcategory J that render less than 10 million pounds per year of raw material (*see* Section III.A.2).

EPA developed these new production rate thresholds based on current screener survey data available prior to proposal. EPA ordered the annual production screener survey data from highest to lowest annual production for each of the regulatory groupings (e.g., A–D, F–I, J, K, and L), then divided each of the regulatory groupings into four size classifications (e.g., small, medium, large, and very large) based on employment and annual production data. EPA performed this size classification task in order to more accurately estimate costs, loadings, NWQIs, and economic impacts of the proposed limitations and standards on this industry. That is, rather than assume one model facility for each of the five regulatory groupings, EPA used four model facilities for each of the five regulatory groupings for better accuracy in its analyses (*see* also MPP Development Document for further details on how these production based thresholds were developed). In evaluating the screener data related to facility annual production, several variables were identified. These were meat and poultry type processed, type of facility operation (*i.e.,* first processing (slaughtering), further processing, or rendering), number of facility employees, annual wastewater generation, and type of wastewater management (*e.g.,* direct discharger,

indirect discharger, land applied on site). Because EPA had only a limited amount of detailed information on facilities, the number of facility employees was selected as an indicator of facility size for modeling (e.g., costs, loads, economic impacts, NWQIs). EPA identified facilities with 100 employees or less as small and then identified the corresponding annual production thresholds. It is important to note for the purposes of estimating costs, loads, economic impacts and NWQIs, EPA used facility level employment data for developing one threshold between ''small'' and ''non-small'' facilities. The SBA size standard for these industries is 500 employees at the company level. EPA divided the remaining non-small facilities (i.e., medium, large, and very large) into equal thirds based on annual production.

EPA is using the results of the revised production rate thresholds to exclude most smaller MPP facilities from today's proposed revisions to 40 CFR part 432 because the technologies on which the options were based are not cost-effective for the facilities with the lowest production threshold (*i.e.,* the smallest facilities). However, these production based thresholds for the proposal are based on available screener survey data. A more detailed evaluation of these thresholds, along with the model facility identification will be made following evaluation of the detailed survey responses and may warrant a change in the production based thresholds. Most smaller MPP facilities are excluded from the scope of today's proposal for a number of reasons: (1) Small MPP facilities as group discharge less than 3% of the conventional pollutants (or 35 million lbs/year), 1% of the toxic pollutants (or 1.3 million lbs/year), 4% of the nutrients (or 7.5 million lbs/year), and less than 1.5% of the pathogens (or 47 x 10^9 CFU/year) as compared to all discharges from the entire MPP industry; (2) EPA determined that only a limited amount of loadings removal would be accomplished by improved treatment; and (3) EPA determined that ''small'' MPP facilities would discharge a very small portion of the total industry discharge. Therefore, EPA is not revising current limitations and standards for small meat facilities. The existing regulations, however, will continue to apply to those facilities. EPA is, however, setting limitations and standards for small poultry direct discharging facilities (for whom there are no existing standards) based on current performance (*see* Section III.B). As explained above, EPA's proposed definition of 'small' facility is based on the screener data available for this proposal. EPA will be re-evaluating this data in preparation for the NODA. EPA is also soliciting comment on alternative definitions of small facilities at higher production levels (representing facilities with more than 100 employees). A supplemental analysis in the record (Docket No. W–01–06, Record No. 25010) compares the alternative definitions in terms of costs, pollutant removals, and economic impacts on the affected facilities. For example, in Subpart K, there are no ''small'' facilities, as defined by EPA, whereas there are 35 medium facilities and 60 large and very large facilities (using currently available data). Thirty-one of the 35 facilities defined as ''medium'' facilities are owned by small businesses (defined as firms with less than 500 employees). EPA specifically is requesting comment on whether the medium facilities in the various Subparts should be included in the ''small'' facility category, particularly in Subpart K which has no ''small facilities.'' In assessing alternate small facility definitions, EPA shall consider the same factors discussed above (e.g. economic impact, small pollutant loadings, etc.) and requests comment on how alternative thresholds might be justified using these factors.

The existing regulations apply to all sizes of meat direct dischargers (except for renderers processing less than 75,000 pound raw material per day—*see* Section III.A.2). The revisions to 40 CFR part 432 being proposed today apply to meat facilities (*see* Section III.A.1) above the new production based thresholds and all poultry facilities that discharge directly to a receiving stream or other waters of the United States (*see* Section III.B for a discussion of poultry facilities).

2. Rendering

In 1975, EPA established regulations (40 CFR part 432, Subcategory J) which apply to independent renderers, defined as independent or off-site operations that manufacture meat meal, dried animal by-product residues (tankage), animal fats or oils, grease and tallow, perhaps including hide curing, by a renderer. The existing regulations establish a size threshold of 75,000 pounds of raw material per day processed. Facilities which process less than this amount are not subject to the existing regulations. EPA is proposing to lower this production threshold so that subpart J applies to facilities that render more than 10 million pounds per year of raw material (or approximately 27,000 pounds per day for a facility that operates 365 days per year). EPA is lowering this production threshold based on data collected for this rulemaking. See Section III.A.1 for a description of EPA's reasons for setting production thresholds and exempting most small MPP facilities (including small rendering facilities that render less than 10 million pounds per year of raw material) from today's revisions to 40 CFR part 432.

Subpart J applies to the rendering of any meat or poultry raw material. When rendering is done in conjunction with a meat slaughterhouse or packinghouse, the rendering wastewater is regulated under the limitations for the appropriate meat slaughtering or packinghouse subcategory (*i.e.,* under subpart A, B, C, or D).

B. Poultry Slaughtering and Further Processing Facilities

EPA is proposing to establish effluent limitations guidelines and new source performance standards for the poultry first processing (*i.e.* slaughtering) and further processing subcategories, and to revise the category title accordingly. Poultry includes broilers, other young chickens, hens, fowl, mature chickens, turkeys, capons, geese, ducks, exotic poultry (*e.g.*, ostriches), and small game such as quail, pheasants, and rabbits (*see* Appendix A of this document).

EPA proposed regulations for this segment of the meat and poultry products industry in 1975, but did not finalize them. EPA has reanalyzed this segment of the meat and poultry products industry and is proposing today to establish BPT, BCT, and BAT limitations for existing facilities and new source performance standards. EPA proposes to create two new subcategories which would apply to poultry processing facilities. The first new poultry subcategory is the ''poultry first processing'' subcategory which includes the slaughtering and evisceration of the bird or animal and dressing the carcass for shipment either whole or in parts, such as leg, quarters, breasts and boneless pieces. These facilities are commonly known as ''ice pack facilities.'' The second new poultry subcategory is the ''poultry further processing'' subcategory which includes additional preparation of the meat including further cutting, cooking, seasoning and smoking to produce ready to be eaten or reheated servings. The additions to 40 CFR part 432 for poultry being proposed today apply to facilities that discharge directly to a receiving stream and other waters of the United States. EPA is proposing to set less stringent effluent limitations guidelines for direct dischargers slaughtering up to 10 million pounds

per year than on facilities which slaughter over 10 million pounds per year and for further processors producing 7 million pounds per year than on facilities which produce over 7 million pounds per year. See Section III.A.1 for a description of EPA's reasons for setting production thresholds. The treatment options proposed for larger poultry slaughtering and further processing facilities are economically unachievable for small poultry slaughtering and further processing facilities. Rendering performed in conjunction with a poultry first processing facility would be subject to the appropriate regulations under the poultry slaughtering (Subpart K).

The technology options which serve as the basis for the proposed effluent limitations guidelines and standards being for the poultry portion of the industry are summarized in Table III.B–1. For descriptions and discussion of the subcategories, *see* Section VI.D; for the technologies, *see* Section VII.D; and for a discussion of the process wastewater generated by these subcategories, *see* section VII.B.

TABLE III.B–1.—SUMMARY OF REGULATORY OPTIONS FOR POULTRY FIRST AND FURTHER PROCESSORS

Subcategory	Regulatory level	Technology option[1]	Technical components[2]
Subpart K: Poultry First Processing (facilities which slaughter up to 10 million pounds per year); and, Subpart L: Poultry Further Processing (facilities which produce up to 7,000 pounds per year of finished product).	BPT; BCT	1	Equalization, dissolved air flotation, secondary biological treatment with less efficient nitrification.
	BAT; NSPS	1	Equalization, dissolved air flotation, secondary biological treatment with less efficient nitrification.
	PSES; PSNS ..	No Action	No pretreatment standards are proposed.
Subpart K: Poultry First Processing (facilities which slaughter more than 10 million pounds per year); and, Subpart L: Poultry Further Processing (facilities which produce more than 7,000 pounds per year of finished product).	BPT; BCT	3	Equalization, dissolved air flotation, secondary biological treatment with nitrification and denitrification.
	BAT; NSPS	3	Equalization, dissolved air flotation, secondary biological treatment with nitrification and denitirification.
	PSES; PSNS ..	No Action	No pretreatment standards are proposed.

[1] See Section VII.D for a discussion of the technology options.
[2] See Section XI.E for a discussion of the Agency's rationale on selecting options.

IV. Rulemaking History and Industry Profile

A. Meat Products Effluent Guideline Rulemaking History

The effluent limitations guidelines and standards for the meat products industry were developed and promulgated in the 1970's. The existing regulations for the meat slaughtering and processing subcategories and independent rendering were issued in phases and are grouped together under 40 CFR part 432.

EPA promulgated BPT, BAT, NSPS limitations and standards for existing and new meat slaughterhouses and packinghouses on February 28, 1974 (39 FR 7894). The 1974 regulation established effluent limitations and standards for existing and new sources for four types of meat slaughterhouses and packinghouses: Simple Slaughterhouse, Complex Slaughterhouse, Low Processing Packinghouse, and High Processing Packinghouse (40 CFR part 432, Subcategories A–D).

EPA promulgated BPT, BAT, NSPS limitations and standards for existing and new meat further processing subcategories and the independent rendering subcategory on January 3, 1975 (40 FR 902). The 1975 regulation established effluent limitations and standards for existing and new sources for six additional types of facilities: Small Processor, Meat Cutter, Sausage and Luncheon Meats Processor, Ham Processor, Canned Meats Processor, and Independent Renderer (40 CFR part 432, Subcategories E–J).

BCT limitations were promulgated on August 29, 1979 (44 FR 50732) for all meat subcategories and independent rendering (40 CFR part 432, Subcategories A–J).

EPA did not establish pretreatment standards (neither PSES nor PSNS) for any of meat subcategories and independent rendering (40 CFR part 432, Subcategories A–J) in the 1974 or 1975 regulations.

The BPT and BAT limitations established in the February 28, 1974 notice were the subject of litigation in *American Meat Institute* v. *EPA*, 526 F.2d 442 (7th Cir. 1975). The Seventh Circuit Court of Appeals reviewed the effluent limitations and remanded selected portions of those regulations. The BPT and BAT regulations remanded by the court were subsequently revised or withdrawn (*see* 44 FR 50732, August 29, 1979; 45 FR 82253, December 15, 1980).

The regulations in the independent rendering subcategory were also the subject of litigation in *National Renderers Association et al.,* v. *EPA, et al.,* 541 F. 2d 1281 (8th Cir. 1976). The Court remanded the regulations to the Agency to reconsider the economic impact of the costs associated with these requirements. The BAT limitations for independent renderers were not remanded, but EPA reevaluated these limitations nonetheless. On October 6, 1977 (42 FR 54417), EPA promulgated a final rule which revised the BAT limitations and new source performance standards for this subcategory. In that final rule, the BAT limitations for ammonia, BOD_5, and TSS are less stringent than the original BAT limitations; however, the NSPS are more stringent than the original NSPS standards. In the final rule, EPA retained an exclusion for small facilities (less than 75,000 pounds of raw material per day) from BPT, BAT, and NSPS.

EPA proposed BPT, BAT, NSPS, PSNS limitations and standards for existing and new poultry slaughterers and processors on April 24, 1975 (40 FR 18150). EPA proposed to subcategorize the poultry processing sector into five subcategories, distinguished by the animal or bird being processed and an additional subcategory which applied to further processing. These regulations were never finalized as the 1977

amendments to the Clean Water Act refocused the Agency's attention on establishing effluent limitations guidelines for industry sectors with effluents containing toxic metals and organics.

B. Industry Profile

The meat and poultry products industry includes facilities which slaughter livestock (e.g., cattle, calves, hogs, sheep and lambs) and/or poultry or process meat and/or poultry into products for further processing or sale to consumers. The industry is often described in terms of three categories: (1) Meat slaughtering and processing; (2) poultry slaughtering and processing; (3) and rendering. Facilities may perform slaughtering operations, processing operations from carcasses slaughtered at other facilities, or both. Companies that own meat or poultry product facilities may also own facilities that either raise the animals or further process the meat or poultry products into final consumer products. These other enterprises are not covered by the meat and poultry products industry effluent limitations guidelines.

Since the 1970's when EPA issued the existing regulations for meat and rendering industry sectors, the meat and poultry products industry has become increasingly concentrated or vertically integrated through alliances, acquisitions, mergers, and other relationships. This vertical integration is particularly pronounced in the broiler sector of the poultry industry. Most of the broiler and other chicken products which reach the consumer have been under the control of the same company from the hatching of the flocks through the processing of the birds. Vertical integration is not seen to the same extent in the meat sector, although there is increasing vertical integration, particularly in the hog sector.

The meat and poultry products industry encompasses four North American Industry Classification System (NAICS) codes which are developed by the Department of Commerce. These NAICS codes include: Animal Slaughtering (Except Poultry) (NAICS 311611); Meat Processed from Carcasses (NAICS 311612); Poultry Processing (NAICS 311615); and Rendering and Meat Byproduct Processing (NAICS 311613).

Animal Slaughtering (Except Poultry) (NAICS 311611), includes meat first processing facilities which slaughter cattle, hogs, sheep, lambs, calves, horses, goats, and exotic livestock (*e.g.,* elk, deer, buffalo) for human consumption. Slaughtering is the first step in the processing of meat animals into consumer products (*i.e.,* calves, hogs, sheep, and lambs). Slaughterhouse operations typically encompass the following steps: (1) Receiving and holding of live animals for slaughter; (2) stunning of animals prior to slaughter; (3) slaughter (exsanguination) of animals; and (4) initial processing of animals. Slaughterhouse facilities are designed to accommodate the multi-step process of slaughtering. In most slaughterhouses, the major steps are carried out in separate rooms.

In addition, many first processing facilities further process carcasses on-site and/or perform rendering operations. These facilities may also process meat products into prepared foods and feed ingredients for animals (except dog and cat food). Otherwise the carcasses are shipped to other facilities for further processing into finished products such as hams, sausages, ground meat, and canned products.

Based on the 1997 U.S. Census of Manufactures, the animal slaughtering industry sector includes 1,300 companies which operate approximately 1,400 facilities. The industry sector employs 142,000 people and generates a total value of shipments of $54 billion. Twelve States reported shipments in excess of $1 billion, with Texas, California, Illinois, Iowa and Wisconsin containing the largest number of slaughtering establishments (at least 60 establishments in each State). Nebraska ranks seventh in the number of facilities located in the State, but has the highest number of employees engaged in animal slaughtering of any State. Nebraska accounts for almost 17 percent of the value added and 16 percent of total shipments in this industry sector. Industry activity is most heavily concentrated in Nebraska, Kansas, Iowa and Texas.

The Animal Slaughtering sector is comprised of a large number of facilities (72 percent of the sector) which have fewer than twenty employees. These facilities employ less than 5 percent of the sector workforce and contribute an even smaller percentage of value added and value of shipments. Thirty-nine facilities employ between 1,000 and 2,500 employees and while comprising only 3 percent of the total number of establishments, provide 43 percent of the industry employment and 46 percent of the value of shipments.

Meat Processed from Carcasses (NAICS 311612) includes facilities engaged in processing or preserving meat and meat by-products (but not poultry or small game) from purchased meats. These facilities do not slaughter animals or perform any initial processing (*e.g.,* de-fleshing, de-feathering).

The meat further processing industry sector includes 1,164 companies, which own and operate about 1,300 facilities. This sector employs about 88,000 people, and the value of shipments is more than $25 billion, of which $9 billion is value added by manufacture.

California, Illinois, New York and Texas have the highest concentration of meat further processing facilities, each with more than 90 meat further processing facilities. However the highest levels of employment are found in Illinois, Pennsylvania, Texas and Wisconsin, which together generate one-third of the meat further processing employment. In Wisconsin more than half of the meat further processing facilities employ more than 20 workers, and the State also accounts for the largest share of both total shipments and value added in the industry.

As with the animal slaughtering sector, more than half of the meat further processing facilities employ fewer than 20 workers. The bulk of the employment (54 percent), value added (55 percent) and total shipments (57 percent) is accounted for by meat further processing facilities employing between 100 and 500 workers. The difference between the animal slaughtering sector and the meat further processing sector is that while the value of shipments in the animal slaughtering industry sector is heavily concentrated in the largest facilities, the value of shipments in the meat further processing sector is more evenly distributed across meat further processing facilities of all different sizes.

Poultry Processing (NAICS 311615) includes the slaughter of poultry, small game animals (*e.g.,* quails, pheasants, and rabbits), and exotic poultry (*e.g.,* ostriches) and the processing and preparing of these products and their byproducts. The 1997 U.S. Census of Manufactures reported 260 companies engaged in poultry slaughtering. These companies own or operate 470 facilities, employ 224,000 employees, and produces about $32 billion in value of shipments.

The poultry slaughtering sector has relatively few facilities with less than 20 employees but like the meat sectors it is dominated by a few very large facilities. Almost 50 percent of the sector employment and over 40 percent of the value of shipments were accounted for by 75 facilities which employ more than 1,000 workers each. Eighty percent of employment and 74 percent of total shipments are produced by facilities that employ more than 500 workers. Yet

these facilities comprise only 36 percent of the poultry processing industry.

Products produced by the poultry processing sector can be divided into two major categories: broilers and turkeys. Broilers comprise more than half of the industry's shipments. Processed poultry accounts for about 30 percent of this sectors shipments and turkey products accounts for about 12 percent.

Poultry processing is largely concentrated in the southeastern States with Arkansas and Georgia having the largest number of facilities, employment and value of shipments. Alabama and North Carolina rank third and fourth in all of these measures. California is the only State in the top ten poultry producing States which is not in the southeast. California ranks tenth in terms of employment and value of shipments and ranks eighth in number of facilities.

The Rendering and Meat Byproduct Processing (NAICS 311613) sector includes facilities engaged in the rendering of inedible stearin, grease, and tallow from animal fat, bones and meat scraps and the manufacturing of animal oils, including fish oil, and fish and animal meal. Many facilities not classified as rendering facilities perform rendering operations but are not classified as such because they are also engaged in slaughtering (these are often on-site rendering facilities that are part of an animal or poultry slaughtering facility).

The rendering sector consists of 137 companies that own or operate 240 facilities. The sector employs 8,800 workers and generates $2.6 billion in shipments. Texas and California have the largest number of rendering facilities. Unlike the meat or poultry industry sectors, the rendering industry sector includes few large facilities (*i.e.,* only 11 rendering facilities employed more than 100 workers per facility in 1997). The 132 rendering facilities which employ between 20 and 99 workers account for the largest share of the industry shipments (66 percent).

Because the meat and poultry products industry produces products for human consumption (with the exception of rendering), the industry as a whole is very conscious of cleanliness and hygiene. Meat and poultry processing facilities use disinfectants to clean and sanitize equipment between production. The industry reports avoiding the use of pesticides which could contaminate their products, although EPA sampling data did detect several pesticides in raw wastewaters. Water is a very important part of meat products manufacturing as meat products and meat product equipment require acceptable levels of cleanliness. The U.S. Department of Agriculture Food Safety and Inspection Service (USDA FSIS) is responsible for regulating and inspecting meat and poultry slaughtering and processing facilities and facilities engaged in edible rendering (*i.e.,* suitable for human consumption) to ensure food safety. The U.S. Food and Drug Administration (FDA) covers inedible rendering operations which produce products suitable for pet food, animal feed, chemical products, and fuel blending.

Water is used to clean the product, clean and sanitize the production equipment and as a transport mechanism for carrying the waste away from the production area. Water can also be used as a part of the process such as scalding birds to facilitate feather removal or chilling the animal or meat to reduce its temperature. The meat and poultry processing industry (excluding rendering) uses an estimated 150 billion gallons of water per year. The meat and poultry products industry ranks in the top third of all three digit SIC manufacturing sectors with regard to overall water consumption (Docket No. W–01–06, Record No. 10025).

Industry sources have estimated that the implementation of USDA's Hazard Analysis and Critical Control Points (HACCP) program has increased water usage by 20 to 25 percent (Docket No. W–01–06, Record No. 10021). USDA FSIS disagrees with industry's assertion that implementation of HACCP has necessarily required greater use of water (Docket No. W–01–06, Record No.10027). Furthermore, USDA FSIS asserts that its regulatory performance standards provide for numerous water reuse opportunities (*see* 9 CFR 416.2(g)).

Many facilities in the meat and poultry processing sector have employed water reuse programs for many years. Some large facilities even have installed onsite advanced wastewater treatment systems which treat facility effluent allowing this water to be reused for some applications within the facility. Other facilities have changed sanitation practices to reduce water use and effluence in general. For example, one independent renderer noted during an EPA site visit that his facility fully converted from a wet cleaning method to a dry cleaning method in the product shipment area in order to minimize water pollution (Docket No. W–01–06, Record No. 10042). EPA solicits comment on the potential of MPP facilities to reduce water consumption and new technologies or practices that can effectively reuse water.

The majority of facilities in the meat and poultry products industry are indirect dischargers (an estimated 5,298 facilities). There are an estimated 359 facilities which discharge directly to waters of the U.S. and 242 of these are larger facilities which often will have a variety of further processing operations on-site. There are 1,113 facilities which report storing water in on-site lagoons or land applying their wastewater (*see* MPP Development Document).

The untreated wastewater contains high concentrations of BOD_5, TSS, oil and grease, pathogens, especially fecal coliforms and nutrients, including nitrogen (including ammonia) and phosphorus. EPA's sampling data collected from meat and poultry products facilities found treatable concentrations of some metals (*e.g.,* copper and zinc). Some of these metals are fed to the animals as feed additives, which therefore is assumed to be the source for these pollutants in the wastewater.

Treatment for meat and poultry processing wastewater varies depending on whether the facility is a direct or indirect discharger. Direct dischargers generally have biological treatment-in-place; most facilities use a combination of anaerobic and aerobic treatment, they also have nitrification to reduce ammonia concentrations in the effluent. Some facilities have denitrification to reduce nitrogen (nitrate) concentrations, although some facilities have a polishing filter to achieve additional reductions of other suspended pollutants. All facilities use some form of disinfection (*e.g.,* chlorine contact tank, ultraviolet radiation) to destroy or render pathogens inactive. Dissolved Air Flotation (DAF) is also commonly used to reduce oil and grease prior to the biological treatment. The indirect dischargers are mostly removing solids from their effluent through the use of screens or settling basins. Many of the indirect discharge facilities surveyed also report using an equalization basin and DAF to reduce the oil and grease concentrations in their effluent. Industry representatives have indicated that facilities avoid adding flocculants or treatment aids to their wastewaters prior to DAF or settling, because these additives prevent them from sending the sludge to a renderer. EPA identified that raw materials with high concentrations of ferric chloride are also often rejected by independent renderers due to their corrosive nature. EPA solicits comment on other types of flocculants or treatment aids and their concentrations that are commonly not accepted by independent renderers.

EPA also examined the impact of different religious meat and poultry production (*e.g.,* kosher, halal, Buddhist) on raw wastewater characteristics in terms of wastewater flow and pollutant concentrations (Docket No. W–01–06, Record No.10028; Record No. 10029). EPA identified that kosher and halal poultry producers pack the birds (inside and out) in salt for one hour to absorb any residual blood or juices. The birds are then rinsed and shipped to kosher/halal meat distributers. An industry representative reported that on an average day a kosher poultry facility would use 80,000 pounds of salt in their operations with a wastewater generation of approximately 2 million gallons wastewater per day. The industry representative stated that the use of salt makes the kosher poultry wastewaters very different from non-kosher poultry wastewaters with kosher poultry wastewaters having an increased total dissolved solids (TDS) concentration. The industry representative also stated that most kosher operations (meat and poultry) are located in urban areas with sewer connections. EPA also identified that Buddhist and Confucian poultry facilities probably do not exhibit wastewater characteristics that differ from non-religious poultry facilities (Docket No. W–01–06, Record No. 10029). Finally, industry representatives identified that there should be no differences, other than salt content, in MPP wastewater characteristics between kosher or halal and other meat facilities because the main difference between religious and non-religious meat production is the method of slaughter (exsanguination) (Docket No. W–01–06, Record No. Record No. 10031). EPA solicits comment on any other differences in production and wastewater generation and characteristics between non-religious and religious meat and poultry facilities.

V. Summary of Data Collection

A. Secondary Sources of Data and Information

The Agency evaluated the following databases online to locate data and information to support regulatory development: The Agency's PCS database, USDA's Food Safety and Inspection Service's HACCP Databases, USDA's Packers and Stockyards Statistical Report, SEC's EDGAR Database, the 1997 U.S. Census of Manufactures, Dun & Bradstreet Million Dollar Directory and Hoover's database. In addition, the Agency conducted a thorough collection and review of secondary sources, which include data, reports, and analyses published by government agencies; reports and analyses published by the meat and poultry products industry and its associated organizations; and publicly available financial information compiled by both government and private organizations.

EPA used the listings of beef processing facilities from Cattle-Fax, the National Cattlemen's Beef Association, Iowa State University, and North Dakota State University to identify the location of individual beef slaughtering facilities, their parent corporation, and, in some cases, the operational capacity of the individual facility. EPA used the National Pork Producers Council publication to identify the location of hog slaughtering facilities, the name of their parent corporation, and the operational capacity of the facility. EPA used WATT PoultryUSA's publications to locate individual poultry slaughtering facilities, the types of processes at those facilities, and the name of their parent corporation. EPA consulted the American Meat Institute, the National Renderers Association and the U.S. Poultry & Egg Association for lists of all member companies and facilities. The Urner Barry Meat and Poultry Directory 2000 provided information on location, parent company, and types of processes at the facility for all three sectors (Docket No. W–01–06, Record No. 25001).

The documents cited above were all used by EPA in developing the industry profile, a survey sampling frame, and for stratifying the survey sampling frame. In addition to these publications, EPA examined many other documents that provided useful overviews and analysis of the meat processing industry. EPA also conducted general Internet searches by company name.

B. Industry Surveys

EPA developed two survey questionnaires to collect site-specific technical and economic information as the above mentioned sources of information did not have sufficiently detailed technical and economic information required for the development of regulatory options.

EPA published a notice in the **Federal Register** on May 1, 2000 (65 FR 25325) announcing the Agency's intent to submit the meat and poultry products industry Survey Information Collection Request (ICR) to OMB. The May 1, 2000 notice requested comment on the draft ICR and the survey questionnaires. EPA received five sets of comments during the 60 day public comment period. Commentors on the ICR included: National Chicken Council, National Renderers Association, American Meat Institute, BCR Foods, and U.S. Poultry and Egg Association. EPA made minor clarifying revisions to the survey methodology and questionnaires as a result of public comments.

EPA made every reasonable attempt to ensure that the meat and poultry products industry ICR did not request data and information currently available through less burdensome mechanisms. Prior to publishing the May 1, 2000 notice, EPA met with and distributed draft copies of the survey questionnaires to three trade associations representing the meat and poultry products industry (American Meat Institute, National Chicken Council, National Renderers Association). EPA obtained approval from OMB for the use and distribution of two survey questionnaires: a short screener survey and a more detailed survey.

1. Description of the Surveys

In February 2001, EPA mailed a short screener survey, entitled ''2001 Meat Products Industry Screener Survey'' to 1,650 meat and poultry products facilities. A copy of the screener is included in the record (Docket No. W–01–06, Record No. 00178). The screener survey consisted of seven questions that elicited site-specific information such as type of animal processed and processing operation, wastewater disposal method, and the number of full-time employees at the site and company. EPA used the information collected from the screener survey to describe industry operations, wastewater generation rates, and wastewater disposal practices. EPA also used the responses to the site employment question for classifying each facility as small or not-small according to the Small Business Administration regulations at 13 CFR part 121.

EPA designed the second survey to collect detailed site-specific technical and financial information. In March 2001, EPA mailed the second survey, entitled ''2001 Meat Products Industry Survey,'' to 350 meat and poultry products facilities. A copy of the detailed survey is included in the record (Docket No. W–01–06, Record No. 00179). The detailed survey is divided into five parts. The first four parts collect general facility and technical data. The first set of questions request general facility site information. The general facility information questions asked the site to identify itself, characterize itself by certain parameters (including meat and poultry products operations, age, and location), and confirm that it was engaged in meat and/or poultry processing operations.

Respondents also indicated whether they use trisodium phosphate (TSP) as a biocide. Substituting other non-phosphorus based biocides with TSP has the potential to lower overall phosphorus concentrations in the raw wastewater and treated effluent. The second set of questions requested analytical and production data including: (1) Detailed daily analytical and flow rate data for selected sampling points; (2) monthly production data; and (3) operating hours for selected manufacturing operations. Survey respondents were required to provide already obtained sampling data and information. The Agency used the analytical data to estimate baseline pollutant loadings and pollutant removals from facilities with treatment-in-place resembling projected regulatory options and to evaluate the variability associated with meat and poultry products industry discharges. The Agency used the production data collected to evaluate the production basis for applying today's proposed rule in NPDES permits.

The next two sections focus on wastewater characteristics and current treatment practices, respectively. Questions regarding wastewater and treatment were designed to gather: (1) Information on the wastewater treatment systems (including diagrams) and discharge flow rates; (2) analytical monitoring data; and (3) operating and maintenance cost data (including treatment chemical usage). The outfall information questions covered permit information such as: (1) Discharge location; (2) wastewater sources to the outfall; (3) flow rates; (4) regulated parameters and limits; and (5) permit monitoring data. The Agency used this information to calculate the effluent limitations guidelines and standards and pollutant loadings associated with the regulatory options that EPA considered for this proposal. The Agency also used data received in response to these questions to identify treatment technologies in place, to determine the feasibility of regulatory options and potential future subcategorization of the meat and poultry products industry, and to estimate compliance costs, the pollutant reductions associated with the likely technology-based options, and potential environmental impacts associated with the regulatory options EPA considered for this proposal.

The fifth part of the detailed survey elicited site-specific financial and economic data. EPA used this information to characterize the economic status of the industry and to estimate potential economic impacts of wastewater regulations. The financial and economic information collected in the survey was necessary to complete the economic analysis of the proposed effluent limitations guidelines and standards for the meat and poultry products industry. EPA requested financial and economic information for the fiscal years ending 1997, 1998, and 1999— the most recent years for which data are available.

2. Development of Survey Mailing List

EPA sent the two meat and poultry products industry survey questionnaires to a random sample of facilities from the USDA Food Safety and Inspection Service (FSIS) Hazard Analysis and Critical Control Points (HACCP) database and a list of renderers provided by the National Renderers Association (NRA). The HACCP database provided a list of 7,981 federally or State-inspected meat and poultry facilities. The HACCP database is dated March 9, 2000 for the federally inspected facilities and May 10, 2000 for the State-inspected facilities. The entire HACCP database is classified into Large, Small, and Very Small facilities, corresponding to more than 500 employees, 10–500 employees, and less than 10 employees at the facility level, respectively. The 236 renderers from the NRA list were not classified by size. The Urner Barry Meat and Poultry Directory 2000 identified production information (i.e., whether a facility was a slaughterer or further processor) for at least 240 of the 292 large facilities (82 percent) and 1,120 of the 2,381 small facilities (47 percent). No such information was available for the remaining large and small facilities or for any of the 5,308 very small facilities.

3. Sample Selection

EPA grouped the facilities into seven strata by the size and the type of meat and poultry processing operation that takes place in each facility so that each stratum would encompass facilities with similar operations. This grouping (also known as stratification) increases precision (reducing one source of uncertainty) for estimates of costs, benefits and other quantities. Table V.B–1 lists the stratification of the meat and poultry products industry which is based on employment and other information from USDA's HACCP program, Urner Barry Meat and Poultry Directory 2000, and the National Renderers Association.

TABLE V.B–1.—MEAT AND POULTRY PRODUCTS INDUSTRY STRATA

Stratum (No. of employees)	Number of facilities in stratum	Screener survey sample size	Detailed survey sample size
Certainty	65	0	65
Large Processor (≥500)	43	31	3
Large Slaughterer (≥500)	190	100	52
Small Processor (10–499)	1,878	688	62
Small Slaughterer (10–499)	498	130	69
Very Small Processor (<10)	5,308	649	57
Renderer	235	52	42
Total	8,217	1,650	350

Various meat and poultry processors were randomly selected within each grouping. EPA weighted each survey response to account for facilities not surveyed and to develop national estimates from the survey responses. EPA deliberately selected the 65 ''certainty'' facilities to obtain site-specific information on the top producers for all types of meat and poultry products as well as facilities identified as good performers by State and Regional environmental personnel. EPA focused much of its analysis on the characteristics of larger facilities because indirect and direct small facilities as a group (*see* Section III.A.1 for descriptions of ''small facilities'') discharge less than 3% of the conventional pollutants, 1% of the toxic pollutants, 4% of the nutrients, and less

than 1.5% of the pathogens as compared to all discharges from all indirect and direct MPP facilities. Moreover, most of these small facilities are discharging small volumes of wastewater into large urban POTW systems which process significantly higher wastewater volumes, which helps minimize impacts. Thus, there is minimal impact on POTW operations or the passing of MPP pollutants of concern through POTWs into waters of the United States. Consequently, larger facilities were oversampled in the sample design. The oversampling rate is approximately 6:3:1, meaning that the large facilities were sampled at 6 times the rate of the very small facilities, and the small facilities at 3 times the rate of the very small. In addition, many of the very small facilities were not eligible for the survey as they were no longer in operation.

4. Survey Response

Of the 8,217 meat and poultry products facilities generating wastewater, 2,000 facilities were mailed either a detailed survey or a screener survey. As of October 4, 2001, 1,365 of the 1,650 screener surveys and 300 of the 350 detailed surveys were returned to EPA. EPA used 961 of the screener surveys (those received before April 24, 2001) and 241 of the detailed surveys (those received before May 29, 2001) for the development of regulatory options. EPA chose the cut-off dates in order to process, synthesize, and analyze the collected data and develop regulatory options in a timely fashion and still use as much data as possible. EPA will use all surveys, including those collected after the deadlines, in upcoming analyses for the forthcoming Notice of Data Availability (NODA) and final rule.

C. Site Visits and Wastewater Sampling

During 2000 and 2001, EPA conducted site visits at 15 MPP facilities. Six of these site visits were conducted at meat facilities, seven at poultry facilities, and two at rendering-only facilities. The purposes of these site visits were to: (1) Collect information on meat and poultry processing operations; (2) collect information on wastewater generation and waste management practices used by the MPP facilities; and (3) evaluate each facility as a candidate for multi-day sampling. In addition, EPA conducted limited sampling during several of the site visits to screen for potential contaminants that may be found in wastewaters from the different types of meat and poultry processing operations.

In selecting candidates for site visits, EPA attempted to identify facilities representative of various MPP processing operations, as well as both direct and indirect dischargers. EPA specifically considered the type of meat and poultry processing operations, age of the facility, size of facility (in terms of production), wastewater treatment processes employed, and best management practices/pollution prevention techniques used. EPA also solicited recommendations for good-performing facilities (e.g. facilities with advanced wastewater treatment technologies) from EPA Regional offices and State agencies. The site-specific selection criteria are discussed in site visit reports prepared for each site visited by EPA (Docket No. W–01–06, Record No.00156).

During each site visit, EPA collected information on the facility and its operations, including: (1) General production data and information; (2) the types of meat and poultry processing wastewaters generated and treated on-site; (3) water source and use; (4) wastewater treatment and disposal operations; (5) potential sampling locations for wastewater (raw influent, within the treatment system, and final effluent); and (6) other information necessary for developing a sampling plan for possible multi-day sampling episodes. EPA also collected wastewater samples of influent and effluent at 7 of the 15 facilities for screening purposes only.

Based on data collected from the site visits, EPA selected 11 facilities for multi-day sampling. The purpose of the multi-day sampling was to characterize pollutants in raw wastewaters prior to treatment as well as document wastewater treatment plant performance (including selected unit processes). Selection of facilities for multi-day sampling was based on an analysis of information collected during the site visits as well as the following criteria:

- The facility performed meat and/or poultry slaughtering and/or further processing operations representative of MPP facilities;
- The facility utilized in-process treatment and/or end-of-pipe treatment technologies that EPA was considering for technology option selection; and
- Compliance monitoring data for the facility indicated that it was among the better performing treatment systems or that it employed wastewater treatment process for which EPA sought data for option selection.

Multi-day sampling occurred at six meat facilities and five poultry facilities. EPA performed multi-day sampling at two facilities, and nine facilities performed the multi-day sampling on behalf of EPA. For the nine facilities that performed the sampling, EPA developed sampling plans that detailed the procedures for sample collection, including the pollutants to be sampled, location of sampling points, and sample collection, preservation, and shipment techniques. EPA assisted the nine facilities as necessary (e.g., provided sample bottle labels, provided assistance in shipping, and in one instance, provided on-site contractor support during the sampling event).

During each multi-day sampling episode, facility influent and effluent wastestreams were sampled. EPA did not collect source water information but will collect additional source water data after proposal. EPA will use the post-proposal source water data to better characterize wastewater characteristics for each of the facilities sampled. At some facilities, samples were also collected at intermediate points throughout the wastewater treatment system to assess the performance of individual treatment units. Some of the facilities chosen for sampling perform rendering and/or further processing operations in addition to meat and/or poultry processing. For facilities that also performed rendering operations or further processing, wastewater from the rendering and/or further processing operations was sampled separately, when possible.

Sampling episodes were conducted over either a 3-day or 5-day period. Samples were obtained using a combination of 24-hour composite and grab samples, depending upon the pollutant parameter to be analyzed. Depending on the type of wastewater processed and the treatment technology being evaluated, EPA analyzed wastewater for up to 53 parameters including conventional (BOD_5, TSS, oil and grease, fecal coliforms, and pH), toxic (selected metals and pesticides), and nonconventional (e.g., nutrients, microbiologicals) pollutants. When possible for a given parameter, EPA collected 24-hour composite samples in order to capture the variability in the waste streams generated throughout the day (e.g. production wastewater versus clean-up wastewater.)

Data collected from the influent samples contributed to characterization of the industry, development of the list of pollutants of concern, and development of raw wastewater characteristics. EPA used the data collected from the influent, intermediate, and effluent points to analyze the efficacy of treatment at the facilities, and to develop current discharge concentrations, loadings, and

the treatment technology options for the meat and poultry products industry. EPA used effluent data to calculate the long-term averages (LTAs) and limitations for each of the proposed regulatory options. EPA also used industry-provided data from the MPP Survey to complement the sampling data for these calculations. During each sampling episode, EPA also collected flow rate data corresponding to each sample collected and production information from each associated manufacturing operation for use in calculating pollutant loadings and production-normalized flow rates. EPA has included in the public record all information collected for which the facility has not asserted a claim of Confidential Business Information (CBI) or which would indirectly reveal information claimed to be CBI.

EPA used the site visit reports to prepare multi-day sampling and analysis plans (SAPs) for each facility that would undergo multi-day sampling. The Agency collected the following types of information during each sampling episode:

- Dates and times of sample collection;
- Flow data corresponding to each sample;
- Production data corresponding to each sample;
- Design and operating parameters for source reduction, recycling, and treatment; technologies characterized during sampling;
- Information about site operations that had changed since the site visit or that were not included in the Site visit report; and
- Temperature, pH, and dissolved oxygen (DO) of the sampled wastestreams.

After the conclusion of the sampling episodes, EPA prepared sampling episode reports for each facility which included descriptions of the wastewater treatment processes, sampling procedures, and analytical results. EPA documented all data collected during sampling episodes in the sampling episode report for each sampled site which are located in the MPP Administrative Record. Non-confidential business information from these reports is available in the public record for this proposal. For detailed information on sampling and preservation procedures, analytical methods, and quality assurance/quality control procedures see the MPP Development Document for today's proposed rule.

D. Pollutants Sampled and Analytical Methods

The Agency (or facilities, as directed by the Agency) collected, preserved, and transported all samples according to EPA protocols as specified in EPA's Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants and in the MPP QAPP.

EPA collected composite samples for most parameters because the Agency expected the wastewater composition to vary over the course of a day. The Agency collected grab samples from unit operations for oil and grease and microbiologicals. Composite samples were collected either manually or by using an automated sampler. Individual aliquots for the composite samples were collected at a minimum of once every four hours over each 24-hour period. Oil and grease samples were collected every four hours and microbiologicals were collected once a day.

Table V.D–1 lists the parameters sampled at the majority of the facilities, some of which have not been identified as pollutants of concern.

Table V.D–1. MPP Sampled Parameters

Biochemical oxygen demand (BOD_5)
Carbonaceous biochemical oxygen demand ($CBOD_5$)
Dissolved biochemical oxygen demand ($DBOD_5$)
Chemical oxygen demand (COD)
Total organic carbon (TOC)
Total suspended solids (TSS)
Total dissolved solids (TDS)
Total volatile solids (TVS)
Chloride
Total residual chlorine (TRC)
Ammonia as nitrogen
Nitrate/nitrite
Total Kjeldahl nitrogen (TKN)
Total phosphorus (TP)
Total dissolved phosphorus (TDP)
Orthophosphate
Oil and grease
Metals (e.g., arsenic, chromium, copper, mercury, zinc)
Carbamate pesticide (carbaryl)
Permethrin (cis-and trans-)
Malathion
Stirofos
Dichlorvos
Total coliform
Fecal coliform
Escherichia coli
Fecal streptococci
Salmonella
Aeromonas
Cryptosporidium (meat facilities only)

All wastewater sample analyses, except for the field measurements of temperature, dissolved oxygen, and pH were completed by EPA contract laboratories. EPA or facility staff collected field measurements of temperature, dissolved oxygen, and pH at the sampling site. The analytical chemistry methods used, as well as the sample volume requirements, detection limits, and holding times, were consistent with the laboratory's quality assurance and quality control plan. Laboratories contracted for MPP sample analysis followed EPA approved analysis methods for all parameters.

The EPA contract laboratories reported data on their standard report sheet and submitted them to EPA's sample control center (SCC). The SCC reviewed the report sheets for completeness and reasonableness. EPA reviewed all reports from the laboratory to verify that the data were consistent with requirements, reported in the proper units, and the data are in compliance with the applicable protocol.

Quality control measures used in performing all analyses complied with the guidelines specified in the analytical methods and in the MPP Quality Assurance Project Plan (QAPP). EPA reviewed all analytical data to ensure that these measures were followed and that the resulting data were within the QAPP-specified acceptance criteria for accuracy and precision.

Section 304(h) of the Clean Water Act directs EPA to promulgate guidelines establishing test procedures (methods) for the analysis of pollutants. These methods allow the analyst to determine the presence and concentration of pollutants in wastewater, and are used for compliance monitoring and for filing applications for the NPDES program under 40 CFR 122.21, 122.41, 122.44, and 123.25, and for the implementation of the pretreatment standards under 40 CFR 403.10 and 403.12. To date, EPA has promulgated methods for all conventional and toxic pollutants and for several nonconventional pollutants. Table 1–B at 40 CFR 136.3 lists the analytical methods approved for four of the five conventional pollutants and Table 1–A at 40 CFR 136.3 lists the fifth, fecal coliform. Part 136 also sets forth the analytical methods for toxic pollutants. EPA has listed, pursuant to Section 307(a)(1) of the Act, 65 metals and organic pollutants and classes of pollutants as ''toxic pollutants'' at 40 CFR 401.15. From the list of 65 classes of toxic pollutants, EPA identified a list of 126 ''Priority Pollutants.'' This list of Priority Pollutants is shown at 40 CFR part 423, appendix A. The list includes non-pesticide organic pollutants, metal pollutants, cyanides, asbestos, and pesticide pollutants.

Currently approved methods for metals and cyanides are included in the table of approved inorganic test procedures at 40 CFR 136.3, Table I–B. Table I–C at 40 CFR 136.3 lists approved methods for measurement of non-pesticide organic pollutants, and Table I–D lists approved methods for the toxic pesticide pollutants and for other pesticide pollutants. Direct and indirect dischargers must use the test methods approved under 40 CFR 136.3, where available, to monitor pollutant discharges from the meat and poultry products industry, unless specified otherwise in part 432 or by the permitting authority. See 40 CFR 401.13 and 403.12(b)(5)(vi). Sometimes, methods in part 136 apply to only waste streams from specified point source categories. For pollutants with no methods approved under 40 CFR part 136, the discharger must use the test procedure specified in the permit or, in the case of indirect dischargers, other validated methods or applicable procedures. See 40 CFR 122.44(i)(1)(iv) and 403.12(b)(5)(vi).

Table V.D–2 provides a list of analytes from EPA MPP sampling that were analyzed by methods that were not approved at 40 CFR part 136.

TABLE V.D–2: METHODS FOR MPP ANALYTES NOT APPROVED AT 40 CFR PART 136

Analyte	Method	Frequency
Chloride	300.0	77 samples out of 217 samples.
Nitrate/Nitrite	300.0	62 samples out of 217 samples.
Total Orthophosphate	300.0	77 samples out of 217 samples.
Carbaryl	632	all samples.
Dichlorvos	1657	all samples.
Malathion	1657	all samples.
Tetrachlorvinphos (stirofos)	1657	all samples.
cis-Permethrin	1660	all samples.
trans-Permethrin	1660	all samples.
E. coli	9221F	all samples.
Aeromonas	9260L	all samples.
Salmonella	FDA–BAM	all samples.
Metals	1620	all samples.

The use of Method 300.0 for chloride, nitrate/nitrite, and total orthophosphate was necessary because the analytical methods normally used for these analytes are subject to interferences such as color, turbidity, and/or particulates. These interferences were sometimes present in the samples, given the difficult matrices associated with the meat and poultry products industry (samples that contain blood, animal tissue, and/or other particulates). Laboratories used Method 300.0 for those samples that contained the interferents, which were a subset of the samples collected, as shown in the table above under the ''Frequency'' column.

The pesticides carbaryl, cis-permethrin, trans-permethrin, dichlorvos, and tetrachlorvinphos (stirofos) are not included in Table 1D-List of Approved Test Procedures for Pesticides at 40 CFR Part 136. Therefore, there are no 40 CFR Part 136-approved methods for these analytes. However, the methods are approved for compliance monitoring of these pollutants in the Pesticide Chemicals Point Source Category (*see* Table 7 in 40 CFR part 455). [Note: Method 1660 is approved for permethrin; however, cis-permethrin and trans-permethrin are structurally similar to permethrin.] There is one approved method for malathion at 40 CFR part 136: Standard Method 6630C. EPA Method 1657 was selected for analysis of malathion instead, for a couple of reasons, including:

- EPA 1600-series methods were developed specifically for the effluent guidelines program; therefore, they have more stringent quality control requirements than Standard Methods; and
- Method 1657 is approved for compliance monitoring of malathion in the pesticide chemical point source category (see Table 7 in 40 CFR part 455).
- Two other parameters were analyzed using EPA Method 1657 in addition to malathion [dichlorvos and tetrachlorvinphos (stirofos)]. Performance of one method for three analytes was the most economical approach.

The biological parameters *E.coli,* Aeromonas, and *Salmonella* are not listed at 40 CFR part 136. Therefore, there are no 40 CFR part 136-approved methods for these analytes, however, EPA proposed methods for *E.coli* on August 30, 2001 (66 FR 169, pages 45811–45829). Metals were analyzed using EPA Method 1620 because this method was developed specifically for the effluent guidelines program and contains more stringent quality control requirements than other 40 CFR part 136-approved methods.

E. Other Data Collection

EPA conducted a number of other data collection efforts to supplement information gathered through the survey process, facility sampling activities, site visits, and meetings with industry experts and the general public. The main purpose of these other data collection efforts was to obtain information on documented environmental impacts of meat and poultry processing industry facilities, additional data on animal processing waste characteristics, pollution prevention practices, wastewater treatment technology innovation, and facility management practices. These other data collection activities included a literature search, a review of current NPDES permits, and NPDES Discharge Monitoring Reports.

1. Literature Search on Environmental Impacts

EPA conducted a literature search to obtain information on various aspects of the animal processing industry, including documented environmental impacts, wastewater treatment technology, waste generation and facility management, and pollution prevention. EPA performed extensive internet and library searches for applicable information. The Agency used the resources of its own environmental library and the U.S. Department of Agriculture's National Research Library to obtain technical articles on environmental issues relating to the animal processing industry. Several university libraries and industry experts were also consulted during the literature search. As a result, EPA was able to compile a list of environmental impacts associated with the meat and

poultry processing industry. The scope of the literature search included government reports of permit violations and any associated environmental impacts. EPA also compiled technical studies on innovative treatment technologies for meat and poultry processing wastewater. EPA has included a summary of the case studies in the public docket (Docket No. W–01–06, Record No. 00167) associated with today's proposal. The primary sources for the case studies include newspaper and technical journal articles, government reports, and papers included in industry and academic conference proceedings.

2. Current NPDES Permits

EPA extracted information from the Agency's Permit Compliance System (PCS) to identify meat and poultry processing industry point source dischargers with NPDES permits. This initial extraction was performed by searching the PCS using reported Standard Industrial Classification (SIC) codes used to describe the primary activities occurring at the site. Specifically, the following SIC Codes were used:

- 2011 Meat Packing Facilities.
- 2013 Sausages and Other Prepared Meats.
- 2015 Poultry Slaughtering and Processing.
- 2077 Animal and Marine Fats and Oils.

EPA identified 359 active meat and poultry product facilities with NPDES permits in the PCS database. The PCS estimate of MPP direct dischargers is approximately equivalent to the screener survey estimate of direct dischargers. EPA will refine its estimates of direct dischargers to incorporate information from both the PCS database and the screener survey.

EPA selected a sample from this universe of dischargers. The Agency then reviewed NPDES permits and permit applications to obtain information on treatment technologies and wastewater characteristics for each of the animal processing and rendering sectors. EPA used this information as part of its initial screening process to identify the universe of processing facilities that would be covered under the proposal. In addition, this information was used to better define the scope of the information collection requests and to supplement other information collected on meat and poultry processing waste management practices.

3. Discharge Monitoring Reports

In addition, the Agency collected long-term effluent data from facility Discharge Monitoring Reports (DMRs) via the PCS database in an effort to perform a ''real world'' check on the achievability of today's proposed limits. DMRs summarize the quality and volume of wastewater discharged from a facility under a National Pollution Discharge Elimination System (NPDES) permit. DMRs are critical for monitoring compliance with NPDES permit provisions and for generating national trends on Clean Water Act compliance. DMRs may be submitted monthly, quarterly, or annually depending on the requirements of the NPDES permit.

EPA extracted discharge data and permit limits from these DMRs (via the PCS database) and from the MPP surveys to help identify regulated pollutants, to identify better performing facilities, and to set limitations in a few cases where sampling data was not available. Specifically, EPA identified the amount of discharged ammonia in relation to the respective permit limits. EPA conducted this analysis in part to identify potential facilities for future sampling as well as to assist in identifying a selection of facilities for the certainty component of the detailed survey exercise, and limitations were set for TSS, Oil and Grease(HEM) and COD based on DMR data from the MPP surveys.

EPA was able to collect DMR information on a total of 176 facilities from four MPP sectors: 77 meat packing facilities; 17 facilities producing sausages and other prepared meat products; 65 poultry slaughtering and processing facilities; and 17 animal and marine fat and oils facilities. EPA collected 31,311 data points on 83 separate pollutant parameters.

Indirect dischargers file compliance monitoring reports with their control authority (e.g., POTW) at least twice per year as required under the General Pretreatment Standards (40 CFR 403) while direct dischargers file discharge monitoring reports with their permitting authority at least once per year. EPA did not collect compliance monitoring reports for MPP facilities that are indirect dischargers as: (1) A vast majority of MPP indirect dischargers are small facilities (i.e., small volumes of wastewater); and (2) this information is less centralized and harder to collect.

Because DMR and indirect discharger compliance monitoring reports do not provide information about processes and production, EPA was not able to use these data directly in calculating the limitations and standards. Instead, in the detailed survey, EPA requested that facilities provide the individual daily measurements from their monitoring (for DMR or the control authority) with detailed information about their treatment systems and processes. After further evaluation of the detailed surveys, EPA intends to use the self-monitoring data corresponding to the proposed treatment options to calculate the final limits and to reassess the achievability of the limits by well-operated BAT systems. In cases where EPA determines that improved system operation will allow the limits to be consistently achieved it will include additional treatment costs for the facility in its cost estimations for the final rule where EPA has not already done so. EPA concludes, in following the approach described above, that it will address issues related to the achievability of the numerical limits by well-operated and economically achievable treatment systems. EPA solicits comments on this method of performing a ''real world'' check on the achievability of its proposed limits.

F. Summary of Public Participation

EPA encouraged the participation of all interested parties throughout the development of the proposed meat and poultry products effluent limitations guidelines and standards. EPA conducted outreach to the following trade associations (which represent the vast majority of the facilities that will be affected by this guideline): American Meat Institute (AMI), American Association of Meat Processors (AAMP), National Renderers Association (NRA), U.S. Poultry and Egg Association, and National Chicken Council. EPA met on several occasions with various industry representatives to discuss aspects of the regulation development. EPA also participated in industry meetings and gave presentations on the status of the regulation development. EPA also met with environmental groups including the Natural Resources Defense Council concerning this proposal.

EPA met with the industry associations and environmental groups and representatives from State and local governments when this industry was first identified as a candidate for rulemaking to seek their opinions on the issues that the Agency should consider as it moved forward for rulemaking.

In the development of the surveys which were used to gather facility specific information on this industry, EPA consulted with the industry groups and several of their members to ensure that the information being requested was asked for in such a way as to be

understandable and that it would be available in the form requested.

EPA conducted site visits to 15 facilities: 6 meat processors, 7 poultry processors and 2 independent rendering facilities and conducted sampling at 11 facilities which provided samples from slaughtering operations, first and further processing and rendering. The facilities visited and sampled were identified by industry experts and State or EPA regional personnel as exemplifying the best performance and treatment in the industry.

EPA also met with representatives from USDA to discuss this regulation and how it might be affected or affect requirements on the meat and poultry processing industry implemented by the Food Safety and Inspection Service of USDA. EPA has met with representatives from State and local governments to discuss their concerns with meat and poultry processing facilities and how EPA should approach these facilities in regulation.

VI. Subcategorization

A. Factors Considered in Developing Proposed Subcategories

The CWA requires EPA, when developing effluent limitations guidelines and pretreatment standards, to consider a number of different factors. For example, when developing limitations that represent the best available technology economically achievable for a particular industry category, EPA must consider, among other factors, the age of the equipment and facilities in the category, location, manufacturing processes employed, types of treatment technology to reduce effluent discharges, the cost of effluent reductions and non-water quality environmental impacts. See Section 304(b)(2)(B) of the CWA, 33 U.S.C. 1314(b)(2)(B). The statute also authorizes EPA to take into account other factors that the Administrator deems appropriate and requires the BAT model technology chosen by EPA to be economically achievable, which generally involves consideration of both compliance costs and the overall financial condition of the industry. EPA took these factors into account in considering whether to establish subcategories and found that dividing the industry into subcategories leads to better tailored regulatory standards, thereby increasing regulatory predictability and diminishing the need to address variations among facilities through a variance process. See *Weyerhaeuser Co.* v. *Costle,* 590 F.2d 1011, 1053 (D.C. Cir. 1978).

EPA used industry survey data and EPA sampling data for the subcategorization analysis. Various subcategorization criteria were analyzed for trends in discharge flow rates, pollutant concentrations, and treatability to determine where subcategorization was warranted. Equipment and facility age and facility location were not found to impact wastewater generation or wastewater characteristics; therefore, age and location were not used as a basis for subcategorization. An analysis of non-water quality environmental characteristics (*e.g.,* solid waste and air emission effects) showed that these characteristics also did not constitute a basis for subcategorization (*see* Section X).

Even though size (*e.g.,* acreage, number of employees, production rates) of a facility does not have an influence on production-normalized wastewater flow rates or pollutant loadings, size was used as a basis for subcategorization because more stringent limitations would not be cost effective for smaller poultry facilities (*see* Sections III.A.1 and III.B for definition of ''small'' and ''non-small'' facilities for each subcategory). See Section III.A.1 for a description on how and why EPA established production based standards for small MPP facilities.

EPA also identified types of meat products manufacturing processes (*e.g.,* slaughtering, further processing, rendering) as a determinative factor for subcategorization due to variations in production-normalized wastewater flow rates (PNFs) and estimated pollutant loadings. For meat facilities: the PNF for slaughtering is 322.8 gal/1000 lb. Live Weight Killed; the PNF for further processing 555.4 gal/1000 lb. Finished Product; the PNF for meat cutters in subcategory F only is 130.4 gal/1000 lb. Finished Product; and the PNF for rendering is 346.0 gal/1000 lb. Raw Material. For Poultry facilities: the PNF for slaughtering is 1,289 gal/1000 lb. Live Weight Killed; the PNF for further processing is 315.7 gal/1000 lb. Finished Product; and, the PNF for rendering is 346.0 gal/1000 lb. Raw Material.

Most slaughtering operations utilize significant amounts of water to process an animal. Slaughtering operations generally involve taking the live animal and producing whole or cut-up meat carcasses (which are then further processed). Wastewaters from slaughtering operations are generated from a variety of sources that generally include the areas where animals are killed and bled, hides or feathers are removed, animals are eviscerated, carcasses are washed and chilled, and areas where carcasses are trimmed and cut to produce the whole carcasses or carcass parts. As a result of these operations, wastewaters are generated that contain varying levels of blood, animals parts, viscera, fats, bones, etc. In addition, federal food safety concerns require frequent and extensive clean-up of slaughtering operations, which also contributes to wastewater generation. These clean-up wastewaters will contain not only slaughtering residues and particulate matter, but also contain products used for cleaning and disinfection (detergents and sanitizing agents).

Alternatively, most further processing operations generate wastewaters from sources different than slaughtering operations. These sources, and the resulting wastewater characteristics, are highly dependent on the type of finished product desired. Further operations can include, but are not limited to, cutting and deboning, cooking, seasoning, smoking, canning, grinding, chopping, dicing, forming or breading. Unlike slaughtering operations, most further processing operations, except for clean-up, do not utilize significant amounts of water. Wastewaters generated from further processing operations will contain some further processing residues and particulate matter (e.g., breading, spices, etc.), as well as products used for cleaning and disinfection (detergents and sanitizing agents).

Rendering operations are used primarily to process slaughtering by-products (e.g., animal fat, bone, blood, hair, feathers, dead animals, etc.). The amount of water used and the characteristics of wastewater generated by rendering operations are highly dependent on a number of factors, including the type of product desired (e.g., edible v. inedible), the rendering process used (batch v. continuous; wet process v. dry process), and the source and type of raw materials used (e.g., poultry processors, slaughterhouses, butcher shops, supermarkets, restaurants, fast-food chains, farms, ranches, feedlots, animal shelters, etc.). In general, rendering operations involve cooking the raw materials to recover fats, oil, and grease; remaining residue is dried and then granulated or ground into a meal. A significant portion of wastewater pollutant loadings generated from rendering operations is condensed steam from cooking operations. Unlike slaughtering and further processing operations, rendering clean-up operations are generally less rigorous, generating a smaller proportion of the total expected wastewater flow.

The following section describes the proposed meat and poultry products industry subcategorization.

B. Proposed Subcategories

In today's notice, EPA proposes to keep the current subcategorization scheme for small facilities, but for larger facilities, we are proposing new limitations and collapsing the existing subcategories. Specifically, EPA proposes new limitations and standards that are the same for facilities in the following MPP subcategories: Simple Slaughterhouses (subpart A); Complex Slaughterhouses (subpart B); Low-Processing Packinghouses (subpart C); and High-Processing Packinghouses (subpart D). Also, EPA proposes new limitations and standards that are the same for facilities in the following MPP subcategories: Meat Cutters (subpart F); Sausage and Luncheon Meats Processors (subpart G); Ham Processors (subpart H); and Canned Meats Processors (subpart I). EPA is also retaining the Renderers (subpart J) subcategory and proposing new limitations and standards for facilities in this subcategory. This proposal does not revise the existing limitations and standards for smaller facilities in subparts A–J (*see* Section III.A.1). Finally, EPA proposes adding two MPP subcategories in 40 CFR part 432: Poultry First Processing (subpart K) and Poultry Further Processing (subpart L). These two new subcategories will cover both small and larger poultry processing facilities, although, the smaller facilities in each of the subcategories are required to meet less stringent requirements than larger poultry facilities (*see* Section III.B and Table III.B–1). EPA chose less stringent limitations for smaller poultry processing facilities because more stringent limits would not be cost effective for smaller poultry facilities (*see* Section III.A.1).

Each subcategory is described in more detail immediately below in terms of its manufacturing processes and wastewater characteristics. All subcategories are further segmented based on the amount of meat and poultry products they slaughter, further process or render.

1. Meat Slaughterhouses and Packinghouses—Subparts A, B, C and D

EPA is proposing to retain the existing subcategories. EPA is not proposing to revise the existing BPT requirements for facilities which slaughter 50 million pounds per year or less for the reasons described in Section III.A.1. of this notice. Since the existing limitations for smaller meat facilities (which EPA believes should be maintained) are different for each of the subcategories, the subcategories themselves are being maintained. EPA believes that retaining the existing subcategorization scheme will simplify implementation for the permit writers as well as generate appropriate limitations and standards for the facilities. EPA requests comments on this approach.

The proposed regulation would require all meat direct dischargers that slaughter more than 50 million pounds live weight per year to achieve the same production-based effluent limitations. EPA finds that the slaughtering and initial processing operations found in all four of these subcategories are the key factors in determining wastewater characteristics and treatability. Moreover, EPA believes there are no significant differences between these four subcategories in terms of age, location, and size of facilities. In addition to slaughtering and initial processing, EPA is proposing to establish allowances to account for the additional processes that may also occur on-site. The proposed effluent limitations guidelines would provide allowances for discharges from each of the following processes: slaughtering (which includes initial processing), further processing, and rendering. These allowances would be the same for all four subcategories and are related to the volume of production as follows: The amount of live weight killed for the slaughtering process, the amount of finished product that is further processed on site, and the amount of raw material that is rendered on-site.

Because of the similarities in wastewater characteristics across all meat slaughter and packinghouses, EPA also requests comment on an alternate approach to subcategorizing the meat slaughtering sector. This alternative would incorporate all meat slaughtering activities in one subcategory. This subcategory would retain the individual BPT allowances for simple and complex slaughterhouses and low and high processing packinghouses for facilities which slaughter 50 million pounds or less per year.

2. Meat Further Processing—Subparts F, G, H and I

The proposed subcategorization scheme requires all facilities that generate more than 50 million pounds per year of meat finished products without performing slaughtering to be regulated by the same production-based effluent limitations guidelines (*see* Section III). The limitations guidelines allow discharges based on the amount of finished product that is further processed on site. The wastewater characteristics and treatability for three of the four subcategories are sufficiently similar to group them together for the purpose of revising or setting new limitations and standards. However, subpart F limitations will be based on a lower production-normalized flow than subpart G, H and I limitations because subpart F facilities generate substantially less water per pound of finished product than the other three subparts. Moreover, EPA believes there are no significant differences between these four subcategories in terms of age, location, and size of these MPP facilities. EPA believes that this subcategorization scheme will simplify implementation for the permit writers as well as generate appropriate limitations and standards for the facilities.

3. Renderers—Subpart J

Subpart J applies to independent rendering facilities which are facilities that only render raw materials and process hides and do no first or further processing. The proposed subcategorization scheme requires all independent rendering facilities that render more than 10 million pounds per year of raw material to be regulated by the same production-based effluent limitations guidelines. This is a change from the current guidelines, which only apply to independent renderers that render more than approximately 27.4 million pounds raw material per year (or 75,000 pounds raw material per day for a facility that operates 365 days per year). See Section III.A.1 for a description on how and why EPA established production based standards for small MPP facilities. The limitations and standards allow discharges based on the amount of raw material that is rendered on site.

4. Poultry First Processing—Subpart K

EPA divided the poultry first processors into two segments: Small and not-small (*see* Table III.B–1). Small poultry first processors slaughter 10 million pounds of poultry per year or less while non-small poultry first processors slaughter more than 10 million pounds of poultry per year. See Section III.B for a description on how and why EPA established production based standards for small poultry processing facilities. EPA is proposing that the technology-based effluent limitations guidelines for small poultry first processors (both new and existing) be based on the less efficient nitrification technology option (Direct Option 1). EPA is proposing that the technology-based effluent limitations guidelines for non-small poultry first processors (both new and existing) be

based on the nitrification/denitrification technology option (Direct Option 3). See Section VII.D for a discussion of the technology options. See the MPP Development Document and MPP Economic Analysis for more details on how EPA developed the two segments and specific requirements for each segment.

The effluent limitations guidelines allow discharges for all activities that may be performed on-site including further processing and rendering based on: (1) The amount of live weight killed; (2) the amount of finished product that is further processed on site; and (3) the amount of raw material that is rendered on site.

5. Poultry Further Processing—Subpart L

EPA divided the poultry further processors into two segments: small and non-small. Small poultry further processors generate 7 million pounds of finished product per year or less while non-small poultry further processors generate more than 7 million pounds of finished product per year. See Section III.B for a description on how and why EPA established production based standards for small poultry processing facilities. EPA is proposing that the technology-based effluent limitations guidelines for small poultry further processors (both new and existing) be based on a less efficient nitrification technology option (Direct Option 1). EPA is proposing that the technology-based effluent limitations guidelines for non-small poultry further processors (both new and existing) be based on the nitrification/denitrification technology option (Direct Option 3). See Section VII.D for a discussion of the technology options. See the MPP Development Document and MPP Economic Analysis for more details on how EPA developed the two segments and specific requirements for each segment. The effluent limitations guidelines allow discharges based on the amount of finished product that is produced on site and also include provisions for those poultry further processors that perform on-site rendering operations.

VII. Technology Options, Costs, Wastewater Characteristics, and Pollutant Reductions

A. Wastewater Treatment Technologies in the MPP Industry

EPA developed a series of technology option alternatives for the proposed rule based on the volumes and characteristics of wastewater generated at MPP facilities and the types of treatment technologies currently used by the industry to treat these wastewaters. Evaluation and selection of technology options was based primarily on information provided in the MPP detailed surveys (*see* Section V.B for a description of the MPP detailed survey.) The detailed surveys requested extensive data on wastewater characteristics, including both raw and treated wastewasters, treatment-in-place technologies, as well as information on production processes. The technology options presented in today's proposal are based on various factors including, but not limited to, the frequency of occurrence, technical performance of unit processes in reducing pollutant loads, and economic achievability.

Because of the similarities in the physical and chemical characteristics of the wastewaters, there are virtually no differences between the meat and poultry sectors in the types of treatment technologies used. The unit processes that are used in treatment of meat and poultry processing wastewater are also similar to that normally used in the treatment of domestic wastewater. The wastewater treatment falls into three main categories: primary treatment, secondary treatment, and tertiary treatment. Primary treatment focuses on the removal of floating and settleable solids; secondary treatment provides removal of most organic matter; and tertiary treatment is used for the removal of nitrogen and/or phosphorus and/or suspended solids. Meat and poultry processing facilities that discharge to a publicly owned treatment works (POTW) typically employ only primary treatment; however, some facilities also provide secondary treatment. Facilities that discharge directly to navigable waters under the authority of a National Pollutant Discharge Elimination System (NPDES) permit, at a minimum apply both primary and secondary treatment. Many direct dischargers also apply tertiary treatment to wastewater discharged under the NPDES permit system.

A variety of unit processes are used by MPP facilities to provide primary, secondary, and tertiary wastewater treatment. Table VII.A–1 summarizes the relative frequency of treatment units used in the industry, based on a preliminary assessment of information provided in the detailed survey. The unit processes most commonly used for the treatment of meat and poultry processing wastewater are described below.

TABLE VII.A–1.—DISTRIBUTION OF WASTEWATER TREATMENT UNITS IN MPP INDUSTRY

Treatment category	Treatment unit	Percent of direct/indirect discharging facilities having the treatment unit in place	
		Direct Discharger (percent)	Indirect Discharger (percent)
Primary treatment	Screen	98	64
	Oil and Grease Removal	83	77
	Dissolved Air Floatation	81	46
	Flow Equalization	75	34
Secondary and Tertiary Treatment	Biological Treatment [1]	100	13
	Filtration	23	0
	Disinfection	92	0

Note 1: Biological Treatment includes any combination of the following: aerobic lagoon, anaerobic lagoon, facultative lagoon, any activated sludge process, and/or other biological treatment processes (*e.g.,* trickling filter).
Source: Detailed Survey Data.

1. Primary Treatment

MPP industry raw wastewaters have high levels of suspended solids and high concentrations of BOD. Most MPP facilities, whether they are direct or indirect dischargers employ some sort of primary treatment to remove floating and settleable solids. The typical unit processes used for primary treatment are

screens followed by dissolved air flotation (DAF) and flow equalization tanks. Some facilities use chemicals to improve suspended solids and biochemical oxygen demand (BOD) removal. Primary treatment serves to reduce suspended solids and BOD loads to subsequent unit processes. Primary treatment can also be used to recover materials that can be converted into marketable products through rendering.

Screening is typically the first and most inexpensive form of primary treatment. Screening removes large solid particles from the waste stream that could otherwise damage or interfere with downstream equipment and treatment processes. Generally all wastewater generated in meat and poultry processing facilities is screened before discharge to subsequent treatment processes. In poultry processing facilities, use of screens aids in recovery of both feathers and offal (viscera and meat particles), that are valuable by-products for the poultry rendering industry. In meat processing facilities, screening is generally limited to processing and cleanup water since viscera (usually) is not transported hydraulically.

Dissolved air flotation (DAF) is also used extensively in the primary treatment of meat and poultry processing wastewater to remove suspended solids. The principal advantage of DAF over gravity settling is the ability to remove very small or light particles including grease more completely and in a shorter period of time. Once particles have been floated to the surface, removal is done by skimming. Chemicals, including, aluminum or iron salts or synthetic organic polymers are often added to improve the performance of DAF units.

Most meat and poultry processing facilities operate on a five-day per week schedule, resulting in a weekly variation of wastewater flow (and load). Also, during the operation of the facilities, daily fluctuation in the wastewater flow (and load) is very common. Flow equalization tanks are used to eliminate the need for sizing subsequent treatment units to handle peak flows and to provide continuous constant flow (and load) to the subsequent treatment units, in-line flow.

2. Secondary Biological Treatment

Because MPP wastewaters have a high organic content, it is not usually possible for a direct discharger to meet permit limits without employing secondary treatment. Although effective primary treatment can significantly reduce the BOD load of a MPP facility, typically more organic removal is necessary prior to discharge into a receiving water body. This additional removal can be accomplished through secondary biological treatment. Commonly used systems secondary biological treatment of wastewater include activated sludge systems, lagoons, oxidation ditch, extended aeration, and sequencing batch reactors. In addition, a sequence of anaerobic and aerobic biological processes is commonly used for secondary treatment.

Anaerobic lagoons are the most commonly used anaerobic unit processes. Five-day biochemical oxygen demand (BOD_5) reductions by anaerobic lagoons can be as high as 90 percent.

In the treatment of meat and poultry processing wastewaters, aerobic treatment may directly follow primary treatment or more typically follow some form of anaerobic treatment to reduce BOD and suspended solids concentrations to levels required for direct discharge. Aerobic processes can also remove more than 90 percent of the influent BOD_5. In addition, the aerobic systems partially nitrify the wastewater by converting ammonia to nitrates. Based on detailed survey responses all the direct discharging MPP facilities employ at least some kind of aerobic treatment prior to discharging the final effluent. The most common aerobic treatments units used by MPP facilities are activated sludge, aerated lagoons, oxidation ditch, extended aeration, and sequencing batch reactors.

3. Tertiary Treatment

Some MPP facilities also employ tertiary treatment to obtain further removal of suspended solids and to reduce nutrient loadings, especially nitrogen and phosphorus levels. Although, primary and secondary treatment significantly reduce BOD, suspended solids, and nitrogen compounds (*e.g.,* ammonia), tertiary treatment can provide significant further removals of nitrogen (conversion of nitrates to nitrogen gas) and especially phosphorus, which is not significantly addressed by most secondary biological treatment systems.

Nitrogen can be largely eliminated from the wastewater by the combined nitrification and denitrification process. Nitrates formed during the nitrification process in secondary treatment are converted to nitrogen gas in the anoxic denitrification unit. Normally, the denitrification unit is placed before the nitrification unit to utilize the influent BOD as the carbon source for denitrification. The nitrates formed in the nitrification unit are recycled to the denitrification unit. Bardenpho process, sequencing batch reactors, extended aeration, and oxidation ditch are commonly used for denitrification. Very few facilities in the industry have biological phosphorous removal systems. A biological phosphorous removal system consists of an anaerobic tank before the nitrification and denitrification system. The system can achieve a very low effluent concentration of phosphorous.

Simple clarification after secondary wastewater treatment may not reduce the concentration of suspended solids to the desired level. Therefore, filtration systems are used to reduce the effluent concentration of suspended solids. During the filtration cycle, wastewater is passed through a bed of granular media which traps the suspended solids thus producing high quality effluent. The filtration unit is regenerated periodically by backwashing. Filtration units use various types of media as filter bed. The sand filtration systems are most commonly found in the industry.

The final step in the treatment of meat and poultry processing wastewaters is disinfection with the objective of destroying remaining pathogenic microorganisms. Disinfection systems are found in the majority of the direct dischargers; very few (if any) indirect dischargers disinfect their wastewater because of additional treatment at the POTW accomplishes the pathogen destruction.

B. Wastewater Sources, Water Use, and Wastewater Characteristics

1. Meat Products Facilities

a. Wastewater Sources and Water Use

Most steps in the slaughtering process generate pollutants that flow into wastewater. Animal urine and fecal matter, and hair, which accumulate in the animal holding pens are washed down into floor drains, and subsequently enter the wastewater stream. Significant amounts of blood are generated in the stunning and killing areas. Although it is usually saved for rendering purposes, some blood often enters wastewater. Blood, in addition to other meat and tissue waste and hide particles, is generated during cattle de-hiding. These particles also can contaminate water if they are not collected properly. Wastewater from both the scalding tub and the de-hairing machine can contain hair, soil, mineral oil and manure. BOD levels from these areas can be as high as 3,000 mg/L. Additional blood and tissue pieces can be produced during the evisceration process. Large amounts of wastewater typically come from washing carcasses. This water contains high levels of

grease, and small amounts of blood, tissue solids, and other fluids. As carcasses are cut into smaller pieces, small pieces of tissues and fluids can enter wastewater. At the end of each day, equipment is cleaned and sanitized. This washdown contains bone dust and other fluids such as blood and cleaning fluids (Docket No. W–01–06, Record No. 00132).

Facility clean up and sanitation can contribute significantly to the overall volume and pollutant load for meat first and further processing facilities. The volume and pollutant load of this wastewater varies significantly from facility to facility, and is dependent on several factors including efficiency of processing facility, housekeeping practices, the extent to which dry cleaning processes are used, and the volume of water used in washing facility equipment. Improper use of water hoses, for example, could lead to unnecessary use of water and result in the production of excess wastewater.

Industrial practices within the meat further processing industry sector are diverse and produce variable waste loads. Meat further processing facilities purchase animal carcasses, meat parts, and other materials and produce sausages, cooked meats, cured meats, smoked meats, canned meats, frozen and fresh meat cuts, natural sausage casings, and other prepared meats and meat specialties. None of these facilities engage in any slaughtering on the same premises as the processing activity.

The product mix of these facilities includes many combinations of products. There are facilities that specialize in one or two types of processed meats products, such as hams, fresh sausages, canned meat products, or meat cuts, and facilities that produce a number of products up to the full line of processed meat products. Meat further processing operations include:

- Raw material storage, shipping, receiving, and thawing (wet, dry, chipping);
- Carcass/meat handling and preparation (breaking, trimming, cutting, boning, tempering, skinning, slicing);
- Seasoning, spicing, and sauce preparation;
- Weighing and batching;
- Grinding, mixing, emulsifying;
- Extruding, stuffing, molding, linking, casing peeling;
- Pickling, smoking, cooking;
- Can preparation, filling, covering, and retorting; and
- Cleanup operations.

Many of these operations contribute to the raw waste load of a meat further processor. Wastewater from these operations generally contain meat, fat, and bone particles as well as soluble constituents such as salts, blood, and pickling, preserving, and preparation materials (e.g., sugar, sodium nitrite and nitrate, spices). Current MPP effluent guidelines divide the meat further processors into five separate industry groups: Small Processors (40 CFR part 432, subpart E); Meat Cutters (40 CFR part 432, subpart F); Sausage and Luncheon Meat Processors (40 CFR part 432, subpart G); Ham Processors (40 CFR part 432, subpart H); and Meat Canners (40 CFR part 432, subpart I).

Small processors, 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. They may produce a wide range of products but most of the these facilities prepare fresh meat cuts, sausage and wieners, and hams. The wastewater source for this subcategory is generally from cleanup and sanitation operations (approximately 50–90 percent of total wastewater flow). The scale of production and the typically limited finished product mix preclude the need for substantial quantities of water during the production day.

Further processors that produce more than 6,000 pounds of meat cuts as finished products per day (i.e., non-small processors) are currently regulated under subpart F of 40 CFR part 432. These facilities require virtually no process water but do generate wastewaters during cleanup and sanitation operations. Facilities in this industry grouping generally break, trim, and cut the large meat parts into single-portion meat cuts. Very little equipment (other than saws, knives and work surfaces) comes in contact with the meat products. The relative simplicity of operation and equipment results in small quantities of process water and a small waste load in the cleanup water.

Sausage and luncheon meat processors that produce more than 6,000 pounds of finished product per day (i.e., non-small processors) are currently regulated under subpart G of 40 CFR part 432. These facilities have an extensive product mix and tend to require more intensive meat processing (e.g., seasoning, cuttings, molding, packing) than meat cutters. Wastewater sources include meat processing and cleanup operations.

Ham processors that produce more than 6,000 pounds of finished product per day (i.e., non-small processors) are currently regulated under subpart H of 40 CFR part 432. These facilities produce hams and other ham-related products. The operations involved in ham production use more water than the typical meat processing operations; and because of the direct water-ham contact, the wastewater load is increased. Ham processors rely on pickling, preserving, and preparation materials (e.g., sugar, sodium nitrite and nitrate, spices) to cure and prepare the ham products. The production operations and cleanup in the rest of the ham processing facility is fairly comparable in both practice and resulting waste load to that of the sausage and luncheon meat processors.

Meat canners that produce more than 6,000 pounds of finished product per day (i.e., non-small processors) are currently regulated under subpart I of 40 CFR part 432. These facilities generally require a number of processing steps such as size reduction, mixing and blending, and cooking. These operations require special equipment and generate more wastewater flows and pollutant loading than other meat further processors per pound of finished product. Meat canners also use pickling, preserving, and preparation materials (e.g., sugar, sodium nitrite and nitrate, spices) to cure and prepare the canned meat products.

b. Wastewater Characterization

Organic materials are the primary sources of pollutants in meat first and further processing wastewater. These substances cause a reduction in oxygen levels as microorganisms consume oxygen for decomposition processes. For this reason these organic substances are evaluated by biochemical oxygen demand (BOD), which measures the amount of oxygen required by bacteria and other microorganisms to decompose the organic matter, and BOD_5, which calculates the amount of oxygen used in the first five days of decomposition. Although levels vary between facilities, typical BOD_5 values in the raw wastewater influent to be treated range from 1,600 mg/L to 3,000 mg/L (Docket No. W–01–06, Record No. 00128). Primary sources of high BOD_5 levels include blood, stomach contents, greases and fats, and pickling, preserving, and cooking materials.

Bacteria are also present in meat first and further processing wastewater in quantities of between 2 to 4 million fecal coliform colony forming units per 100 mL based on the most probable number (MPN) technique for estimating microbial populations. There is also the potential for viruses and parasite eggs to be present in the water. The amounts and types of pollutants that slaughterhouses generate greatly depends upon the particular step

considered in the slaughter process. Tables VII.B–1 and VII.B–2 give characteristics of raw wastewaters at meat product facilities.

Wastewater generated from meat further processors (*e.g.,* meat cutters, sausage producers, ham processors, meat canners) are also dominated by organic materials originating from blood, meat, fatty tissue, and meat extracts. These organic materials also are sources of biochemical oxygen demand, nitrogen, and phosphorus. Other contaminants that can directly enter the wastewater from further processing facilities include salts, pickling, preserving, and preparation materials (*e.g.,* sugar, sodium nitrite and nitrate, spices), lubricating oils, and cleaning compounds. Both slaughterhouses and further processors can generate significant quantities of oil and grease. Characteristics of first processing and further processing wastewaters are shown in Tables VII.B–1 and VII.B–2. Hog and cattle operations are presented separately to highlight differences in generation rates of pollutants of concern.

TABLE VII.B–1.—CHARACTERISTICS OF HOG PROCESSING RAW WASTEWATER

Meat operations	Raw waste characteristics						
	Daily flow MGD	BOD_5 mg/L	Suspended solids mg/L	Grease mg/L	TKN mg/L	TP mg/L	Fecal coliform CFU/100 ml
First Processing and Rendering:							
Average	1.95	2,220	3,314	674	229	73	1.6E6
Range, low-high	0.43–4.21	2,014–2,462	2,896–3,732	406–941	NA	67–78	NA
Further Processing:							
Average	0.30	1,492	363	162	24	82	1.38E6

Source: Docket No. W–01–06, Record No. 00176

TABLE VII.B–2.—CHARACTERISTICS OF CATTLE PROCESSING RAW WASTEWATER

Meat operations	Raw waste characteristics						
	Daily flow MGD	BOD_5 mg/L	Suspended solids mg/L	Grease mg/L	TKN mg/L	TP mg/L	Fecal coliform CFU/100 ml
First Processing and Rendering and Hide Processing:							
Average	1.60	5,771	1,998	1,262	150	41	1.2E6
Range, low-high	0.74–2.18	3,673–7,237	1,153–3,332	146–3,021	67–306	30–58	7.3E5–1.6E6

Source: Docket No. W–01–06, Record No. 00177

2. Poultry Facilities

a. Wastewater Sources and Water Use

As with the meat processing sector, poultry first and further processing facilities are significant consumers of water and generators of wastewaters. Poultry first processing (slaughtering) wastewaters are generated at each stage of the process, beginning with waste generated at the bird reception area from crate cleaning and ending with wastes generated from equipment cleaning during the grading and packing stage. The poultry first processing wastewaters generated at each stage of poultry first processing differ in volume and pollutant loads.

The principal sources of wastes in poultry processing are from live bird holding (reception area) and receiving, killing, defeathering, eviscerating, carcass washing, chilling, cut-up, and cleanup operations. When present, further processing and rendering operations also are significant sources of wastes. These wastes include blood not collected, feathers, viscera, soft tissue removed during trimming and cutting, bone, urine and feces, soil from feathers, and a variety of cleaning and sanitizing compounds. Further processing and rendering can be additional sources of fat and other soft tissue as well as substances such as cooking oils.

The poultry first processing volume and pollutant load from the reception area depends on several factors including bird throughput and extent of dry cleaning employed to sanitize transport vehicles, crates, and unloading areas. Minimizing the wait period prior to slaughter reduces manure production and ultimately the volume of water needed to clean the crates and unloading areas.

The first processing (slaughtering) of poultry generates blood, grease, and cleaning water. Similar to meat facilities, the blood is collected and removed for processing as a by-product for use in feed or fertilizer.

Scalding is performed to loosen the feathers from the slaughtered birds. Scalding also results in the removal of some suspended solids, blood, and grit. The pollutant load generated from this step is dependent on the cleanliness of the birds, the effectiveness of blood recovery, the type of scalding process, and the quantity of water used. The scalded birds are then defeathered by plucking machines. The feathers, typically collected on screens, contain soil particles, grit, and some blood. Feathers, like blood, are treated as a valuable by-product and are cooked, and grounded to form a high protein meal.

The evisceration process involves the removal of both edible offal (e.g., heart, gizzard, and liver) and inedible offal (head, guts) either by a vacuum conveyor or by a water mediated transport (flow-away) system in larger facilities, or by hand (edible offal such as feet which are captured for Asian markets) and flow-away (inedible offal) in small facilities. Screens are used in the flow away system to separate out solids. After evisceration, the carcasses are usually washed to remove any remaining blood and extraneous tissue. Viscera are captured for inedible

rendering. Evisceration is estimated to contribute about a third of the total pollutant load (Docket No. W–01–06, Record Nos. 00133–00137).

In a wet chilling process, carcasses are immersed in cold water or unstatic slush ice to retard bacterial growth and thus spoiling of the meat. The primary pollutants generated in this process are organic matter, body fluids, and fats and grease. Pollutant loads are relatively small and the wastewater can be reused in the chilling process or in other poultry processing operations (e.g., scalding tank) after treatment. USDA FSIS regulations govern water re-use practices from a food safety perspective. USDA FSIS provides an online ''Sanitation Performance Standards Compliance Guide'' as suggested means or examples by which water can be safely re-used in various applications, meeting all regulatory requirements (Docket No. W–01–06, Record No. 10029). These USDA FSIS sanitation guidelines are not regulatory but are intended for didactic purposes only.

Clean up and sanitation can contribute significantly to the overall volume and pollutant load of a poultry first processing facility. The volume and pollutant load of this wastewater varies significantly from facility to facility, and is dependent on several factors including, efficiency of the processing facility, housekeeping practices, the extent to which dry cleaning processes are used, and the volume of water used in washing facility equipment. Improper use of water hoses, for example, could lead to unnecessary use of water and the resulting production of excess wastewater.

The main poultry further processing operations contribute in varying degrees to the raw waste load and flow. These poultry further processing operations include:

- Receiving, storage, thawing;
- Cutting, deboning, dicing, grinding, and chopping;
- Cooking, batter, breading; mixing and blending; and
- Stuffing and canning.

Poultry further processors do no slaughtering but instead produce finished poultry products. Many of the operations performed in poultry further processing facilities are similar to those of meat further processing operations; therefore, sources of wastewater are similar for both meat and poultry further processors. Cooking is involved in almost all poultry further processing operations. These poultry processing operations remove specific parts of the birds, such as wings and legs, and then remove the remaining meat from the skeletal structure of the birds. Cooking may precede or follow this cutting operation. The meat is used in large pieces or reduced in size by using special equipment. Various ingredients are mixed with the poultry meat and the numerous types of finished products are formed, cooked, breaded, packaged, and usually frozen. The relative quantities of water and waste load are substantially less in these further processing facilities than in poultry first processing (slaughtering) facilities.

b. Wastewater Characterization

The principal constituents of poultry processing wastewaters are a variety of readily biodegradable organic compounds, primarily fats and proteins, present in both particulate and dissolved forms. To reduce wastewater treatment requirements, poultry processing wastewaters also are screened to reduce concentrations of particulate matter before treatment. An added benefit of this practice again is increased production of rendered by-products. Because feathers are not rendered with soft tissue, wastewater-containing feathers is not commingled with other wastewater; instead, it is screened separately and then combined with wastewater screened to recover soft tissue before treatment.

Poultry processing wastewaters remain high strength wastes even after screening in comparison to domestic wastewaters based on concentrations of BOD, COD, TSS, nitrogen, and phosphorus. Blood not collected, solubilized fat, and urine and feces are the principal sources of BOD in poultry processing wastewaters. As with meat processing wastewaters, the efficacy of blood collection is a significant factor in determining BOD concentration in poultry processing wastewaters.

Another significant factor in determining the BOD_5 of poultry processing wastewaters is the degree that manure (urine and feces), especially from receiving areas, is handled separately as a solid waste. Chicken and turkey manures have BOD_5 in excess of 40,000 mg/kg on an as excreted basis (Docket No. W–01–06, Record No. 00160). Although the cages and trucks used to transport broilers to processing facilities usually are not washed, cages and trucks used to transport live turkeys to processing facilities are washed to prevent disease transmission from farm to farm. Thus, manure probably is a more significant source of wastewater BOD for turkey processing operations than for broiler processing operations.

Primarily because of immersion chilling, fat is a more significant source of BOD in poultry processing in comparison to meat processing wastewaters. Additional sources of BOD in poultry processing wastewaters are the feather and skin oils desorbed during scalding for feather removal. Thus, the oil and grease content of poultry processing wastewaters typically is higher than that in meat processing wastewaters.

Blood not collected as well as urine and feces also are significant sources of nitrogen in poultry processing wastewaters. The principal form of nitrogen in these wastewaters before treatment is organic nitrogen with some ammonia nitrogen produced by the microbially mediated mineralization of organic nitrogen during collection. Nitrite and nitrate nitrogen generally are present only in trace concentrations, less than 1 mg/L. The phosphorus in poultry processing wastewaters also is primarily from blood, manure, and cleaning and sanitizing compounds.

Due to the presence of manure in poultry processing wastewaters, densities of the total and fecal coliform and fecal streptococcus groups of bacteria generally are on the order of several million colony forming units per 100 mL. Members of these groups of microorganisms generally are not pathogenic; but they do indicate the possible presence of pathogens of enteric origin such as *Salmonella ssp.* and *Campylobacter jejuni,* gastrointestinal parasites, and pathogenic enteric viruses. *Giardia lamblia,* and *Cryptosporidium parvum* are not of concern in poultry processing wastewaters.

Poultry processing wastewaters also contain a variety of mineral elements, some of which are present in the potable water used. Water supply systems and mechanical equipment may be significant sources of metals including copper, chromium, molybdenum, nickel, titanium, and vanadium. In addition, manure is a significant source of arsenic and zinc. Although pesticides also are commonly used in the production of poultry to control external parasites, mandated withdrawal periods before slaughter typically should limit concentrations in wastewater to non-detectable or trace levels. Table VII.B–3 gives characteristics of poultry processing raw wastewaters.

TABLE VII.B–3.—CHARACTERISTICS OF POULTRY PROCESSING RAW WASTEWATER

Poultry meat operations	Raw waste characteristics						
	Daily flow MGD	BOD_5 mg/L	Suspended solids mg/L	Grease mg/L	TKN mg/L	TP mg/L	Fecal coliform CFU/100 ml
First Processing:							
Average	0.89	1,662	760	665	54	12	9.8E5
Range, low-high	0.60–1.10	948–2,166	510–1,040	243–1,501	14–102	6–17	2.6E5—1.6E6
Further Processing and Rendering:							
Average	1.10	3,293	1,657	793	80	72	8.6E5

Source: Docket No. W–01–06, Record No. 00161.

3. Independent Rendering Facilities

a. Wastewater Sources and Water Use

Rendering operations are intensive users of water and significant generators of wastewater. Water is used throughout the rendering process, for raw material sterilization, condensing cooking vapors, facility cleanup, truck and barrel washing, odor control and boiler makeup (Docket No. W–01–06, Record No. 00141). Most of these activities also generate wastewater. Rendering facilities produce approximately one-half ton (120 gallons) of water for each ton of rendered material (Docket No. W–01–06, Record No. 00122). Variations in wastewater flow per unit of raw material processed are largely attributable to the type of condensers used for condensing the cooking vapors and, to a lesser extent, to the initial moisture content of the raw material.

The National Rendering Association (NRA) collected data from its membership to provide a general characterization of rendering wastewaters. Results from an NRA survey of its members indicates that the average rendering facility (in terms of production) generates about 215,000 gallons/day of process wastewater and an average of 34,000 gallons/day from other sources (Docket No. W–01–06, Record No. 00122). The NRA estimates that the average sized facility discharges about 243,300 gallons/day or 169 gallons per minute (Docket No. W–01–06, Record No. 00122).

Condensates resulting from cooking and drying are the largest contributors to the total wastewater in terms of volume and pollutant load (Docket No. W–01–06, Record No. 00127). At those rendering facilities where hide curing is also performed as an ancillary operation, additional wastewater flow is generated. Wastewaters from these operations are high in pollutant concentrations, but relatively low in volume, particularly when the curing solution is only dumped a few times each year (Docket No. W–01–06, Record No. 00141).

Water scrubbers commonly are used to control emissions of noxious odors from the condensation of evaporated moisture produced during cooking and drying. These scrubbers can contribute up to 75 percent of the volume of wastewater discharged from these cooking and drying operations (Docket W–01–06, Record No. 00141). Condensates recovered from cooking and drying processes contain high concentrations of volatile organic acids, amines, and mercaptans, and other malodorous compounds. Thus, rendering facility condensers can be sources of significant emissions of noxious odors to the atmosphere without water scrubbing for emission control. Recycled final effluent is used for the scrubber operation; therefore, little increase in final effluent volume is produced by the scrubber operation.

Liquid drainage from raw material receiving areas can contribute significantly to the total raw waste load (Docket W–01–06, Record No. 00141). Large amounts of raw materials commonly accumulate in receiving areas (in bins or on floors). Fluids from these raw materials drain off and enter the internal facility sewers (Docket W–01–06, Record No. 00141). At rendering facilities that process poultry, drainage of liquids can be significant because of the use of fluming to transport feathers and viscera in the processing facility. In such facilities, liquid drainage may account for approximately 20 percent of the original raw material weight.

The other important source of wastewater from rendering operations is water used for cleaning equipment and interior building surfaces, the cleanup of spills, and trucks when materials are received from off-site locations for rendering. Cleanup of rendering equipment and facilities is less intensive than for processing facilities and usually occurs only once per day, even though rendering usually is a 24-hour operation and commonly occurs on a seven day per week schedule. The wastewater generated during cleanup operations usually accounts for about 30 percent of total rendering facility wastewater flow (Docket W–01–06, Record No. 00141).

b. Wastewater Characterization

Although a rendering facility's wastewater pollutant concentration can vary with the quantity and state of the animal material delivered to the facility (Docket No. W–01–06, Record No. 00126), the wastewater constituents are generally the same for all facilities (Docket No. W–01–06, Record No. 00141). For example, a 1975 EPA survey found that the average and range of BOD_5 wastewater values for facilities processing greater than 50 percent poultry by-products could not be differentiated from those facilities processing less than 50 percent poultry by-products or from those for the total industry. Additionally, the study found that facility size did not have an effect on the levels of pollutants in the waste stream. Facility practices are the determining factor for raw wasteload (Docket No. W–01–06, Record No. 00141). During the summer, if raw materials are received by the rendering operation in an advanced state of decay, ammonium levels in the effluents could increase.

In a typical rendering facility the raw materials that are processed include body fluids (including blood), fat, manure, hide curing solutions, tallow and grease, and animal tissue (including meal products such as meat, meat and bone, blood, feathers, hair and poultry meal) (Docket No. W–01–06, Record No. 00126; Record No. 00141). All of these products can enter the wastewater, and as a result, the wastewater typically contains organic materials such as protein (soluble and insoluble), grease, suspended solids, which are sources of biochemical oxygen demand, nitrogenous compounds, phosphorus, salts.

As mentioned above, wastewater is generated at each step of the rendering process. Condensates formed during the cooking/drying process are extremely polluted and contain high concentrations of volatile organic acids, amines, mercaptans, and other noxious compounds. Most of the organic compounds detected in rendering wastewater are volatile fatty acids (Docket No. W–01–06, Record No. 00127).

Washdown in inedible rendering facilities is less intensive than in meat and poultry processing facilities because the same degree of sanitation is not required (Docket No. W–01–06, Record No. 00141). Washdown, the process of cleaning the areas for receiving, grinding and cooking of raw materials and product separation with water, usually occurs at the end of a day's operation when rendering has been completed. The volume of water used for cleanup can be a significant portion of the flow per unit of raw material processed; usually, clean up water accounts for 30 percent of the total wastewater flow (Docket No. W–01–06, Record No. 00141). Other areas are typically dry cleaned. Washdown can also follow an accidental spill, further contributing to the wastewater load.

Each step in the rendering process contributes to the overall pollutant load and volume of wastewater. The relative contributions of each step in the process can be seen in Table VII.B–4. The table presents the pollutant concentrations found in samples collected from a continuous dry rendering facility in Columbus, Ohio (Docket No. W–01–06, Record No. 00126). Samples from cooker condensate, raw blood, and washdown water were analyzed. The cooker condensate was mostly composed of condensed volatile fats and oils with some ammonia. The washdown water was facility clean-up water mixed with drainage from the raw product storage hopper (the relative proportions were not measured). Although the blood accounted for only a small percentage of the total volume of wastewater, it was very high in chemical oxygen demand (COD).

TABLE VII.B–4.—POLLUTANT LOADINGS FOR A DRY CONTINUOUS RENDERING FACILITY

Parameter	Raw blood [1] (mg/l)	Cooker condensate [1,2] (mg/l)	Wash-up water [3] (mg/l)
Total COD	150,000	2,400–6,000	7,600
Soluble COD	136,000	2,400–6,000	3,200
Kjeldahl Nitrogen (TKN–N)	16,500	430–740	270
Crude Protein (Org-N*6.25)	81,250	0	1,440
Ammonia Nitrogen	3,500	430–740	40
COD: TKN	9.1	5.6–8.1	28.1
Total Phosphorus (P)	183	<4	15.1
COD:P	820	>1500	503
Freon Extractables (Fats, Oils, and Grease)	620	110–260	35
Potassium	798	<6	20.9
Calcium	55	<1	26.4
Magnesium	27	<1	7.3
Iron	164	2	9.4
Sodium	818	0.1	37.1
Copper	0.7	<0.2	0.1
Zinc	1.3	<0.15	0.46
Manganese	0.05	0.05	0.01
Lead	<0.6	<3	<1.3
Chromium	0.3	<0.2	0.12
Cadmium	0.05	<0.01	<0.04
Nickel	<0.2	<1	<0.4
Cobalt	<0.02	<0.01	<0.04
Sulfate (SO_4–S)	300	<2	4.6
Total Chloride	1700	<2	86

Source: Docket No. W–01–06, Record No. 00126.

Note 1: Each point is the mean of three samples analyzed in duplicate.

Note 2: Two batches of influent were used in the research. A range in concentration levels is shown for some cooker condensate parameters because of variability in strength between winter and summer batches. Cold ambient temperatures around the forced air condensers affected the COD strength of the cooker condensate. The COD strength of the blood and wash-up water was similar for both batches, so only one concentration level is presented.

Note 3: "<" and ">" symbols both indicate the limits of the analyses were exceeded.

The National Rendering Association (NRA) collected data from its membership to provide a general characterization of rendering wastewaters. Table VII.B–5 presents the results of this survey. The data represent only wastewater generated and final effluent loadings, and do not identify specific sources of generated wastewater. The final effluent data represent pollutant loads after treatment has been applied. The NRA did not collect data on nutrients or metals. Fecal coliform bacteria were detected at bacterial counts of 250,000,000 colony forming units per milliliter for generated wastewaters and 45,000 colony forming units per milliliter for discharged wastewaters.

TABLE VII.B–5.—WASTEWATER CHARACTERIZATION OF "TYPICAL" NRA MEMBER RENDER FACILITY

Parameter	Generated wastewater concentration (mg/L)	Discharged wastewater concentration (mg/L)
Chemical Oxygen Demand (COD)	123,000	8,000
Biochemical Oxygen Demand (BOD)	80,000	5,100
Total Suspended Solids (TSS)	8,400	268
Fats, Oils, and Greases (FOG)	3,200	116
Metals (Average Zinc)	NA	0.68

Source: NRA, 2000.

C. Pollutants of Concern

EPA determined pollutants of concern for the meat and poultry products industry by assessing EPA sampling data. To establish the pollutant of concern, EPA reviewed the analytical data from influent wastewater samples to determine the pollutants which were detected at treatable levels. EPA set treatable levels at five times the baseline value to ensure that pollutants detected at only trace amounts would not be selected. EPA obtained the pollutants of concern by establishing which parameters were detected at treatable levels in at least 10 percent of all the influent wastewater samples. Tables VII.C–1 and VII.C–2 show the result of this analysis. EPA did not sample at independent rendering facilities but instead transferred data from on-site rendering facilities. Consequently, EPA is using all the pollutants of concern from Tables VII.C–1 and VII.C–2 for independent rendering facilities. EPA is planning further sampling at independent rendering facilities after proposal to better refine the list of pollutants of concern list for independent renderers.

TABLE VII.C–1.—POLLUTANTS OF CONCERN FOR MEAT PROCESSING FACILITIES

Pollutant group	Pollutant	CAS No.	Number of times analyzed	Number of detects
Classicals or Biologicals	Aeromonas	C2101	36	36
	Ammonia as Nitrogen	7664417	46	46
	Biochemical Oxygen Demand	C003	46	45
	BOD 5-day (Carbonaceous)	C002	46	46
	Chemical Oxygen Demand (COD)	C004	46	46
	Chloride	16887006	46	46
	Cryptosporidium	137259508	6	6
	Dissolved Biochemical Oxygen Demand	C003D	46	41
	Dissolved Phosphorus	14265442D	46	46
	E. Coli	C050	36	36
	Fecal Coliform	C2106	46	46
	Fecal Streptococcus	C2107	46	46
	Hexane Extractable Material	C036	46	46
	Nitrate/Nitrite	C005	46	33
	Total Coliform	E10606	46	46
	Total Dissolved Solids	C010	46	46
	Total Kjeldahl Nitrogen	C021	36	36
	Total Organic Carbon (TOC)	C012	46	46
	Total Orthophosphate	C034	46	45
	Total Phosphorus	14265442	46	46
	Total Suspended Solids	C009	46	46
	Volatile Residue	C030	46	46
Metals	Chromium	7440473	46	46
	Copper	7440508	46	46
	Manganese	7439965	46	46
	Titanium	7440326	46	46
	Zinc	7440666	46	46
Pesticides	Carbaryl	63252	12	5
	Cis-permethrin	61949766	12	6
	Trans-permethrin	61949777	12	7

TABLE VII.C–2.—POLLUTANTS OF CONCERN FOR POULTRY PROCESSING FACILITIES

Pollutant group	Pollutant	CAS No.	Number of times analyzed	Number of detects
Classicals or Biologicals	Aeromonas	C2101	17	17
	Ammonia as Nitrogen	7664417	48	47
	Biochemical Oxygen Demand	C003	48	48
	BOD 5-day (Carbonaceous)	C002	48	48
	Chemical Oxygen Demand (COD)	C004	48	48

TABLE VII.C–2.—POLLUTANTS OF CONCERN FOR POULTRY PROCESSING FACILITIES—Continued

Pollutant group	Pollutant	CAS No.	Number of times analyzed	Number of detects
	Chloride	16887006	48	48
	Dissolved Biochemical Oxygen Demand	C003D	48	47
	Dissolved Phosphorus	14265442D	48	48
	E. Coli	C050	17	17
	Fecal Coliform	C2106	23	23
	Fecal Streptococcus	C2107	23	23
	Hexane Extractable Material	C036	48	48
	Nitrate/Nitrite	C005	48	28
	Salmonella	68583357	17	3
	Total Coliform	E10606	23	23
	Total Dissolved Solids	C010	48	48
	Total Kjeldahl Nitrogen	C021	47	47
	Total Organic Carbon (TOC)	C012	48	46
	Total Orthophosphate	C034	48	44
	Total Phosphorus	14265442	48	48
	Total Residual Chlorine	7782505	48	14
	Total Suspended Solids	C009	48	48
	Volatile Residue	C030	48	48
Metals	Copper	7440508	48	48
	Manganese	7439965	48	47
	Zinc	7440666	48	48
Pesticides	Carbaryl	63252	21	12

D. Approach to Estimating Compliance Costs

1. Overview

This section describes EPA's methodology for estimating engineering compliance costs and pollutant loading reductions associated with the regulatory options proposed for the meat and poultry products industry. Costs and pollutant loading reductions were estimated for each class of MPP facilities, including meat, poultry, and meat and poultry (mixed) facilities. A description of each of the technology options is provided below and the rationale for selecting the proposed BAT and NSPS options are provided in Section XI. Detailed information on estimated compliance costs are provided in the MPP Development Document (*see* Docket No. W–01–06, Record No. 00168).

2. Methods for Estimating Compliance Costs

a. Overview

This section presents EPA's estimates of industry-wide compliance costs associated with the proposed rule. EPA separated MPP facilities into groups based on the type of meat and poultry processed (*e.g.,* meat, poultry, or both meat and poultry). To ensure all facilities are accounted for, and variation in raw wastewater characteristics are considered, EPA classified all meat and poultry processing operations as either first processing (*e.g.,* slaughtering, carcass preparation and quartering), further processing (*e.g.,* deboning, cooking, sausage making), or rendering (wet or dry) and all possible combinations of these processes. These classifications produced 19 groupings. Table VII.D–1 details the 19 different groupings. Finally, EPA divided each of the 19 groupings into four size classes (small, medium, large, and very large) based on annual total production. These groupings allow EPA to consider variations in: (1) Raw wastewater characteristics as determined by meat type and processes performed; and (2) size, which can determine wastewater volumes generated and thus the size of required treatment technology. EPA used these MPP operations, meat or poultry product types, and size classifications to develop 76 model facilities (= 19 groupings x 4 size classes) in order to describe the broad range of potential MPP facilities in current operation.

TABLE VII.D–1.—DEFINITION OF 19 MPP MODEL FACILITY GROUPINGS

Number	Product type	Model facility grouping code	Processes performed		
			First processing	Further processing	Rendering
1	Meat	R1	X		
2	Meat	R2		X	
3	Meat	R12	X	X	
4	Meat	R13	X		X
5	Meat	R23		X	X
6	Meat	R123	X	X	X
7	Poultry	P1	X		
8	Poultry	P2		X	
9	Poultry	P12	X	X	
10	Poultry	P13	X		X
11	Poultry	P23		X	X
12	Poultry	P123	X	X	X
13	Mixed (Meat & Poultry)	M1	X		

TABLE VII.D–1.—DEFINITION OF 19 MPP MODEL FACILITY GROUPINGS—Continued

Number	Product type	Model facility grouping code	Processes performed		
			First processing	Further processing	Rendering
14	Mixed (Meat & Poultry)	M2		X	
15	Mixed (Meat & Poultry)	M12	X	X	
16	Mixed (Meat & Poultry)	M13	X		X
17	Mixed (Meat & Poultry)	M23		X	X
18	Mixed (Meat & Poultry)	M123	X	X	X
19	Meat and/or Poultry	Render			X

EPA developed characteristics for each model facility based on the MPP Screener Survey, the MPP Detailed Survey, and EPA's sampling data. EPA used Computer Assisted Procedure For Design And Evaluation Of Wastewater Treatment Systems (CAPDET), a computerized cost model, for developing construction cost and annual costs of a treatment unit (Docket No. W–01–06, Record No. 00129). The capital cost of a treatment unit was calculated using the construction costs obtained from CAPDET.

The step-by-step method for calculating the incremental cost for each regulatory option is summarized below:

- Use the MPP Screener Survey data to establish production levels for each of the 76 model facilities;
- Use the MPP Screener Survey data to identify the median wastewater flow (model facility flow) and to estimate the number of MPP facilities nationally represented by each of the 76 model facilities;
- Use the MPP Detailed Survey data to determine frequency of occurrence for treatment units in each of the 76 model facilities;
- Develop construction costs and annual costs of treatment units from CAPDET using model facility wastewater flows and typical influent and effluent pollutant concentrations;
- Estimate capital costs of treatment units from construction costs;
- Estimate capital and annual costs for each regulatory option of the 76 model facilities using capital and annual costs of treatment units, frequency of occurrence, and national estimate of MPP facilities for each of the 76 model facilities; and
- Estimate the regulatory cost for each subcategory based on the model facility costs.

The Agency has developed a regulatory subcategorization scheme for the proposed rule, based on various combinations of the 76 model facility costs. Table VII.D–2 defines the 10 regulatory groupings based on facility type and size. See section 11 of the MPP Development Document for more details on how EPA developed size classifications for each of the 19 groupings.

TABLE VII.D–2.—DEFINITION OF 10 MPP REGULATORY GROUPINGS

40 CFR subcategory	Facility size	Facility type	Model facility grouping code [1]
A, B, C, D	Medium, large, very large	Meat first	R1, R12, R13, R123.
	Small	Meat first processors	R1, R12, R13, R123.
F, G, H, I	Medium, large, very large	Meat further processors	R2, R23, 0.61 *M2.
	Small [2]	Meat further processors	R2, R23, 0.59*M2, 0.5*M23.
J	Medium, large, very large	Independent Renderers	Render.
	Small	Independent Renderers	Render.
K	Medium, large, very large	Poultry first processors	P1, P12, P13, P123.
	Small	Poultry further processors	P1, P12, P13, P123.
L	Medium, large, very large	Poultry further processors	P2, P23, 0.39*M2.
	Small	Poultry further processors	P2, P23, 0.41*M2, 0.5*M23.

Note 1: The following abbreviations apply: R = Meat facilities; P = Poultry facilities; M = Facilities producing both meat and poultry products; 1 = First Processors; 2 = Further Processors; and 3 = Meat or Poultry facilities performing on-site rendering.

Note 2: This group of small meat further processors includes all meat facilities that annually produce less than 50 million pounds of finished product and also includes all facilities currently covered under Subpart E (Small Processors) (*see* Section III.A.1).

The MPP Screener Survey only identified medium sized facilities performing further processing on both meat and poultry (Model Facility Grouping Code = M2 and M23) and small facilities performing further processing, and further processing and rendering on both meat and poultry (Model Facility Grouping Code = M23). EPA allocated the costs for facilities that produce both meat and poultry products into the meat further processors regulatory grouping (40 CFR part 432, Subcategory E through I) and poultry further processors regulatory grouping (40 CFR part 432, Subcategory L) based on total annual production. EPA allocated the costs equally between the two groupings if production data were not available.

b. Available Technologies

Although EPA is proposing limitations and standards based on the performance of specific processes and treatment technologies in reducing pollutant loadings, the Agency is not proposing to require a discharger to use those processes or technologies in treating the wastewater. Rather, the processes and technologies that would be used to treat meat and poultry processing wastewater are left to the discretion of individual facilities; the proposed rule requires only the numerical discharge limits be achieved. In establishing these limits, however, EPA evaluated a range of technology options that a facility could implement to achieve the proposed limitations and standards. The technology options evaluated for existing direct dischargers

(BPT/BCT/BAT) and Pretreatment Standards for Existing Sources (PSES) were selected based on an analysis of treatment units in-place according to the data supplied in the detailed surveys. A summary of these technology options are shown in the Table VII.D–3.

TABLE VII.D–3.—BPT/BCT/BAT/PSES TECHNOLOGY OPTIONS CONSIDERED FOR THE MEAT AND POULTRY PROCESSING INDUSTRY

Treatment units	Technology options [1]								
	1	2	3	4	5	PSES 1	PSES 2	PSES 3	PSES 4
Screen	X	X	X	X	X	X	X	X	X
Dissolved air floatation (DAF)	X	X	X	X	X	X	X	X	X
Equalization tank						X	X	X	X
Anaerobic lagoon	X	X	X	X	X				
Biological treatment with nitrification	X [1]	X	X	X	X		X	X	X
Biological treatment with nitrification and denitrification			X	X	X			X	X
Biological treatment with nitrification and denitrification and phosphorous removal				X	X				X
Filter					X				
Disinfection	X	X	X	X	X				

X: treatment unit is required for that option.
[1] Nitrification is limited for Option 1.
Note 1: EPA only considered Option5 for poultry facilities.

c. Treatment-in-Place Frequency of Occurrence

The frequency of occurrence for specific treatment units was an important factor in EPA's cost estimates. To evaluate treatment-in-place, EPA categorized MPP Detailed Survey responses into two size groups: small and non-small (medium, large, very large). Data provided in the MPP Detailed Survey were not sufficiently detailed to allow further subdividing the non-small grouping into individual groupings for medium, large, and very large facilities. EPA also considered frequency of treatment units by discharge status (direct or indirect).

The Agency evaluated the wastewater treatment systems of all the facilities currently in the MPP Detailed Survey database. To determine the wastewater treatment upgrades necessary for the facilities to be in compliance with each regulatory option, the Agency compared the existing treatment system of the facility to the list of treatment units for each regulatory option (Table VII.D–3). EPA determined the treatment unit frequency of occurrence for each of the 76 model facilities. Treatment unit frequency of occurrence is defined as the ratio of the number of facilities that have the treatment unit in place (or other treatment units that can perform the same function) to the total number of facilities in that subcategory. The frequency of occurrence distribution across medium, large, and very large facilities was assumed to be identical. Facilities that do not have the treatment unit require upgrading costs to achieve the performance of the proposed technology options.

d. CAPDET Computer Model

The Computer Assisted Procedure For Design And Evaluation Of Wastewater Treatment Systems (CAPDET) computer model requires design specifications and pollutant wastewater concentrations as its input. Data collected through survey responses, site visits, sampling episodes, and literature were used to run the CAPDET model. The input wastewater flow for a particular subcategory was taken equal to the model flow of that subcategory. Although default influent concentration values are provided in CAPDET, EPA used sampling and survey data from MPP facilities to extent available for purposes of running the cost model. The influent concentrations for a particular subcategory were determined through the use of EPA sampling data. In general, data from sampling locations that represent influent concentrations of the wastewater treatment system for each regulatory option were selected. When data from multiple facilities were identified for a regulatory option, an average of the concentrations was derived. EPA excluded a limited amount of sampling and survey data that were considered outliers based on engineering judgement. If data were not available, EPA derived data from similar operating facilities having similar wastewater characteristics. Default values provided in CAPDET were used for several parameters for which no sampling value was available (e.g., percent volatile solids, cations, anions, non-degradable fraction of VSS). Soluble COD and settleable solids concentrations were derived based on literature. Desired effluent concentrations for a particular subcategory for each option were determined from EPA sampling episodes and from detailed survey responses. EPA selected data from best performing red meat, poultry, rendering, and mixed facilities for each option based on effluent concentrations and the treatment scheme the facilities had in-place. If data were not available, EPA derived data from similar operating facilities having similar wastewater characteristics. Remaining design specifications were determined from literature, survey responses, site visits, and sampling episodes.

e. Cost Components

Capital cost, annual cost, performance cost, and retrofit costs are the four major components of costs used for estimating the incremental industry-wide cost for the proposed regulation.

The construction costs of treatment units for each subcategory were obtained as an output from CAPDET model runs. Based on the cost information obtained from the costing document for centralized waste treatment industry (Docket No. W–01–06, Record No. 00138), the direct (excluding construction cost) and indirect costs were estimated to be 69 percent of the construction cost of the treatment units. The break up of the direct and indirect costs are provided in Table VII.D–4. The capital cost for a treatment unit was obtained by using the following equation:

Capital Cost of a treatment unit = 1.69 × Construction cost of the treatment unit

TABLE VII.D–4.—COST FACTORS USED TO ESTIMATE CAPITAL COSTS

Cost item	Cost type	Cost factor (% of construction cost)
Construction cost	Direct	100
Piping	Direct	17
Instrumentation and controls.	Direct	13
Engineering	Indirect	19.5
Contingency	Indirect	19.5
Total capital cost		169

The annual (operations and maintenance) costs of the treatment units for each subcategory were obtained from the CAPDET model. The incremental annual costs were associated with the following cost items:

- Labor (operation, maintenance, laboratory, administrative and general),
- Maintenance (materials and vendors),
- Chemical Costs,
- Energy Costs, and
- Sludge disposal costs.

f. Incremental Costs Calculation

EPA estimated the incremental cost for each regulatory option by comparing the existing treatment system of the facility identified in the MPP Detailed Survey with that of the proposed regulatory option (*see* Table VII.D–3) and costed for the additional treatment units needed to meet the regulatory option. Therefore, a facility identified by the MPP Detailed Survey that has a treatment train similar to a regulatory treatment option does not accrue any additional cost for that regulatory option. It is expected that the facilities with a technology-in-place (TIP) comparable to an option should be able to meet the proposed effluent limits of that option. However, in reality, some of these facilities with TIP may not be able to meet the proposed effluent limits because of inadequate operational practices compared to the proposed treatment unit. Therefore, to calculate the cost of improving performance, the Agency assumed a 10 percent increase in the annual costs of all the facilities with TIP as performance cost.

Since many of the existing treatment units in the facilities could be retrofitted to meet stricter regulatory options, EPA investigated the costs required to upgrade such systems. The Agency found that all nitrification systems (Option2 and PSES2) could be retrofitted to a nitrification and denitrification system (Option3, PSES3). Similarly, all nitrification and denitrification systems could be retrofitted to a nitrification, denitrification, and phosphorous removal (Option4, Option5, PSES4) system. Based on information provided by industry experts, EPA estimated that facilities with a nitrification system in place would incur 33 percent of the capital cost of a new nitrification system to upgrade the system to a nitrification and denitrification system (Docket No. W–01–06, Record No. 00130). Retrofit capital costs to convert a nitrification system to a nitrification and denitrification and phosphorous removal system were estimated to be 54 percent of the capital cost of a new nitrification system (ibid). For direct dischargers, the Agency assumed that the retrofit costs to convert a nitrification system to: (1) A nitrification and denitrification system; and (2) a nitrification and denitrification and phosphorous removal system are 45 percent and 65 percent respectively of the cost of a nitrification and denitrification system. See the MPP Development Document for more information on what assumptions EPA used in estimating retrofit costs.

g. Summary of Annualized Engineering Costs

The recommended options with annualized costs for the non-small size category are shown in Table VII.D–5. These costs include the estimated capital investment costs annualized as described in Section VIII of this notice. EPA used the retrofit costs to estimate the total compliance cost for this industry ($80 million). EPA notes that retrofit options are available to MPP facilities and are less costly than construction of new treatment units (e.g. tanks, piping) (Docket W–01–06, Record No. 00166.) EPA's basis for selecting the retrofit costs is that operators will choose the less costly compliance option and retrofit their WWTP when the retrofit option is available. EPA solicits comment on which costs (i.e., retrofit or upper bound) is most appropriate to consider for the final rule.

TABLE VII.D–5.—ANNUALIZED COSTS (1999$) OF THE RECOMMENDED OPTIONS FOR NON-SMALL SIZE CLASS

Regulatory subcategory (RS)	Discharge type	Option	Annualized cost (millions per year)
A, B, C, D	Direct	BAT3	42.2
F, G, H, I	Direct	BAT3	0.5
J	Direct	BAT2	0.6
K	Direct	BAT3	34.5
L	Direct	BAT3	2.2

E. Approach to Estimating Pollutant Reductions

1. Sources and Use of Available Data

EPA used analytical data provided by the industry in the detailed surveys and analytical data from facilities sampled to estimate baseline and post-compliance pollutant concentrations. Detailed Surveys for 48 direct dischargers and 103 indirect dischargers were used in the analysis. In addition, EPA used data from the sampling efforts conducted at 11 MPP facilities. As previously stated, two facilities were sampled by EPA and nine facilities carried out self-sampling with technical oversight provided by EPA.

2. Calculation of Average Concentrations from Analytical Data

For each facility that provided analytical data as part of their detailed survey, EPA used the average concentrations provided in the detailed survey for each pollutant of concern in the baseline loading analysis. When a facility did not provide average concentrations but instead provided non-averaged, self-monitoring data, EPA calculated an average value to use as the baseline concentration. In calculating proposal average baseline concentrations, EPA did not edit any analytical data provided in the detailed survey. In addition, EPA did not use sample detection limits or the maximum and minimum concentration values when average values were not available

in the survey. However, for EPA sampling episodes where concentrations of pollutants were reported below the sample detection limit, EPA used the reported sample detection limit as the concentration. Analytical data from the sampling episodes used for both baseline and regulatory options loading calculations were averaged on a daily basis for each sample location.

3. Establishment of Baseline Concentration Data

EPA derived baseline concentrations for each POC for each of the 151 (= 48 direct + 103 indirect) facilities used to generate pollutant load reduction estimates. EPA used the following hierarchy of methods to calculate baseline concentrations for each of the 151 facilities:

- When a facility provided concentration data (average values provided in the detailed survey and averages calculated by EPA as described previously) for any of the 37 POCs, EPA used this average concentration.
- In the absence of any baseline concentration data in the detailed survey, EPA transferred analytical data from EPA sampling episodes for similar meat and poultry processors and similar treatment in-place. When such sampling data were available for more than one episode, EPA used an average concentration value of these episodes.
- For POCs where EPA sampling episode data were not available to transfer concentration data, the Agency used average concentrations from both detailed survey and EPA sampling episode data from facilities with the same processing category and treatment option to calculate an average baseline concentration for each pollutant in a subcategory.
- When data from facilities in the same meat and poultry processing category were not available, an average concentration of facilities in similar meat and poultry processing categories was used instead.
- When all of the above imputation methods failed to derive pollutant concentrations, then facility data from other, similar treatment options were used. The size of the facility (small or non-small) was not considered in transferring data within similar meat and poultry processing categories and treatment options.

After pollutant data were estimated for each facility, EPA calculated average baseline concentrations from the individual facilities, separating indirect dischargers from direct dischargers and small facilities from non-small facilities. This process yielded a total of four averages for each meat and poultry processing category: (1) Direct, small; (2) direct, non-small; (3) indirect, small; and (4) indirect non-small. When a particular meat and poultry processing category was not represented by the facilities in the detailed survey, EPA used available data from similar meat and poultry processing categories in the detailed survey to derive average pollutant concentrations for the missing meat and poultry processing category. Averages were comprised of meat subcategory averages that best represent the subcategory without facilities. This calculation used both small and non-small facilities. These estimates were then used to generate baseline pollutant concentrations for each of the 19 meat and poultry processing categories (*see* Table VII.D–1) being analyzed by EPA.

4. Derivation Average Effluent Concentrations Representing Implementation of Regulatory Options

For each regulatory option being considered, EPA calculated average effluent concentrations for effluent pollutant concentrations that represent the best performing facilities (from the respective of types of treatment in-place and degree of expected pollutant removals). For purposes of proposal, EPA relied on both EPA sampling episode data and facility-submitted data to calculate average effluent concentrations. Average effluent concentrations were calculated for the following six meat and poultry processes:

- first processing (meat);
- further processing (meat);
- rendering (meat);
- first processing (poultry);
- further processing (poultry); and
- rendering (poultry).

Average effluent concentrations were derived for each of the above six meat and poultry processes from effluent concentration data collected during the sampling episodes. Specifically, for each regulatory option, effluent concentration data from representative facilities were used to derive average effluent concentrations for each POC. In the absence of data for a particular meat and poultry process at a facility, pollutant concentration data from another facility within the same grouping as well as applicable performance data (i.e., pollutant removal efficiencies from a facility representative of the regulatory option) were used to derive appropriate concentration data. These average effluent concentrations were derived irrespective of facility size.

In order to derive average effluent concentrations for the other 13 meat groupings (other than the six above), EPA used typical flow values provided in the detailed survey to determine the percentage of flow attributable to each of the three processes (first, further and rendering). The Agency used these flow values and pollutant concentrations from the above six subcategories to derive average effluent concentrations for the various combinations of processes such as first and further, first and render, etc. Average effluent concentrations for the rendering subcategory (meat and poultry combined) were derived by averaging poultry rendering average effluent concentrations with meat rendering average effluent concentrations. Likewise, average effluent concentrations for further processing mixed subcategory were derived by averaging average effluent concentrations from poultry further processing with average effluent concentrations from meat further processing. For regulatory option BAT1, average effluent concentrations were based on those developed for regulatory option BAT2 for all pollutants except ammonia, nitrite-nitrate, and TKN. Because under regulatory option BAT1 EPA assumed less efficient nitrification was occurring and all of the sampled facilities were categorized as operating at levels at least equivalent to BAT2, EPA estimated average effluent concentrations for ammonia, nitrite-nitrate, and TKN. These estimates were generally derived by calculating the average ammonia effluent concentrations from facilities that submitted analytical data as part of their detailed survey and that listed their treatment system type as conventional (EPA assumed that these facilities are not operating their treatment systems to specifically achieve nitrification, and therefore would be representative of performance of the BAT1 regulatory option). EPA also assumed that the total nitrogen for regulatory option BAT1 would be equal to the total nitrogen for regulatory option BAT2 (i.e., the total and organic nitrogen would not change from BAT1 to BAT2, just the form that the nitrogen was in). Based on the total nitrogen and ammonia concentrations, EPA then derived nitrite-nitrate and TKN concentrations based on theoretical relationships between the forms of nitrogen.

5. Calculation of Pollutant Loadings

EPA estimated baseline and regulatory option pollutant loadings for all 37 POCs using the average concentrations for each subcategory and national flow (average) values derived from the screener survey for small and non-small facilities. The following

equation was used for conventional pollutants, nutrients, metals and pesticides:

Load = Flow x Conc. x 8.345
where:
Load = Pollutant loading, lbs/day
Flow = Flow rate, million gallons per day
Conc. = Average pollutant concentration, mg/L
8.345 = Conversion factor, lbs/gal and mg/L.

For microbiological pollutants, the loads were computed using the following equation:

Load = Flow x Conc. x 37.8
where:
Load = Pollutant loading, Million cfu/day
Flow = Flow rate, million gallons per day
Conc. = Average pollutant concentration, cfu/100 mL
37.8 = Conversion factor, L/gal and mL/L.

For Cryptosporidium, the loads were computed using the following equation by the following equation:

Load = Flow x Conc. x 3.78
where:
Load = Pollutant loading, Million/day
Flow = Flow rate, million gallons per day
Conc. = Pollutant concentration, per L
3.78 = Conversion factor, L/gal.

EPA estimated pollutant loading for the entire industry using the national estimates of the number of facilities in each meat subcategory multiplied by the subcategory loadings.

VIII. Economic Analysis

A. Introduction

EPA's economic analysis assesses the costs and a variety of impacts of this proposal. This section reviews that analysis while the record for the proposal contains the detailed results of this analysis. In particular, the MPP Economic Analysis (EA) presents the results of the assessment. The MPP EA estimates the economic and financial costs of compliance with the proposal on individual facilities and companies. The MPP EA also considers impacts on new sources, foreign trade impacts and market impacts. The MPP EA also includes an analysis detailing the effects on small meat products businesses. Finally, the MPP EA contains the results of a cost-effectiveness analysis for the meat and poultry products industry.

B. Economic Data Collection Activities

As noted above (*see* Section V.B), EPA sent a survey to a representative sample of meat and poultry products facilities. However, that data has not been fully processed and, with some exceptions, is generally not available for use in the analysis for today's proposal. EPA has thus relied on secondary data sources, most importantly on data from the 1997 U.S. Census of Manufacturers.

a. Census of Manufacturers Data

For the economic analysis used in today's proposal, EPA primarily used data taken from the 1997 Census of Manufacturers published by the U.S. Census Bureau. These data are published according to four NAICS codes applicable to the meat and poultry products industry: 311611 Animal (except Poultry) Slaughtering, 311612 Meat Processed from Carcasses, 311613 Rendering and Meat Byproduct Processing, and 311615 Poultry Processing. The Census data contains a large number of financial statistics that are aggregated to the NAICS-code level. The Census data also contains some information disaggregated by size of establishment; this information is employees, payroll, cost of materials, value of shipments, and a handful of other statistics. Finally, EPA was able to obtain from the Census Bureau the mean, standard deviation, covariance, and correlation of value of shipments, payroll, and cost of materials disaggregated by size of establishment. EPA used this information to create model facilities that were matched to the engineering model facilities (*see* Section VII).

b. MPP Screener and Detailed Survey

EPA was able to use items from the screener and detailed survey in its analysis for the proposal. The questions in both the screener and detailed surveys related to amount of production (of various meat types and processing operations), employees at the facility, and employees at the company that owns the facility are most relevant to the economic analysis. The detailed survey collected a large amount of information about the individual facilities and companies that own those facilities, including general information about the type of ownership, facility and company employment, interest and discount rates, and income statements for 1997–1999 and balance sheets for 1999 (both income statement and balance sheet information were collected for the facility and the company). EPA utilized all of the information from the screener survey in this proposal but was only able to use selected items from the detailed survey due to the additional complexity and time required to process the detailed surveys. This data will be used in EPA's post-proposal analyses and presented in its forthcoming NODA.

c. Other Data Sources

Although EPA relied primarily on its two surveys and the Census of Manufacturers, other data sources informed the analysis where appropriate. These other sources include numerous journals, academic publications, data and reports from USDA and other government agencies, and industry publications such as *Meat & Poultry* and *Meat Processing.*

C. Annualized Compliance Cost Estimates

EPA estimates that 246 direct discharging meat and poultry products facilities would be regulated by this proposal. EPA also considered regulating the 731 largest indirect discharging facilities. EPA calculated the economic impact on each of the facilities based on the cost of compliance using the technology basis for each of the options considered for the proposal. For direct dischargers, EPA calculated impacts for compliance with BPT/BCT/BAT; for indirect dischargers, EPA calculated impacts for compliance with PSES. As detailed in Section XI, EPA based the proposed standards for direct discharges on Option 3 (except for the Rendering Subcategory, which are based on Option 2) and EPA is proposing no limitations or standards for indirect dischargers. EPA also calculated costs and impacts for the 4670 smallest facilities; these results are presented in the EA. These small facilities are not included in the estimates discussed in this section unless specifically noted.

The technologies that are the basis for today's proposal are estimated to have a total pre-tax annualized cost of $80.0 million and a total post-tax annualized cost of $50.5 million. The pre-tax annualized costs are the most complete estimates of annualized control costs, but the post-tax costs more accurately reflect the costs businesses will incur because they net out tax savings. For that reason, both pre-tax or post-tax costs are used in the economic impact analysis. Pre-tax costs, however, more accurately reflect the total cost to society of the rule and are used in the EO 12866 analysis, the cost-effectiveness analysis, and elsewhere.

D. Economic Impact Methodologies

EPA's analysis of the economic impacts of the proposed guidelines and standards for the meat and poultry products industry examines the costs of the proposed regulations on the economic viability of facilities and firms

using relatively standard financial analysis tools. A MPP firm is a business unit or enterprise that owns or operates a collection of MPP facilities. Since the costs are estimated for model facilities, the economic impact analysis is also performed on analogously constructed economic model facilities. This section describes the construction of those facilities and the impact analysis itself as well as a description of what the analysis will look like when the detailed survey data is available.

1. Economic Model Facilities

EPA based its economic model facilities on the U.S. Census Bureau's 1997 Economic Census of the four NAICS codes for meat and poultry product industries (NAICS 311611, 311612, 311613, and 311615). EPA used Census revenue and cost information at both the employment class (that is, disaggregated into size groupings based on annual production) and the industry level. At the employment class level, EPA used the Census' value of total shipments (a proxy for total revenues), payroll and material costs data. (In some cases, value of total shipments may be understated or overstated if survey respondents do not receive the full value for their shipments, as may be the case if one facility ships to another facility owned by the same company. EPA did not, however, adjust these values.) EPA used industry level data on benefits, depreciation, rent, and purchased services and attributed it to the employment class level using a small number of reasonable assumptions (*e.g.*, employment benefits are proportionate to payroll, refuse removal costs are proportionate to material costs). EPA divided each component of facility income by the number of establishments in the employment class to calculate the average for that class. EPA then estimated model facility earnings before interest and taxes (EBIT) in each class as the average value of shipments minus payroll, material costs, benefits, depreciation, rent, and purchased services. Because revenues, payroll and cost of materials are the most significant components of EBIT, the relative error introduced by attributing industry level data to the employment class level should be small.

EPA used data from Census' Annual Survey of Manufacturers (ASM), 1997 Economic Census, and the Internal Revenue Service code combined with additional assumptions to estimate model facility net income and cash flow from EBIT. EPA assumed model facility EBIT is equal to business entity taxable income as the basis for calculating tax payments; EPA then applied 1999 federal and an average of state corporate tax rates to EBIT. EPA estimated industry level interest payments using a combination of ASM data on past investment by industry, Census data on relative investment in buildings and equipment, and assumptions about investment behavior (e.g., all investment in each year was funded through bank loans, the interest rate on those loans was equal to the nominal prime rate for that year plus 1 percent). Interest payments were then attributed to each employment class based on the percentage of industry investment accounted for by that employment class in the 1997 Census. EPA estimated net income as EBIT less estimated tax and interest payments for each model facility. Cash flow was then calculated as net income plus depreciation. EPA inflated all model income measures from the Census year, 1997, to the baseline year, 1999, using the implicit price deflator for the meat and poultry products industry.

However, the model facility in reality represents a distribution of facility incomes around the mean. Therefore, EPA estimated this distribution of income around the model facility mean by obtaining from Census a special tabulation of the variances and covariances for value of shipments, material costs, and payroll in each employment class. EPA assumed that the distribution of each variable is normal; given the relatively large number of observations within each employment class, this assumption is reasonable. Because model facility EBIT is calculated as a linear function of the means of its components, the variance of EBIT for each employment class can be calculated as a linear function of the variances and covariances of the components using well established formulae. Because the actual income measures differed from the approximate income measure (EBIT) on which variance was estimated, EPA adjusted the variance of each income measure using standard rules concerning the expected value of mean and variance.

In order to perform the economic impact analysis, EPA matched its economic model facilities to the engineering model facilities used to estimate costs. All red meat (or meat) facilities that perform animal slaughter, whether alone or in combination with other processes, were assigned economic model facilities from NAICS 311611. Red meat facilities that perform further processing but no slaughtering activities processes were assigned economic model facilities from NAICS 311612, as were facilities that process a mix of both red meat and poultry (approximately 70 percent of their production is red meat). Facilities that process poultry, with or without slaughter, were assigned economic model facilities from NAICS 311615. Finally, facilities that only perform rendering operations were classified as NAICS 311613. The model economic facilities were further matched to the model engineering facilities by size. EPA used production from each engineering model, combined with representative meat product prices for 1999, to estimate model facility revenues. The engineering model was then assigned an economic model that most closely matched its estimated revenues.

The economic analysis is based on a wide variety of sources including the screener survey and publicly available data. However, the facility counts in each class and subcategory are based on estimates derived from the stratified random sampling procedure used to determine survey recipients. Sixty-five facilities were specifically selected to receive surveys (''certainty facilities''). Information on these 65 certainty facilities was not available in time to complete subcategorization and analysis of these facilities because information on these facilities was collected in the detailed survey and it could not be processed as quickly as the screener survey. Therefore, to project potential impacts to these 65 certainty facilities, EPA totaled impacts by subcategory (or class) and discharge type, then inflated these impacts by 8 percent. EPA is thus implicitly assuming that the 65 certainty facilities are similar to the model facilities used in the remainder of the analysis, and impacts are therefore proportionate to impacts projected for other facilities. However, EPA could not identify the subcategories or classes in which these impacts may occur in time to include precise estimates for all aspects of the analysis. Instances where the certainty facilities are excluded from the analysis are indicated clearly.

2. Methodology for Calculating Impacts

EPA calculated economic impacts of facilities and firms incurring the costs of compliance with the proposal. EPA estimated impacts at the facility-level in several ways: using four financial ratios and by estimating closures in two different ways. EPA also estimated firm impacts using return on assets (ROA) and Altman's Z'. EPA also estimated costs in two different ways (*see* Section VII): one estimate assumes that facilities must install each individual technology included in a given option, another option assumes that facilities would be

able to meet the limitations with some fraction of this full cost. More specifically, facilities with nitrification (option 2) already in place would be able to upgrade their existing systems to denitrification and phosphorus removal without incurring the full capital cost of those technologies. These cost estimates are referred to as retrofit costs.

EPA used four financial ratios to estimate impacts. Each of these is a ratio of annualized compliance cost to another measure: revenues, earnings before interest and taxes (EBIT), cash flow, and net income. (EPA used pretax costs for the revenue and EBIT ratios and used the post-tax costs for the net income and cash flow ratios.) These measures are listed in decreasing order and their respective ratios will correspondingly increase for a given cost level. EPA found that these four cost ratios are highly correlated and do not individually provide unique information. That is, for all model facilities EPA found that the cost/revenue ratio is smaller than the cost/EBIT ratio, which is smaller than the cost/cash flow ratio. (This correlation could be a factor of the highly aggregated data on which model facilities are based because this aggregated data masks variability across facilities.) In order to simplify the presentation, EPA chose the ratio of cost/net income as its preferred (central) measure of economic achievability (the results for all of the ratios are presented in the MPP EA).

EPA also estimated the probability that a facility would close, because the cost of compliance exceeded one of the other financial measures. In the analysis, EPA used both cash flow and net income. EPA estimated these probabilities by using the variance and covariance information provided by the Census Bureau to derive the variance of both cash flow and net income. The probability that annualized compliance costs are greater than either of these measures provides a rough estimate of the probability of that facility closing. While EPA believes this approach is promising, EPA has less confidence in these closures estimates for several reasons which are discussed in detail in the MPP EA. Primarily, these estimates predict that improbably large percentages of facilities have negative net income at the baseline. Because EPA has less confidence in these closure numbers, they are not relied upon for economic achievability determinations, but the estimates are presented in the MPP EA.

EPA notes that the use of average ratios could mask considerable variability in economic impacts. This is a shortcoming of the use of model facilities. EPA has attempted to ameliorate this shortcoming to a practicable extent by using multiple model facilities within each subcategory and by being relatively conservative in its choice of average ratios that are deemed economically achievable. EPA also considered using the probability estimates discussed in the previous paragraph but is not relying on them for its economic achievability determinations. EPA is considering, however, refined probability estimates.

As EPA continues to process the data from the detailed survey, we intend to use that data in the economic analysis for the final rule. The use of this more detailed economic data will allow the use of more facilities that better represent financial conditions across the industry and more sophisticated financial techniques such as discounted cash flow models. These models are fully documented in the MPP EA. A discounted cash flow model compares the present value of forecasted cash flow (or, alternatively, net income) with the present value of the regulatory option. If the present value of the regulatory costs exceeds that of the projected cash flow, it does not make financial sense to upgrade the facility. That is, if the present value of projected cash flow is positive before, but negative after, the incurrence of regulatory costs, the facility is presumed to close. For the analysis, cash flow at the facility-level is defined as the sum of net income and depreciation. Cash flow is widely used within industry in evaluating capital investment decisions because both net income and depreciation (which is an accounting offset against income, but not an actual cash expenditure) are potentially available to finance future investment. However, assuming that total cash flow is available over an extended time horizon to finance investments related to environmental compliance could overstate a facility's ability to comply because depreciation is the facility's way of accounting for the cost of replacing existing capital. The facility may not be able to afford this replacement if depreciation is instead allocated to environmental compliance. EPA solicits comment on the economic analysis in this proposal and the methods it is considering for subsequent analyses, particularly the use of cash flow as a measure of resources available to finance environmental compliance and suggestions for alternative methodologies.

EPA also estimated firm-level impacts to take into account the aggregate impacts on firms that own multiple facilities. These impacts could be especially important in a concentrated industry such as the meat and poultry products industry, in which some firms own dozens of facilities. To examine firm-level impacts, EPA employed an Altman Z'-score analysis, which employs a statistical technique called multiple discriminant analysis to predict company bankruptcy based on a weighted combination of financial ratios. The Altman Z'-score is a widely-used tool used to predict firm ''financial distress'' or bankruptcy. It takes into account a company's total assets, total liabilities and earnings, which are influenced by total compliance capital costs incurred by a company because of the proposal as well as pre-tax annualized compliance costs.

The score places firms into three levels of financial health: where financial distress is unlikely, where financial distress is indeterminate, and where financial distress is likely. EPA considered firms that move from an indeterminate or unlikely distress prediction to a likely distress prediction to be at risk of bankruptcy or other serious financial disruption. The actual effects of financial distress are inherently unpredictable and a firm may avoid legal bankruptcy by taking other measures such as laying off employees, closing facilities, or selling assets. These firms still may incur very significant impacts even if they do not file for bankruptcy.

EPA developed a market model to examine the impacts of the proposal on the price and output of various meat and poultry products. The market analysis for each product depends not only on the compliance costs for that product but also on the impact of costs on the prices of the other three meat and poultry products because as prices for one product rise, consumers will purchase less of that product and more of the other three products. EPA selected a perfectly competitive structure for the meat and poultry products market model after performing an extensive literature search. EPA developed standard domestic supply, domestic demand, import supply, and export demand equations for each meat and poultry product. Domestic demand for each meat and poultry product is specified as a function of the price of the other three meat and poultry products in addition to its own price. EPA used USDA data to determine baseline market prices and quantities. Key model parameters (e.g., price elasticities) were selected from existing published sources after an extensive search. For each meat and poultry product market to be in equilibrium, U.S. domestic demand plus foreign

demand (exports) must equal U.S. domestic supply plus foreign sales (imports) at its current market price.

Compliance costs shift the supply curve for each meat and poultry product by the average per-unit compliance cost for that product. Given the supply shift for each product, EPA solves for the post-regulatory set of meat prices that results in equilibrium in all four markets. This solution provides estimates of post-regulatory impacts. Finally, the post-regulatory prices are substituted back into the individual component equations domestic supply, domestic demand, import supply, and export demand for each meat and poultry product. Changes in prices and these quantities for each meat and poultry product measure the market-level impacts of today's proposal.

E. Costs and Impacts of BPT/BCT/BAT Options

Tables VIII.E–1 through VIII.E–5 present the cost and cost/net income results for the options considered by EPA for BPT, BCT, and BAT. These are options 2 through 4 for subcategories A–D, F–I, and J, and options 2 through 5 for subcategories K and L. EPA was unable to identify any direct dischargers that did not have at least option 1 in current use. Costs for this option are therefore zero for direct dischargers and are not presented.

EPA is required to determine economic achievability for individual subcategories and the industry as a whole. Thus, impacts are presented by subcategory. This presentation necessarily masks variability in costs and impacts across different types and sizes of facilities in each subcategory. More detail on these results is presented in Chapters 5 and 6 of the MPP EA. The MPP EA also presents results for the other measures of economic impact discussed in Section IV.E. The following 5 tables exclude the 65 certainty facilities from both costs and facility counts.

TABLE VIII.E–1.—COST AND IMPACTS FOR SUBCATEGORY A–D, BPT/BCT/BAT OPTIONS

[$1999 millions—66 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
2	4.86	0.25	5.49	0.28
3	24.7	1.30	36.3	1.90
4	42.4	2.38	72.3	4.11

TABLE VIII.E–2.—COST AND IMPACTS FOR SUBCATEGORY F–I, BPT/BCT/BAT OPTIONS

[$1999 millions—19 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
2	0.210	0.13	0.221	0.14
3	0.310	0.29	0.415	0.4
4	1.94	1.36	4.28	2.91

TABLE VIII.E–3.—COST AND IMPACTS FOR SUBCATEGORY J, BPT/BCT/BAT OPTIONS

[$1999 millions—21 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
2	0.304	0.68	0.304	0.68
3	2.51	5.70	3.55	8.03
4	2.97	6.74	3.87	8.78

TABLE VIII.E–4.—COST AND IMPACTS FOR SUBCATEGORY K, BPT/BCT/BAT OPTIONS

[$1999 millions—88 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
2	2.52	0.32	2.63	0.34
3	20.1	2.73	29.5	3.98
4	26.1	3.56	37.5	5.14
5	15.5	2.15	40.7	5.61

TABLE VIII.E–5.—COST AND IMPACTS FOR SUBCATEGORY L, BPT/BCT/BAT OPTIONS

[$1999 millions—15 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized ompliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
2	0.156	0.36	0.17	0.39
3	1.28	3.01	1.79	4.23
4	1.78	4.12	2.65	6.04
5	1.00	2.83	2.37	6.71

F. Results of BCT Cost Test

In July 1986, EPA explained how it developed its methodology for setting effluent limitations based on BCT (51 FR 24974). EPA evaluates the reasonableness of BCT candidate technologies—those that remove more conventional pollutants than BPT—by applying a two-part cost test: A POTW test and an industry cost-effectiveness test.

EPA first calculates the cost per pound of conventional pollutant removed by industrial dischargers in upgrading from BPT to a BCT candidate technology, and then compares this cost to the cost per pound of conventional pollutants removed in upgrading POTWs to advanced secondary treatment (*i.e.,* ''the POTW test''). The upgrade cost to industry must be less than the POTW benchmark of $0.25 per pound (in 1976 dollars) or $0.63 per pound (in 1999 dollars). In the industry cost-effectiveness test, the ratio of the cost per pound to go from BPT to BCT divided by the cost per pound to go from raw wastewater to BPT for the industry must be less than 1.29 (that is, the cost increase must be less than 29 percent).

For purposes of this analysis, EPA is assuming that for subcategories A–D, F–I, and J the existing BPT limits are equivalent to the baseline. Thus, EPA is considering only options 2 through 4 as BCT candidate options. All BCT analyses include the 65 certainty facilities.

Table VIII.F–1 presents the calculations for the BCT cost test using both the retrofit and upper-bound costs for subcategories A–D, F–I, and J (those subcategories with existing BPT limits). Option 2 passes the POTW test in subcategories A–D and J, while no other option does in those subcategories, nor do any of the options in subcategory F–I. Options 3 and 4 therefore do not pass the BCT cost test and it is not necessary to perform the industry cost-effectiveness test for these options, nor is it necessary to perform the industry cost-effectiveness test for subcategory F–I. The choice of retrofit versus upper-bound costs does not affect the result of the test (these two costs are identical for option 2, so the cost test result is the same for either set of costs).

TABLE VIII.F–1.—POTW COST TEST CALCULATIONS, SUBCATEGORIES A–J

Option	Conventional pollutant removals (M lbs)	Retrofit costs			Upper-bound cost		
		Pre-tax total annualized costs ($1999 M)	Ratio of costs to removals ($/lb.)	Pass POTW test?	Pre-tax total annualized costs ($1999 M)	Ratio of costs to removals ($/ lb.)	Pass POTW test?
Subcategory A–D							
2	22.5	9.93	0.44	Y	9.93	0.44	Y
3	23.7	42.3	1.78	N	59.5	2.51	N
4	25.6	73.5	2.87	N	118	4.60	N
Subcategory F–I							
2	0.461	0.404	0.88	N	0.404	0.88	N
3	0.503	0.537	1.07	N	0.692	1.38	N
4	0.545	3.53	6.47	N	7.01	12.86	N
Subcategory J							
2	5.94	0.552	0.09	Y	0.552	0.09	Y
3	6.16	4.28	0.70	N	5.80	0.94	N
4	6.62	4.98	0.75	N	6.31	0.95	N

Table VIII.F–2 presents the industry cost-effectiveness test for option 2 for subcategories A–D and J. This option fails the test for subcategories A–D but passes the test for Subcategory J. Thus, BCT is not revised for subcategories A–D or F–I, but BCT is set equal to option 2 for subcategory J.

TABLE VIII.F–2.—INDUSTRY COST-EFFECTIVENESS TEST CALCULATIONS, SUBCATEGORIES A–D AND J

BCT option	RAW–BPT conventional pollutant removals (M lbs)	RAW–BPT pre-tax total annualized costs (1999$ M)	RAW–BPT ratio of costs to removals (1999$ M) [A]	BPT–BCT ratio of costs to removals (1999$/ lb.) [B]	BPT–BCT raw-BPT ratio [B]/[A]	Pass industry cost-effectivenss test?
Subcategory A–D						
2	1,521	270,240,482	0.178	0.40	2.25	No.
Subcategory J						
2	19.63	10,001,886	0.509	0.12	0.24	Yes.

Table VIII.F–3 presents the calculations for the BCT cost test using both the retrofit and upper-bound costs for subcategories K and L. The test is calculated from the proposed BPT option, which is option 3. (If the test were to be conducted from a less stringent option the outcome would not change. These calculations are presented in the MPP EA.) Neither option 4 or option 5, the only options more stringent than BPT for these subcategories, passes the POTW test. These options therefore do not pass the BCT cost test and it is not necessary to perform the industry cost-effectiveness test in these subcategories. Thus, BCT is set equal to BPT for these subcategories. More detail on the calculation and inputs of the BCT tests is contained in the record (Docket No. W–01–06, Record No. 25,002—BCT Analysis for Meat and Poultry Products Point Source Category).

TABLE VIII.F–3.—POTW COST TEST CALCULATIONS, SUBCATEGORIES K AND L

Option	Conventional pollutant removals (M lbs)	Retrofit costs			Upper-bound costs		
		Pre-tax total annualized costs ($1999 M)	Ratio of costs to removals ($/ lb.)	Pass POTW test?	Pre-tax total annualized costs ($1999 M)	Ratio of costs to removals ($/ lb.)	Pass POTW test?
Subcategory K							
3	2.44	34.5	N/A	N/A	48.4	N/A	N/A
4	3.95	44.2	11.20	N	61.3	15.52	N
5	4.79	66.1	13.80	N	66.1	13.80	N
Subcategory L							
3	0.136	2.18	N/A	N/A	2.95	N/A	N/A
4	0.196	3.03	15.48	N	4.32	22.06	N
5	0.230	3.85	16.72	N	3.85	16.72	N

G. Costs and Economic Impacts of PSES Options

Tables VIII.G–1 through VIII.G–5 present the cost/net income results for the options considered by EPA for PSES. These are options 1 through 4 for subcategories A–D, F–I, and J, and options 1 through 54 for subcategories K and L. EPA is required to determine economic achievability for individual subcategories and the industry as a whole. Thus, impacts are presented by subcategory. This presentation necessarily masks variability in costs and impacts across different types and sizes of facilities in each subcategory. More detail on these results is presented in Chapters 5 and 6 of the MPP EA. The MPP EA also presents results for the other measures of economic impact discussed in Section IV.E. All figures in the following five tables exclude the 65 certainty facilities.

TABLE VIII.G–1.—COST AND IMPACTS FOR SUBCATEGORY A–D, PSES OPTIONS

[$1999 millions—60 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-Tax annualized compliance cost	Cost/net income (%)
1	1.83	0.27	4.30	0.57
2	43.3	5.28	91.3	10.4
3	52.4	6.53	59.0	7.21
4	64.4	7.36	74.3	8.14

TABLE VIII.G–2.—COST AND IMPACTS FOR SUBCATEGORY F–I, PSES OPTIONS

[$1999 millions—234 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-Tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
1	6.37	0.46	11.1	0.80
2	31.4	2.32	61.4	4.53
3	50.6	3.71	50.9	3.72
4	67.6	5.05	67.8	5.06

TABLE VIII.G–3.—COST AND IMPACTS FOR SUBCATEGORY J, PSES OPTIONS

[$1999 millions—75 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized	Cost/net income (%)
1	0.511	0.33	0.78	0.50
2	7.59	4.77	14.0	8.78
3	13.9	8.74	17.1	10.79
4	15.0	9.47	18.0	11.36

TABLE VIII.G–4.—COST AND IMPACTS FOR SUBCATEGORY K, PSES OPTIONS

[$1999 millions—138 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
1	3.24	0.28	6.50	0.55
2	54.5	4.20	114	8.71
3	76.8	6.16	81.5	6.53
4	80.5	6.52	83.9	6.80

TABLE VIII.G–5.—COST AND IMPACTS FOR SUBCATEGORY L, PSES OPTIONS

[$1999 millions—208 facilities]

Option	Retrofit costs		Upper-bound costs	
	Post-tax annualized compliance cost	Cost/net income (%)	Post-tax annualized compliance cost	Cost/net income (%)
1	5.17	0.87	9.12	1.50
2	34.2	5.23	63.3	9.63
3	45.4	6.99	45.6	7.00
4	58.0	8.95	58.1	8.96

H. Economic Impacts for New Sources

EPA is proposing NSPS limitations equivalent to the limitations that are established for BPT/BCT/BAT for all subcategories. These limitations are economically achievable for existing sources. In general, EPA concludes that new sources will be able to comply at costs that are similar to, or less than, the costs for existing sources. They may be able to comply at lower cost since new sources can apply control technologies more efficiently than sources that need to retrofit for those technologies. Therefore, NSPS limitations will not present a barrier to entry for new facilities.

EPA is not proposing to establish PSES or PSNS limitations for indirect dischargers, so there will be no impacts on new indirect dischargers. EPA solicits comment on whether EPA should set more stringent standards for either direct or indirect new sources.

I. Firm-Level Impacts

For those firms with available data, EPA estimated a baseline Z'-score and a corresponding score after the firm incurred the costs of complying with the proposal. EPA examined the company-level financial data in the detailed survey for the companies with complete and consistent data. This effort yielded 20 companies with appropriate data. These firms include most of the largest beef, pork, and poultry processing companies. These firms own 421

facilities, or an average of 21 facilities each. EPA estimated the number of facilities owned by each company using publicly available information such as trade publications and web sites as well as information from the detailed survey.

Because EPA does not have an exact accounting of the type and size of the facilities owned by each company, EPA estimated total compliance costs for each of these companies by constructing a production-weighted average facility compliance cost for red meat, poultry and rendering facilities. This average was constructed by multiplying the compliance cost for each model facility by its production amount, summing across a given product type (meat or poultry), and dividing by total production in that product type. This average was then multiplied by the number of facilities owned by a company to estimate the total costs for a given company. The costs for the proposed option do not move any companies from unlikely or indeterminate distress to likely distress.

EPA notes that in its recent proposed rules concerning concentrated animal feeding operations (CAFOs), EPA analyzed the potential impacts from costs passed on from the CAFO to the processor (66 FR 3092–30923). Many of these processors are the same companies that are considered in this proposal and EPA estimated that from $34 million to $306 million could be passed from the CAFO to the processor as a result of the CAFO proposal, but EPA was unable to apportion these costs among specific companies. EPA intends to fully account for the potential costs of the final CAFO rule when the MPP guidelines are promulgated. EPA solicits comment on the most accurate method to include these potential costs in the MPP economic analysis.

J. Community Impacts

The communities where the meat products facilities are located may be affected by the proposed regulation if facilities cut back operations, local employment and income may fall, sending ripple effects throughout the local community. Facility-level changes in employment could be used to calculate total employment changes. However, the model facilities used by EPA are not tied to any specific location and thus EPA does not have enough information to estimate community impacts with any level of confidence. EPA plans to conduct an analysis of community-level impacts as part of its post-proposal activities and present these results in a subsequent NODA.

K. Market and Foreign Trade Impacts

Foreign trade impacts are difficult to predict, since agricultural exports are determined by economic conditions in foreign markets and changes in the international exchange rate for the U.S. dollar. However, EPA predicts small projected changes in overall supply and demand for these products and a slight increase in market prices. Thus, foreign trade impacts as a result of the proposed regulations will be minor. Using the market model for meat and poultry products, EPA estimates that the domestic supply and demand for beef, pork, chicken, and turkey all decrease by very slight amounts (all less than 0.1 percent). The decrease in domestic supply ranges from 0.02 percent to 0.05 percent and the decrease in domestic demand ranges from 0.02 percent to 0.04 percent.

Despite its position as one of the largest agricultural producers in the world, historically the U.S. has not been a major player in world markets for red meat (beef and pork) or poultry products. In fact, until recently, the U.S. was a net importer of these products. The presence of a large domestic market for meat and poultry products has limited U.S. reliance on developing export markets for its products. As the U.S. has taken steps to expand export markets for red meat and poultry products, one major obstacle has been that it remains a relatively high cost producer of these products compared to other net exporters, such as New Zealand, Australia, and Latin American countries, as well as other more established and government-subsidized exporting countries, including Canada and the countries in the European Union. Increasingly, however, continued efficiency gains and low-cost feed are making the U.S. more competitive in world markets for these products, particularly for red meat. While today's proposed regulations may raise production costs and potentially reduce production quantities that would otherwise be available for export, EPA believes that any quantity and price changes resulting from the proposed requirements will not significantly alter the competitiveness of U.S. export markets for red meat.

In contrast, U.S. poultry products now account for a controlling share of world trade and exports account for a sizable and growing share of annual U.S. production. Given the established presence of the U.S. in world poultry markets and the relative strength in export demand for these products, EPA does not expect that the predicted quantity and price changes resulting from today's proposed regulations will have a significant impact on the competitiveness of U.S. poultry exports.

As part of its market analysis, EPA evaluated the potential for changes in traded volumes, such as increases in imports and decreases in exports, and concluded that volume trade will not be significantly impacts by today's proposed regulations. EPA estimates that imports of beef will increase by 0.01 percent or less compared to baseline (pre-regulation) levels. In no other sector is there a measurable change in imports. EPA estimates that exports decline by 0.14 percent in the chicken sector, 0.12 percent in the pork sector, 0.09 in the beef sector, and 0.05 percent in the turkey sector. None of these decreases in exports are considered to be significant.

L. Cost-Reasonableness and Cost-Effectiveness Analysis

EPA compared the compliance costs for the proposal against the following three different metrics: Removal of all pollutants in pounds, removal of only toxic pollutants in toxic pound-equivalents, and removal of only nutrients in pounds. Although in recently promulgated effluent guidelines, EPA has relied primarily on the toxic pollutant cost-effectiveness measure for evaluating BAT, that measure is less appropriate for comparing the relative cost-effectiveness of options to control pollutants from the meat and poultry products industry because it discharges relatively more conventional pollutants and nutrients than toxic pollutants. Furthermore, the BCT cost test evaluates the cost-reasonableness of the removal of conventional pollutants (*see* Section VIII.G) a description of the methodology, data, and results of these analyses in more detail is contained in the EA.

a. BPT Cost-reasonableness

Tables VIII.L–1 and VIII.L–2 present the results of the BPT cost-reasonableness analysis for direct dischargers in subcategories A–J and K&L, respectively. These results are presented separately because while the cost-reasonableness test is useful for evaluating the options in subcategories A–J, it is also a statutory criteria for evaluating the BPT options under consideration for subcategories K and L. EPA has historically considered cost/reasonableness ratios as high as $37/lb to be reasonable for BPT. Results are presented using both the retrofit and upper-bound costs.

TABLE VIII.L–1.—COST-REASONABLENESS ESTIMATES, SUBCATEGORIES A–J

Option	Removals (M lbs)	Retrofit costs		Upper-bound costs	
		Pre-tax total annualized costs ($1999 M)	Ave. cost/ lb. removal ($/lb.)	Pre-tax total annualized costs ($1999 M)	Ave. cost/ lb. removal ($/lb.)
Subcategory A–D					
2	12.3	9.9	0.81	9.9	0.81
3	38.7	42.2	1.09	59.5	1.54
4	41.0	73.5	1.79	118	2.88
Subcategory F–I					
2	0.25	0.4	1.59	0.4	1.59
3	2.01	0.5	0.27	0.7	0.34
4	2.02	3.5	1.74	7.0	3.47
Subcategory J					
2	18.3	0.6	0.03	0.6	0.03
3	18.3	4.3	0.23	5.8	0.32
4	18.1	5.0	0.27	6.3	0.35

TABLE VIII.L–2.—COST-REASONABLENESS ESTIMATES, SUBCATEGORIES K AND L

Option	Removals (M lbs)	Retrofit costs		Upper-bound costs	
		Pre-tax total annualized costs ($1999 M)	Ave. cost/ lb. removal ($/lb.)	Pre-tax total annualized costs ($1999 M)	Ave. cost/ lb. removal ($/lb.)
Subcategory K					
2	1.63	4.8	2.95	4.8	2.95
3	7.32	34.5	4.71	48.4	6.61
4	8.1	44.2	5.46	61.3	7.56
5	8.0	66.1	8.23	66.1	8.23
Subcategory L					
2	.09	0.3	3.28	0.3	3.28
3	0.31	2.2	7.11	2.9	9.60
4	0.32	3.0	9.54	4.3	13.59
5	0.32	3.9	11.97	3.9	11.97

For subcategories A–J, no option has a cost-reasonableness greater than $ 3.47/lb using upper-bound costs, or greater than $ 1.79 using retrofit costs. Subcategories K and L show similar magnitudes. The least cost-reasonable option for subcategory K is the most stringent option, option 5, with a cost-reasonableness of $ 8.23. The cost-reasonableness for all of the other options for subcategory K are less than $ 8.00/lb. The cost-reasonableness of the options for subcategory L are slightly higher, the least cost-reasonable is option 4 with upper-bound costs, at $ 14/lb. All of these figures are well within the cost-reasonableness of previously promulgated BPT standards.

b. Toxic Cost-Effectiveness

The results of the toxic cost-effectiveness analysis are expressed in terms of the costs (in 1981 dollars) per pound-equivalent removed, where pounds-equivalent removed for a particular pollutant is determined by multiplying the number of pounds of a pollutant removed by each option by a toxic weighting factor. The toxic weighting factors account for the differences in toxicity among pollutants and are derived using ambient water quality criteria. Cost effectiveness results are presented in 1981 dollars as a reporting convention. Cost-effectiveness is calculated as the ratio of pre-tax annualized costs of an option to the annual pounds-equivalent (lb-eq) removed by that option, and can be expressed as the average or incremental cost-effectiveness for an option.

Average cost-effectiveness can be thought of as the ''increment'' between no regulation and the selected option for any given rule. Incremental cost-effectiveness measures the relative cost-effectiveness for two options and is the appropriate measure for comparing one regulatory option to another regulatory option for the same subcategory. Toxic cost-effectiveness results by subcategory and option are presented for direct dischargers in Table VIII.L–3 and indirect dischargers in Table VIII.L–4. The options are listed in order of increasing removals. Toxic cost-effectiveness is presented using both retrofit and upper-bound costs.

TABLE VIII.L–3.—TOXIC COST-EFFECTIVENESS, DIRECT DISCHARGERS

Option	Total pounds removed	Retrofit costs			Upper bound costs		
		Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effective-ness	Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effective-ness ($1981/pounds equivalent)
Subcategory A Through D							
BAT 2	93,586	NA	NA	NA	$9.93	$62	$62
BAT 3	93,687	$42.25	$263	NA	$59.52	$371	$286,414
BAT 4	94,195	$73.53	$455	$35,930.0	$117.98	$731	$67,154
Subcategory E Through I							
BAT 2	2,609	NA	NA	NA	$0.40	$90	$90
BAT 3	2,618	$0.54	$120	NA	$0.69	$154	$18,512
BAT 4	2,615	$3.53	$787	($597,188.0)	$7.01	$1,564	($1,216,372)
Subcategory J							
BAT 2	1,550	NA	NA	NA	$0.55	$208	$208
BAT 3	1,621	$4.28	$1,540	NA	$5.80	$2,089	$43,028
BAT 4	1,553	$4.98	$1,871	(5,991.0)	$6.31	$2,370	($4,333)
Subcategory K							
BAT 2	63,192	NA	NA	NA	$4.82	$45	$45
BAT 3	64,094	$34.46	$314	NA	$48.37	$440	$28,181
BAT 4	64,029	$44.21	$403	($87,773.00)	$61.25	$558	($115,860)
BAT 4	65,169	$66.09	$592	NA	$66.09	$592	$2,479
Subcategory L							
BAT 2	373	NA	NA	NA	$0.30	$472	$472
BAT 3	383	$2.18	$3,329	NA	$2.95	$4,494	$160,314
BAT 4	371	$3.03	$4,769	($43,685.00)	$4.32	$6,796	($70,689)
BAT 5	398	$3.85	$5,645	NA	$3.85	$5,645	($10,190)

TABLE VIII.L–4.—TOXIC COST-EFFECTIVENESS, INDIRECT DISCHARGERS

Option	Total pounds removed	Retrofit costs			Upper bound costs		
		Pretax annualized cost (Millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effective-ness ($1981/pounds equivalent)	Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effective-ness ($1981/pounds equivalent)
Subcategory A through D							
PSES1	240,421	NA	NA	NA	$7.05	$17	$17
PSES2	310,768	NA	NA	NA	$151.49	$284	$1,198
PSES3	309,081	$86.42	$163	NA	$96.25	$182	$19,107
PSES4	309,541	$105.86	$200	$24,671	$120.64	$227	$30,955
Subcategory E through I							
PSES1	76,890	NA	NA	NA	$18.79	$143	$143
PSES2	78,831	NA	NA	NA	$102.09	$756	$25,036
PSES3	78,855	$83.25	$616	NA	$83.68	$619	($440,522)
PSES4	78,813	$109.82	$813	($368,189)	$110.20	$816	($367,437)
Subcategory J							
PSES1	3,918	NA	NA	NA	$1.33	$198	$198
PSES2	4,983	NA	NA	NA	$23.25	$2,723	$12,011
PSES3	5,112	$23.09	$2,635	NA	$27.91	$3,185	$21,075
PSES4	4,951	$24.78	$2,920	($6,157)	$29.22	$3,443	($4,757)
Subcategory K							
PSES1	377,651	NA	NA	NA	$10.84	$17	$17
PSES2	382,550	NA	NA	NA	$188.95	$288	$21,212
PSES3	382,735	$126.00	$192	NA	$133.01	$203	($176,292)

TABLE VIII.L–4.—TOXIC COST-EFFECTIVENESS, INDIRECT DISCHARGERS—Continued

Option	Total pounds removed	Retrofit costs			Upper bound costs		
		Pretax annualized cost (Millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effectiveness ($1981/pounds equivalent)	Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1981/pounds equivalent)	Incremental cost effectiveness ($1981/pounds equivalent)
PSES4	381,751	$131.39	$201	($3,196)	$136.54	$209	($2,093)
Subcategory L							
PSES1	49,950	NA	NA	NA	$15.26	$178	$178
PSES2	51,257	NA	NA	NA	$105.33	$1,199	$40,224
PSES3	51,367	$74.25	$843	NA	$74.56	$847	($162,814)
PSES4	51,237	$93.89	$1,069	($88,323)	$94.11	$1,072	($87,885)

The average toxic cost-effectiveness values for the selected options generally range from $120/lb-eq to $400/lb-eq. The average toxic cost-effectiveness values for subcategory L are an exception, and are estimated at $3,329/lb-eq or $4,494/lb-eq. For all subcategories except J, the incremental toxic cost-effectiveness is extremely high by historic standards (see Appendix B of the EA for a comparison) however, control of toxic pollutants is not the main goal of the proposal. Rather, EPA focused primarily on cost-reasonableness (for total pounds) and nutrient cost-effectiveness in selecting among options.

c. Nutrient Cost-Effectiveness

EPA also has calculated the cost-effectiveness of the removal of nutrients for the options considered in today's proposal. As a basis of comparison, EPA has estimated that the average cost-effectiveness of nutrient removal by POTWs with biological nutrient removal is $4/lb for nitrogen and $10/lb for phosphorus.

Tables VIII.L–5 and VIII.L–6 present the results of the nutrient cost-effectiveness analysis for direct and indirect dischargers, respectively. The options are listed in order of increasing removals. Toxic cost-effectiveness is presented using both retrofit and upper-bound costs.

TABLE VIII.L–5.—NUTRIENT COST-EFFECTIVENESS, DIRECT DISCHARGERS

Option	Total pounds removed	Retrofit costs			Upper bound costs		
		Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1999/pounds eqivalent)	Incremental cost effectiveness ($1999/pounds equivalent)	Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1999/pounds equivalent)	Incremental cost effectiveness ($1999/pounds equivalent)
Subcategory A Through D							
BAT 2	1,972,012	NA	NA	NA	$9.93	$5.0	$5.0
BAT 3	42,818,320	$42.25	$1.0	NA	$59.52	$1.4	$1.2
BAT 4	44,916,551	$73.53	$1.6	$14.9	$117.98	$2.6	$27.9
Subcategory E through I							
BAT 2	35,700	NA	NA	NA	$0.40	$11.3	$11.3
BAT 3	2,115,639	$0.54	$0.3	NA	$0.69	$0.3	$0.1
BAT 4	2,120,199	$3.53	$1.7	$656.1	$7.01	$3.3	$1,385.8
Subcategory J							
BAT 2	86,772	NA	NA	NA	$0.55	$6.4	$6.4
BAT 3	482,224	$4.28	$8.9	NA	$5.80	$12.0	$13.3
BAT 4	531,196	$4.98	$9.4	$14.3	$6.31	$11.9	$10.3
Subcategory K							
BAT 2	809,883	NA	NA	NA	$4.82	$6.0	$6.0
BAT 3	8,371,827	$34.46	$4.1	NA	$48.37	$5.8	$5.8
BAT 4	8,870,390	$44.21	$5.0	$19.6	$61.25	$6.9	$25.8
BAT 5	8,856,078	$66.09	$7.5	NA	$66.09	$7.5	($338.4)
Subcategory L							
BAT 2	0	NA	NA	NA	$0.30	NA	NA
BAT 3	320,160	$2.18	$6.8	NA	$2.95	$9.2	$8.3
BAT 4	318,194	$3.03	$9.5	($432.9)	$4.32	$13.6	($700.6)
BAT 5	334,187	$3.85	$11.5	NA	$3.85	$11.5	$29.5

TABLE VIII.L–6.—NUTRIENT COST-EFFECTIVENESS, INDIRECT DISCHARGERS

Option	Total pounds removed	Retrofit costs			Upper bound costs		
		Pretax annualized cost (millions of $1999)	Average cost effectiveness ($1999/pounds equivalent)	Incremental cost effectiveness ($1999/pounds equivalent)	Pretax annualized cost (millions of $1999)	Average cost effectivess ($1999/pounds equivalent)	Incremental cost effectiveness ($1999/pounds equivalent)
Subcategory A Through D							
PSES1	907,327	NA	NA	NA	$7.05	$7.77	$7.77
PSES2	1,573,317	NA	NA	NA	$151.49	$96.29	$216.88
PSES3	33,837,795	$86.42	$2.55	NA	$96.25	$2.84	($1.71)
PSES4	35,215,559	$105.86	$3.01	$14.11	$120.64	$3.43	$17.70
Subcategory E Through I							
PSES1	1,997,640	NA	NA	NA	$18.79	$9.41	$9.41
PSES2	1,510,007	NA	NA	NA	$102.09	$67.61	($170.82)
PSES3	4,616,635	$83.25	$18.03	NA	$83.68	$18.13	($5.93)
PSES4	4,603,357	$109.82	$23.86	($2,001.07)	$110.20	$23.94	($1,996.98)
Subcategory J							
PSES1	8,233,864	NA	NA	NA	$1.33	$0.16	$0.16
PSES2	146,708	NA	NA	NA	$23.25	$158.51	($2.71)
PSES3	10,194,886	$23.09	$2.26	NA	$27.91	$2.74	$0.46
PSES4	10,379,498	$24.78	$2.39	$9.18	$29.22	$2.82	$7.09
Subcategory K							
PSES1	5,468,191	NA	NA	NA	$10.84	$1.98	$1.98
PSES2	2,827,350	NA	NA	NA	$188.95	$66.83	($67.45)
PSES3	18,404,976	$126.00	$6.85	NA	$133.01	$7.23	($3.59)
PSES4	19,217,341	$131.39	$6.84	$6.63	$136.54	$7.11	$4.34
Subcategory L							
PSES1	2,715,456	NA	NA	NA	$15.26	$5.62	$5.62
PSES2	1,893,734	NA	NA	NA	$105.33	$55.62	($109.61)
PSES3	5,911,953	$74.25	$12.56	NA	$74.56	$12.61	($7.66)
PSES4	5,936,000	$93.89	$15.82	$769.90	$94.11	$15.85	$792.95

The nutrient cost-effectiveness for the selected options varies by subcategory from $0.10/lb to $8.30/lb. These values are all within the approximate benchmarks determined by EPA for phosphorus. In fact, for Subcategories A–I, Option 3 is more cost-effective (in terms of nutrients) than Option 2 and is well within the benchmark for nitrogen as well. For subcategories J, K, and L, the nutrient cost-effectiveness numbers for the proposed options range from $5.80 to $9.20 per pound. These exceed the benchmark for nitrogen. When broken out by nitrogen and phosphorus, Option 2 meets the individual benchmarks, but option 3 does not for subcategories K and L. These options thus may not be cost-effective for nutrient removal.

M. Small Business Analysis

EPA analyzed the economic impacts on small businesses in order to comply with its obligations under the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act. The RFA provides that the default definitions for small businesses are based on size standards determined by the Small Business Administration (SBA). The standards are for firms, not facilities, and are based on NAICS codes. The size standard for all of the NAICS codes in the meat and poultry products industry is 500 employees.

The first step in the analysis was determining how many facilities in the industry are owned by small businesses and how many are owned by large businesses. EPA took two separate approaches to make this determination and compared the estimates to information from other sources on the number of facilities owned by large businesses to determine which was more accurate. The first approach relied on data from the SBA website on the number of firms and facilities of a certain size; this data was provided under a special contract with the Census Bureau and matches the employment classes used in the Census of Manufacturers. The second approach relied on data from the screener survey.

Using the SBA/Census data, EPA first checked the employment class for each model facility. If the model facility was in an employment class exceeding 500, then all facilities controlled by the same firm were assumed to be large business owned. If not, then EPA assigned to that model facility the ratio of facilities to establishments for the corresponding employment class in the SBA/Census special study. Multiplying that ratio by the number of facilities represented by the model facility resulted in our estimate of small business owned facilities.

For example, suppose the model facility for R12, medium was in the 100–249 employee class, and the SBA/Census special study tells us that for NAICS 311611, there are 200 firms and 210 facilities with 100–500 employees. In that case, we assumed 95% of R12, medium facilities were stand alone small businesses, and 5% of R12,

medium facilities were large business owned.

As an alternative to the estimates from the SBA/Census data, EPA also examined responses from the screener survey, which asks for facility and company employment for each facility. EPA then compared the resulting estimates of the numbers of businesses from each alternative approach to information from the various sources in the industry profile on the number of facilities owned by large businesses. For all the subcategories except rendering, the SBA/Census data appeared to provide more accurate comparative estimates and was used to generate the numbers of small and large businesses. EPA used the screener survey to generate this data for rendering facilities. EPA determined that none of the certainty facilities are owned by small businesses.

EPA estimates the 73 facilities owned by small businesses will be affected by this regulation: 69 nonsmall facilities in subcategories A–K with new BPT/BCT/BAT requirements and 4 small facilities in Subcategory L subject to new BPT requirements. Average cost/sales ratios for facilities owned by small businesses are presented in Table VIII.M–1 as well as the range of cost/sales ratios calculated for those facilities. Average cost/net income ratios for facilities owned by small businesses are presented in Table VIII.M–2 with the range of cost/net income ratios calculated for those facilities. The ranges are generated by calculating the ratios for each of the model facilities that make up each subcategory. The average ratio is thus a weighted average of the ratios for the model facilities. Therefore, this average ratio may vary from the ratio for the subcategory as a whole.

TABLE VIII.M–1.—COST/SALES RATIOS FOR SMALL BUSINESS-OWNED FACILITIES, SELECTED OPTIONS

Subcategory	Number of small business-owned facilities	Cost/net income (%)		
		Average	Low	High
A–D	5	0.02	0.25	0.25
F–I	10	0.07	0.01	0.27
J	12	0.17	0.17	0.17
K	28	0.58	0.37	1.00
L (nonsmall)	12	0.55	0.27	0.59
L (small)	4	0.20	0.20	0.20

TABLE VIII.M–2.—COST/NET INCOME RATIOS FOR SMALL BUSINESS-OWNED FACILITIES, SELECTED OPTIONS

Subcategory	Number of small business-owned facilities	Cost/net income (%)		
		Average	Low	High
A–D	5	0.25	0.25	0.25
F–I	10	0.55	0.09	2.03
J	12	0.68	0.68	0.68
K	28	6.82	5.03	8.94
L (nonsmall)	12	4.87	2.03	5.31
L (small)	4	2.44	2.44	2.44

IX. Water Quality Analysis and Environmental Benefits

A. Qualitative Description of Water Quality Benefits

EPA evaluated the environmental benefits of controlling the discharges of conventional pollutants from meat and poultry production industry (MPP) facilities to surface waters in national analyses of direct and indirect discharges. EPA used the National Water Pollution Control Assessment Model (NWPCAM version 1.1) to model the instream Dissolved Oxygen (DO) concentration, as influenced by pollutant reductions of BOD_5, Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS) and Fecal Coliform (FC). Based upon each reach mile concentration of DO, BOD_5, FC and TSS, EPA estimated the change in each reaches' use category. The use categories ladder is as follows, from poorest to best: No use, boatable, fishable, and swimmable; where swimmable waters are most desirable.

EPA modeled a sample set of 97 facilities. EPA estimates that the proposed rule will improve overall use of 17 to 28 reach miles for the sample set. Scaling these results to represent the nation level of 246 facilities, EPA estimates the national improvement in overall use to be 29 to 49 reach miles. The national monetized benefits for this overall use improvement range from $15.5 million to $16.1 million.

B. Facilities Modeled

EPA estimates that 246 red meat, poultry, and rendering facilities are covered under this proposed rule. EPA mailed out 350 detailed surveys to generate both environmental and economic data. EPA received 241 detailed surveys in time for data analysis of this proposed rule making (*see* Section V.B). Of the 241 detailed surveys, EPA was able to model the environmental impacts of 97 facilities (36 direct dischargers and 61 indirect dischargers). EPA did not evaluate: (1) 79 facilities which report storing water in on-site lagoons or land applying their wastewater; or (2) 65 facilities for which EPA had insufficient data to conduct the water quality analysis.

C. Pollutants of Concern

EPA identified 30 pollutants of concern for the meat processing segment of the industry and 27 pollutants of concern for the poultry processing segment of the industry (*see* Section V.C). This list includes Ammonia as Nitrogen, Carbonaceous BOD_5, Chemical Oxygen Demand (COD), Nitrate +Nitrite (as Nitrogen), Hexane Extractable Method (HEM), Oil and Grease, Total Recoverable Oil and Grease, pH, Temperature, Total Nitrogen and Total Phosphorous (as PO_4).

Discharges of these pollutants of concern into freshwater and estuarine

ecosystems may alter aquatic habitats and adversely affect aquatic biota. For example, habitat degradation can result from increased suspended particulate matter that reduces light penetration, and thus primary productivity, or from accumulation of suspended particles that alter benthic spawning grounds and feeding habitats. Nutrients, including phosphorus and nitrogen are the primary causes of surface water eutrophication, which can reduce dissolved oxygen content of waterbodies to levels insufficient to support fish and invertebrates. Eutrophication may also increase the incidence of harmful algal blooms which release toxins as they die and can severely affect wildlife as well as humans.

BOD_5 and COD are important measures of the organic content of an effluent. When effluents with high BOD_5 or COD are discharged to surface waters, the process of microbial degradation of organic compounds can, under certain conditions, reduce dissolved oxygen levels in receiving water bodies below the threshold necessary to support aquatic life. Additionally, meat and poultry processing raw wastewaters contain significant amounts of organic nitrogen which rapidly breaks down into ammonia which, if left untreated, are a direct toxicant to aquatic communities. Oil and grease are known to produce toxic effects on aquatic organisms (*i.e.,* fish, crustacea, larvae and eggs, gastropods, bivalves, invertebrates, and flora). Pathogens are known to impact a variety of water uses including recreation, drinking water sources, and aquatic life and fisheries (Docket No. W–01–06, Record No. 10024).

D. Benefits Modeling Methodology

EPA chose to use the National Water Pollution Control Assessment Model (NWPCAM) version 1.1 to estimate environmental impacts to surface water quality resulting from implementation of various scenarios for regulating MPP facilities. Specifically, EPA developed NWPCAM v1.1 to model instream Dissolved Oxygen (DO) concentration, as influenced by pollutant reductions of BOD_5, Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS) and Fecal Coliform (FC). Based upon each reach mile concentration of DO, BOD_5, FC and TSS, EPA estimates the change in each reaches' use category. The use categories ladder is as follows, from poorest to best: 0 = no use; 1 = boatable; 2 = fishable; and 3 = swimmable (where swimmable waters are most desirable).

The NWPCAM is a national-scale water quality model that characterizes water quality conditions for the Nation's network of river and streams. As of present, the NWPCAM v1.1 only models DO, BOD_5, Fecal Coliform, TKN and TSS. EPA is presently working to modify the model to include the following: (1) Modeling of nutrients for an eutrophication analysis of ponds and lakes; and (2) modeling of other pollutants for rivers and streams. This model update should be completed in time for the final rule.

Since the meat and poultry processing industry waste streams are mostly non-toxic organic pollutants, EPA is satisfied that NWPCAM v1.1 models the majority of pollutant pounds generated by the 97 MPP facilities included in this rule making. However, for this reason, EPA acknowledges that the environmental impacts and benefits are probably underestimated.

In addition, EPA did not evaluate the impact on receiving waters from conventional pollutants (BOD_5, TSS, Oil and Grease and Fecal Coliform) and other pollutants (metals, nutrients) which pass through the POTW (*see* Section XI.B). EPA is, however, soliciting comment on whether pretreatment standards are necessary for this industry and how EPA should model these potential benefits from controls on MPP indirect dischargers.

E. Modeled Technology Option Scenarios

EPA estimated the benefits from the improvements in water quality expected for 8 different scenarios of the various regulatory options.

TABLE IX.E–1.—BENEFITS SCENARIOS MODELED

Scenario	Regulatory options [1]
1	BAT2
2	BAT3
3	BAT4
4	BAT2 + PSES1
5	BAT3 + PSES1
6	BAT4 + PSES1
7	BAT3 (meat, poultry), BAT2 (rendering)
8	BAT3 (meat, poultry), BAT2 (rendering) + PSES1

Note 1: BAT options apply to within scope direct dischargers and PSES options apply to within scope indirect dischargers (*see* Section III).

The regulatory options evaluated for direct dischargers were:

BAT2: Dissolved Air Flotation (DAF) (advanced oil/water separation), Lagoon, and Disinfection (Oil and Grease, BOD_5, TSS, Pathogen removal) + Nitrification (Ammonia (NH3) removal)

BAT3: BAT2 + Denitrification (Nitrogen removal)

BAT4: BAT3 + (Phosphorus removal)

The regulatory Options evaluated for indirect dischargers were:

PSES1: DAF, Equalization (Oil and Grease, TSS, removal)

F. Documented Impacts and Permit Violations

EPA identified 10 articles documenting environmental impacts due to meat and poultry processing facilities. Documented impacts include 4 reaches with nutrient loadings, 2 sites with contaminated well water, 1 site with contaminated ground water, and 1 lake threatened by nutrient loadings. EPA also documented 20 permit violations by meat and poultry processing facilities. The permit levels mostly violated are NH_3–N, PO_4, and TSS.

EPA identified 18 articles which document legal action in criminal cases taken against meat and poultry processing facilities. Documented legal action includes: (1) Conspiracy of 5 facilities to violate the CWA; (2) one case of illegal dumping of waste; and (3) five cases of falsifying records, diluting waste samples and or destroying records. These legal actions resulting in 3 possible cases of incarceration and fines ranging from $0.25 million to $12.6 million. All of these articles and permit violations are documented in the record (Docket No. W–01–06, Record No. 10033).

G. Modeled Water Quality Impacts

The environmental analysis for 97 meat and poultry processing facilities is presented in Table IX.G–1. EPA estimates that the proposed rule would decrease end-of-pipe pollutant loadings 10 percent for all subcategories. The baseline load of 49.9 million lbs/yr (BOD_5, TSS, Nitrogen, Phosphorus and TKN) would be reduced to 45.1 million lbs/yr. The recommended treatment option would result in the over-all use improvement of 21 river miles at the sample set, and approximately 36 miles at the national level.

TABLE IX.G–1.—MODELED ENVIRONMENTAL BENEFITS (97 FACILITIES)

Scenario	Regulatory options	Pollutant [1] Load (million lbs/yr)	Pollutant Reduction (percent)	Overall use improvement [2] (reach miles)	
				Sample	National
Baseline		49.9			
1	BAT2	47.5	5	17	29
2	BAT3	45.0	10	21	36
3	BAT4	44.8	10	21	36
4	BAT2 + PSES1	36.2	27	24	41
5	BAT3 + PSES1	33.7	32	28	48
6	BAT4 + PSES1	33.5	33	21	36
7	BAT3 (meat, poultry), BAT2 (Rendering)	45.1	10	21	36
8	BAT3 (meat, poultry), BAT2 (Rendering) + PSES1	33.7	32	28	48

Note 1: Baseline = 49.9 Million lbs/yr. Pound totals include BOD, TSS, Nitrogen, Phosphorus and TKN from 97 facilities. Some overlap between categories may be occurring

Note 2: Sample set represents 97 facilities. National set represents 246 facilities. Of the 246 facilities represented, 79 facilities are zero dischargers, and therefore do not contribute to these modeled water quality impacts/improvements.

H. Monetized Water Quality Benefits

Economic benefits associated with the meat and poultry products scenarios are based on incremental changes in water quality use-support (i.e., boatable, fishable, swimmable) and the population benefitting from the changes. Benefits are calculated state-by-state at the State (local) scale as well as at the national level. For each State, benefits at the local-scale represent the value that the State population is willing to pay for improvements to waters within the State or adjoining the State. For each State, benefits at the national-scale represent the value that the State population is willing to pay for improvements to waters in all other states in the continental United States. EPA solicits comment on additional methods for estimating and monetizing benefits.

Table IX.H–1 summarizes the resulting estimates of economic benefits for each of the six regulatory scenarios analyzed. Based on the subset of facilities included in the NWPCAM analysis, the total national willingness-to-pay (WTP) benefits at the local-scale for all water quality use-supports ranged from approximately $15.5 million for BAT2 to $16.1 million for BAT4 + PSES1. EPA estimates that the annual benefits of the proposed regulatory action (i.e., Scenario 7) is $15.6 million per year. Since these benefits are for a subset of the facilities regulated by the proposal, they should not be compared to the total costs of the rule. EPA estimates that the costs for Scenario 7 for the facilities included in the benefits analysis are $33.7 million. If the ratio of costs to benefits for these facilities is the same as the ratio of costs to benefits for all facilities, the total benefits of the rule would be $37.0 million.

TABLE IX.H–1.—MODELED ENVIRONMENTAL BENEFITS (97 FACILITIES)

Scenario	Regulatory options	Monetized benefits ($1999 million)
1	BAT2	15.5
2	BAT3	15.6
3	BAT4	15.6
4	BAT2 + PSES1	15.9
5	BAT3 + PSES1	16.0
6	BAT4 + PSES1	16.1
7	BAT3 (meat, poultry), BAT2 (Rendering).	15.6
8	BAT3 (meat, poultry), BAT2 (Rendering) + PSES1.	16.0

X. Non-Water Quality Environmental Impacts

Sections 304(b) and 306(b) of the Clean Water Act require EPA to consider non-water quality environmental impacts (including energy requirements) associated with effluent limitations guidelines and standards. To comply with these requirements, EPA considered the potential impact of the proposed MPP rule on energy consumption, air emissions, and solid waste generation. A discussion of the proposed technology options is given in Section VII of this preamble. Considering energy use and environmental impacts across all media, the Agency has determined that the impacts identified in this section are justified by the benefits associated with compliance with the proposed limitations and standards. Section X.A discusses the energy requirements for implementing wastewater treatment technologies at MPP facilities. Section X.B presents the impact of the proposed technologies on air emissions, and section X.C discusses the impact on wastewater treatment sludge generation.

A. Energy Requirements

EPA estimates that compliance with this rule will result in a small net decrease in energy consumption at non-small MPP facilities that are direct dischargers and no change in energy consumption at all MPP facilities that are indirect dischargers (as EPA is proposing no PSES and PSNS for all MPP subcategories) (*see* Section III.A.1 for EPA's definition of small and non-small facilities). EPA did, however, estimate the energy consumption at non-small MPP facilities that are indirect dischargers and noted a small net increase in energy consumption. Table X.A–1 and X.A–2 present estimates of energy usage by technology option for both non-small direct and indirect dischargers, respectively. For the selected proposal technology options, EPA estimates that there will be a reduction in total annual energy use across all non-small direct dischargers (a net reduction of 144 million KWH/yr). This is a relatively small net reduction in comparison with the total annual amount of energy purchased by non-small direct facilities (2,929 million KWH/yr). There are no incremental energy use impacts for direct dischargers that are small poultry slaughterers (subpart K) or small poultry further processors (subpart L) as all of these small facilities are currently implementing the proposed limitations and standards (Docket No. W–01–06, Record No. 00168).

TABLE X.A–1.—INCREMENTAL ENERGY USE FOR EXISTING NON-SMALL MPP FACILITIES, DIRECT DISCHARGERS

40 CFR part 432 subcategory groupings [1]	Total Energy purchased per non-small MPP facility (million KWH/fac.-yr)	Incremental MPP WWTP energy use per non-small MPP facility in units of million KWH/fac.-yr and total energy usage percent Increase per non-small MPP facility [% increase]			
		BAT2	BAT3	BAT4	BAT5
A, B, C, D	11.42	0.0221 [0.19%]	−0.9324 [−8.89%]	−1.0759 [−10.40%]	NA
F, G, H, I	13.46	0.0017 [0.01%]	−0.0239 [−0.18%]	−0.0354 [−0.26%]	NA
J	5.47	0 [0.00%]	−0.2415 [−4.62%]	−0.261 [−5.01%]	NA
K	13.53	0.0031 [0.02%]	−0.627 [−4.86%]	−0.6076 [−4.70%]	−0.6033 [−4.67%]
L	13.46	0.0021 [0.02%]	−0.1088 [−0.81%]	−0.1094 [−0.82%]	−0.1519 [−1.14%]

Note 1: Small Processors (Subpart E) are not covered under the proposal (*see* Section III.A.1) and do not have any net incremental NWQIs (including energy usage).

TABLE X.A–2.—INCREMENTAL ENERGY USE FOR EXISTING NON-SMALL MPP FACILITIES, INDIRECT DISCHARGERS

40 CFR part 432 subcategory groupings[1]	Total energy purchased per non-small MPP facility (million KWH/fac.-yr)	Incremental MPP WWTP energy use per non-small MPP facility in units of million KWH/fac.-yr and total energy usage percent increase per non-small MPP facility [% Increase]			
		PSES1	PSES2	PSES3	PSES4
A, B, C, D	11.42	0.2644 [2.26%]	4.5467 [28.48%]	2.0473 [15.20%]	1.6061 [12.33%]
F, G, H, I	13.46	0.1227 [0.90%]	0.6021 [4.28%]	0.3404 [2.47%]	0.3137 [2.28%]
J	5.47	0.0243 [0.44%]	0.4617 [7.78%]	0.0061 [0.11%]	−0.0547 [−1.01%]
K	13.53	0.1423 [1.04%]	2.6724 [16.49%]	0.9385 [6.49%]	0.8078 [5.63%]
L	13.46	0.0995 [0.73%]	0.6519 [4.62%]	0.3194 [2.32%]	0.2933 [2.13%]

Note 1: Small Processors (Subpart E) are not covered under the proposal (*see* Section III.A.1) and do not have any net incremental NWQIs (including energy usage).

The Direct Option BAT3 results in a net decrease in energy use. This is a result of the nitrification/denitrification process (BAT3) utilizing less oxygen and less mixing than the nitrification process (BAT2). Oxygen transfer and mixing operations require energy to run blowers and mixers, respectively. The electrical energy costs of a fully nitrifying wastewater treatment plant (WWTP) can typically be reduced by approximately 20% by implementation of denitrification with influent BOD as the necessary organic carbon source (Docket No. W–01–06, Record No. 00166).

EPA used facility count, wastewater flow, and treatment-in-place data from the Screener Survey and Detailed Survey to develop the previous energy use estimations. The MPP Development Document provides more detailed information on the development of these energy use estimations.

B. Air Emissions Impacts

The Agency believes that the end-of-pipe technologies included in the technology options for this rule do not generate significant incremental air emissions either directly from the facility or indirectly through increased air emissions impact from the electric power generation facilities providing the additional energy.

Odors are the only significant air pollution problem associated with MPP facility wastewater treatment. Malodorous conditions usually occur in anaerobic waste treatment processes or localized anaerobic environments within aerobic systems. However, it is generally agreed that anaerobic tanks and ponds will not create serious odor problems unless the process water has a high sulfate content. The proposed technology options will not significantly increase odors as the proposed technology options do not create additional amounts of methane.

The anaerobic contact tank or pond odor is unpredictable as evidenced by the few facilities that have odor problems without sulfate waters (Docket No. W–01–06, Record No. 00162). Facilities generally utilized a scum layer on the anaerobic contact tank or pond to minimize odors (Docket No. W–01–06, Record No. 10034). Additionally, covers and collectors of off-gases from tanks or ponds may also control odors. If the off-gas has sufficient methane content it can then be recovered for energy or burned in a flare. Dissolved air flotation systems can also generate localized odors if facilities do not: (1) Properly remove the skimmings or grease-containing solids; or (2) provide sufficient ventilation around the treatment system if it is located indoors. Odors can best be controlled by elimination, at the source, in preference to treatment for odor control.

EPA visited several MPP facilities that EPA considered to be operating the selected proposal technology options. None of these BAT facilities had odor control problems. One MPP WWTP operator noted that his facility, which

operates BAT5 technology (biological nutrient removal with disc filter), has had no odor control problem since the installation of his new WWTP even with private residences located within ¼ mile of the WWTP (Docket No. W–01–06, Record No. 00154).

As previously stated, EPA estimates an annual net energy reduction of 144 million KWH for the selected proposal technology options. EPA is proposing no PSES or PSNS regulatory controls for indirect dischargers. This annual net energy reduction, however, is small compared with the amount of energy used by MPP direct dischargers (2,929 million KWH/yr) and trivial when compared with the total electricity used by the entire United States in 1999 (3,501 billion KWH) (Docket No. W–01–06, Record No. 00139).

C. Solid Waste Generation

The most significant non-water quality environmental impact (NWQI) is the generation of additional solids from MPP WWTP. These additional solids are generally nonhazardous. Some solids are recovered for additional processing (rendering) and are not considered solid wastes or NWQIs. Screening devices of various design and operating principles are used primarily for removal of large-scale solids (*e.g.,* feathers, large animal particles) from the meat and poultry processing facility raw water before the raw water reaches the headworks of the WWTP. These large-scale solids have economic value as inedible rendering raw material.

The organic and inorganic solid material separated from the MPP wastewater, including chemicals added to aid solids separation, is called sludge. Typically, this sludge contains 95 to 98 percent water before dewatering. The raw sludge can be concentrated, digested, dewatered, dried, incinerated, land-filled, or spread in sludge holding ponds. Facilities may use combinations of these sludge management options for different periods of the year. A WWTP operator for a poultry slaughtering facility, which utilizes BAT5 technology, noted that sludges from his facility are used as a soil amendments via spray irrigation for crops raised on the facility's property, while during the off-growing season (July through March) these sludges are kept in a lagoon. The operator pays a fee for land application of the WWTP sludge. EPA noted during site visits to two independent rendering operations that sludges from dissolved air floatation units which use chemical additions to promote solids separation are rendered, however, the chemical bond between the organic matter and the polymers requires that the sludges be processed (rendered) at higher temperatures (260 °F) and longer retention times (Docket No. W–01–06, Record No. 10042). EPA estimates that compliance with this proposed rule will result in a decrease in wastewater treatment sludges at MPP facilities.

For the selected proposal technology options, EPA estimates that there will be a 3.4% reduction in total annual sludge production across all non-small direct dischargers (a net reduction of approximately 16,500 tons/yr). This is a relatively small net reduction in comparison with the current total annual amount of sludge production by non-small direct facilities (approximately 500,000 tons/yr). Tables X.C–1 and X.C–2 present the amount of wastewater treatment sludge expected to be reduced at non-small facilities as a result of implementing each of the technology options. There are no incremental sludge generation impacts for direct dischargers that are small poultry slaughterers (subpart K) or small poultry further processors (subpart L) as all of these small facilities are currently implementing the proposed limitations and standards (Docket No. W–01–06, Record No. 00168).

EPA is proposing no PSES and PSNS for all indirect dischargers in all MPP subcategories. EPA did, however, estimate the sludge generation at non-small MPP facilities that are indirect dischargers and noted a small net increase in sludge generation.

TABLE X.C–1.—INCREMENTAL SLUDGE GENERATION FOR EXISTING NON-SMALL MPP FACILITIES, DIRECT DISCHARGERS

40 CFR part 432 subcategory groupings[1]	Baseline total sludge generated at non-small MPP facilities, direct dischargers (tons/year)	Incremental Sludge Generated—tons/yr and percent increase [% Increase] for non-small MPP facilities, direct dischargers			
		BAT2	BAT3	BAT4	BAT5
A, B, C, D	353,794	0 [0.0%]	−5,976 [−1.7%]	−5,334 [−1.5%]	NA
F, G, H, I	6,564	0 [0.0%]	−45 [−0.7%]	−26 [−0.4%]	NA
J	3,655	0 [0.0%]	−124 [−3.4%]	−124 [−3.4%]	NA
K	129,917	0 [0.0%]	−10,353 [−8.0%]	8,533 [6.6%]	8,533 [6.6%]
L	3,326	0 [0.0%]	−146 −4.4%]	−137 [−4.1%]	−909 [−27.3%]

Note 1: Small Processors (Subpart E) are not covered under the proposal (*see* Section III.A.1) and do not have any net incremental NWQIs (including sludge generation).

TABLE X.C–2.—INCREMENTAL SLUDGE GENERATION FOR EXISTING NON-SMALL MPP FACILITIES, INDIRECT DISCHARGERS

40 CFR part 432 subcategory groupings[1]	Baseline total sludge generated at non-small MPP facilities, indirect dischargers (tons/year)	Incremental sludge generated—tons/yr and percent increase [% Increase] for non-small MPP facilities, indirect dischargers			
		PSES1	PSES2	PSES3	PSES4
A, B, C, D	63,466	0 [0.0%]	227,567 [358.6%]	187,011 [294.7%]	189,695 [298.9%]

TABLE X.C–2.—INCREMENTAL SLUDGE GENERATION FOR EXISTING NON-SMALL MPP FACILITIES, INDIRECT DISCHARGERS—Continued

40 CFR part 432 subcategory groupings[1]	Baseline total sludge generated at non-small MPP facilities, indirect dischargers (tons/year)	Incremental sludge generated—tons/yr and percent increase [% Increase] for non-small MPP facilities, indirect dischargers			
		PSES1	PSES2	PSES3	PSES4
F, G, H, I	2,599	302 [11.6%]	58,071 [2234.6%]	48,598 [1870.1%]	50,046 [1925.8%]
J	9,520	32 [0.3%]	11,259 [118.3%]	9,212 [96.8%]	9,522 [100.0%]
K	38,422	97 [0.3%]	188,012 [489.3%]	162,621 [423.3%]	162,589 [423.2%]
L	2,360	228 [9.6%]	61,213 [2593.6%]	53,794 [2279.2%]	54,233 [2297.8%]

Note 1: Small Processors (Subpart E) are not covered under the proposal (*see* Section III.A.1) and do not have any net incremental NWQIs (including sludge generation).

As shown in Table X.C–1, Direct Option BAT3 results in a net decrease in sludge generation for non-small direct dischargers. This is a result of the nitrification/denitrification (BAT3) metabolism which reduces sludge production as compared with nitrification (BAT2) metabolism for the same solids retention time (Docket No. W–01–06, Record No.00166). Full-scale domestic WWTP have shown a 5 to 15% reduction in waste sludge production after the inclusion of the nitrification/denitrification process (Docket No. W–01–06, Record No. 10035).

EPA also expects that water conservation and pollution prevention technologies may result in a greater sludge reduction. EPA expects these technologies to reduce sludge generation for the following reasons:

- Water conservation technologies reduce the amount of source water used and thus mass of pollutants in the source water which reduces the amount of sludge generated during treatment.
- Pollution prevention practices reduce the mass of pollutants in treatment system influent streams which reduces the amount of WWTP sludge.

EPA used facility count, wastewater flow, and treatment-in-place data from the MPP Screener Survey and Detailed Survey to develop the previous sludge generation estimations. The MPP Development Document provides more detailed information on the development of these sludge generation estimations.

XI. Options Selected for Proposal

A. Introduction

1. Methodology for Proposed Selection of Regulated Pollutants

EPA selects the pollutants for regulation based on the pollutants of concern (POCs) identified for each subcategory.

EPA selected a subset of pollutants for which to establish numerical effluent limitations from the list of POCs for each regulated subcategory. Section VII.C. discusses EPA's methodology for selecting POCs and identifies on a subcategory basis the POCs relevant to this proposal. Generally, a chemical is considered a POC if it was detected in the untreated process wastewater at 5 times the minimum level (ML) in more than 10 percent of samples.

Monitoring for all POCs is not necessary to ensure that Meat and Poultry Products wastewater pollution is adequately controlled, since many of the pollutants originate from similar sources, have similar treatabilities, are removed by similar mechanisms, and are treated to similar levels. Therefore, it may be sufficient to monitor for one pollutant as a surrogate or indicator of several others.

Regulated pollutants are pollutants for which the EPA would establish numerical effluent limitations and standards. EPA selected a POC for regulation in a subcategory if it meets all the following criteria:

—Chemical is not used as a treatment chemical in the selected technology option.
—Chemical is not considered a volatile compound.
—Chemical is effectively treated by the selected treatment technology option.
—Chemical is detected in the untreated wastewater at treatable levels in a significant number of samples, *e.g.,* generally 5 times the minimum level at more than 10 percent of the raw wastewater samples.
—Chemicals whose control through treatment processes would lead to control of a wide range of pollutants with similar properties; these chemicals are generally good indicators of overall wastewater treatment performance.

Based on the methodology described above, EPA proposes to regulate pollutants in each subcategory that will ensure adequate control of a range of pollutants.

2. Selection of Proposed Regulated Pollutants for Existing and New Direct Dischargers

The current regulation requires facilities to maintain the pH between 6.0 and 9.0 at all times. EPA intends to retain this limitation and proposes to codify identical pH limitations for previously unregulated subcategories. The pH shall be monitored at the point of discharge from the wastewater treatment facility to which effluent limitations derived from this part apply.

In addition, EPA is proposing to establish effluent limitations for MPP facilities for the following pollutants of concern: BOD, COD, TSS, oil and grease, fecal coliforms, ammonia, total nitrogen, and total phosphorus. The specific justifications for the pollutants to be regulated for each subcategory are provided below. In general, EPA selected these pollutants because they are representative of the characteristics of meat processing wastewaters generated in the industry, and are key indicators of the performance of treatment processes that serve as the basis for the proposed effluent limitations.

A number of POCs evaluated by EPA are parameters that identify the quantity of material in an effluent that is likely to consume oxygen as it breaks down in surface waters after it has been discharged. These parameters include total organic carbon, BOD, COD and dissolved BOD. Values for these POCs

in meat poultry processing wastes are typically very high due to the wastewaters generated from killing, evisceration, further processing, and rendering processes. EPA is proposing to regulate BOD and COD, which will be used as indicators of the performance of biological treatment systems to remove all oxygen-demanding pollutants.

Total suspended solids (TSS), total dissolved solids (TDS), and total volatile solids are parameters that measure the quantity of solids in a wastewater. Meat processing facilities typically produce wastewaters high in organic solids including blood, carcass, feathers, and feces. These solids cause a high oxygen demand (both chemical and biochemical) and are high in protein and nitrogen content. Because some nutrients bind to solids, and solids often include oxygen-demanding organic material, limiting the loading of solids will prevent degradation of surface waters. EPA proposes to regulate TSS as an indicator of performance of biological treatment systems to remove solids. EPA considered regulation of TDS, however, as organic matter is broken down in a biological system, levels of TDS may increase, which makes regulation of TDS not feasible. EPA is considering setting TDS direct and/or indirect limitations and standards for certain meat and poultry further processors (*e.g.,* ham processors) that use significant amounts of brine or pickling solutions for the final rule. EPA solicits comment on whether such TDS limitations and standards are necessary, what technologies would be appropriate for this industry for TDS removal, and which industry subcategories (if any) should be subject to these potential limitations and standards.

Wastewaters from meat processing facilities have high concentrations of nutrients associated primarily with solids from feces wastes and facility cleaning processes. In addition, those facilities employing advanced biological treatment systems to remove ammonia convert organic nitrogen to nitrate and nitrites. Due to the potential degrading impacts to surface waters associated with the discharge of nutrients (*e.g.,* eutrophication), EPA proposes to regulate total nitrogen and total phosphorus. In regulating total nitrogen and total phosphorus, EPA will ensure that biological treatment systems used by facilities are effectively removing all forms of these nutrients including total kjeldahl nitrogen (TKN), nitrate/nitrite, ammonia as nitrogen, orthophosphate, and dissolved phosphorus. EPA proposes to regulate total nitrogen to ensure that the relationship between organic nitrogen (estimated by the pollutant TKN) and inorganic nitrogen (estimated by nitrate/nitrite) is maintained, thus EPA is defining ''total nitrogen'' to be the sum of nitrate/nitrite and TKN. EPA is also proposing to specifically regulate ammonia as nitrogen because of the significant oxygen demand it exerts, as well as its relatively high toxicity to aquatic life. In conjunction with the proposed regulations for total nitrogen, EPA proposes to approve EPA Method 300.0 at 40 CFR part 432. Alternatively, EPA may amend 40 CFR part 136 to include Method 300.0 for determination of nitrate/nitrite from wastewaters in the meat and poultry products point source category. The analytical methods for nitrite/nitrate that are currently approved at 40 CFR part 136 include many that are based on colorimetric techniques (*i.e.,* adding reagents to a sample that form a colored product when they react with the nitrate/nitrite and measuring the intensity of the colored product). Such methods can be subject to interferences in the difficult matrices associated with this industry where samples may contain blood, animal tissue, and/or other particulates which affect both the color development and ability to pass light through the sample to measure the intensity of the colored product. In contrast, Method 300.0 employs the technique known as ion chromatography to measure 10 inorganic anions, including nitrate and nitrite. Ion chromatography permits the various inorganic anions to be separated from one another, as well as from other materials and contaminants present in the sample. Each anion can be identified on the basis of its characteristic retention time (the time required to pass through the instrumentation). After separation, the anions are measured by a conductivity detector that responds to changes in the effluent from the ion chromatograph that occur when the negatively charged anions (analytes) elute at characteristic retention times, thereby changing the conductivity of the solution. Thus, Method 300.0 offers better specificity for nitrate and nitrite in the presence of interferences compared to the approved colorimetric methods. Method 300.0 is located in the rulemaking record (Docket No. W–01–06, Record No. 10036). EPA requests comment on the use of this method for the meat and poultry point source category and whether the method should be approved at 40 CFR part 432 or at 40 CFR part 136 or both.

Oil and grease (as n-hexane-extractable material) is a parameter that measures oil and grease concentrations in effluents. Oil and grease is contained in many of the meat processing operations. EPA is proposing the control of oil and grease is necessary to ensure that treatment systems are effective in removing oil and grease. Excessive oil and grease concentrations can be associated with high BOD demand in a surface water and present other nuisance problems. In the proposed rule, these 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 has used the two different notations because the existing BPT limitations and today's proposed limitations were based upon 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.

Chlorides measure the quantity of chloride ion dissolved in solution. In the meat processing industry, salts may be used for cleaning and antimicrobial purposes. The presence of chloride in discharges to surface waters may impact aquatic organisms because of their sensitivity to concentrations of salt. Although EPA determined that chlorides are a pollutant of concern, EPA is not proposing to regulate chlorides because biological systems are not specifically designed and operated to treat chlorides. In fact, EPA observed in some instances an increase in chlorides within the biological treatment system (*i.e.,* from the influent to the effluent) at several facilities. As a result, EPA believes that a facility will not be able to manage a biological treatment process to consistently

achieve effluent limitations for chlorides.

Total coliform, fecal coliform, E. coli, fecal streptococci, Salmonella, and Aeromonas were considered POCs because they provide information on concentrations of potential bacterial and other pathogens in meat processing wastewaters. Meat processing wastewaters are typically high in pathogens as they are associated with the organic solids such as feces, blood, and internal organ wastes that are produced in many of the processes. The control of pathogens is important to ensure efficient treatment to prevent impairment of surface water uses such as a drinking water source or as a recreation water. EPA is proposing to regulate fecal coliform as an indicator of the efficacy of treatment processes to control pathogens. Because analytical methods require that fecal coliforms be measured within eight hours of sample collection, EPA is currently conducting a study to determine if longer holding times affect the number of viable bacteria remaining in the sample during the eight hour holding time period. A number of organisms are being tested for, including fecal and total coliforms, *Escherichia coli,* Aeromonas species, fecal streptococci, Salmonella species and *Enterococcus faecium.* In addition, in developing the proposed limitations and standards, EPA measured fecal coliform counts in samples that had been retained longer than eight hours. The EPA study is testing for viable organisms between 8 and 48 hours holding time. Thus, EPA will conduct this holding time study for two purposes: to evaluate the use of data in developing the limitations and standards; and for possible revisions to currently approved methods. In the forthcoming NODA, EPA will provide the data collected during the study and its evaluation of the results.

In many instances, EPA found meat processing facilities utilizing chlorine to disinfect treated wastewaters. As a disinfectant, chlorine is highly toxic to aquatic life. In light of the fact that EPA is proposing to regulate fecal coliform, EPA is also considering regulating total residual chlorine as means to control the amount of chlorine that is discharged to surface waters for the final rule. However, EPA is not proposing to regulate total residual chlorine at this time. EPA solicits comment on this issue (*see* discussion on disinfection techniques in Section XI.A.3).

Metals may be present in meat processing wastewaters due to a variety of reasons. They are used as feed additives, they may be contained in sanitation products, or they may result from deterioration of meat processing machinery and equipment. Many metals are toxic to algae, aquatic invertebrates, and/or fish. Although metals may serve useful purposes in meat processing operations, most metals retain their toxicity once they are discharged into receiving waters. Although EPA observed that many of the biological treatment systems used within the meat processing industry provide substantial reductions of most metals, biological systems are not specifically designed and operated to remove metals. As a result, EPA believes that a facility will not be able to manage a biological treatment process to consistently achieve effluent limitations. Therefore, EPA is not proposing to regulate metals.

Pesticides are used for controlling animal parasites and may be present in wastewaters from initial animal wash and processing operations. Some pesticides are bioaccumulative and retain their toxicity once they are discharged into receiving waters. Similar to metals, although EPA observed that many of the biological treatment systems used within the meat processing industry provide adequate reductions of pesticides, most biological systems are not specifically designed and operated to remove pesticides. As a result, EPA believes that a facility will not be able to manage a biological treatment process to consistently achieve effluent limitations for pesticides. Therefore, EPA is not proposing to regulate pesticides.

3. Approach to Determining Long Term Averages, Variability Factors, and Effluent Limitations Guidelines and Standards

This subsection describes the statistical methodology used to develop long-term averages, variability factors, and limitations for BPT, BCT, BAT, and NSPS. The same basic procedures apply to the calculation of all effluent limitations guidelines and standards for this industry, regardless of whether the technology is BPT, BCT, BAT, or NSPS. For simplicity, the following discussion refers only to effluent limitations guidelines; however, the discussion also applies to new source standards.

The proposed limitations for pollutants for each option, as presented in today's notice, are provided as maximum daily discharge limitations and maximum monthly average discharge limitations. Definitions provided in 40 CFR 122.2 state that the ''maximum daily discharge limitation'' is the ''highest allowable 'daily discharge' '' and the ''maximum average for monthly discharge limitation'' is the ''highest allowable average of 'daily discharges' over a calendar month, calculated as the sum of all 'daily discharges' measured during a calendar month divided by the number of 'daily discharges' measured during that month.'' Daily discharge is defined as the 'discharge of a pollutant' measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling.''

EPA calculates the limitations based upon percentiles chosen with the intention, on one hand, to accommodate reasonably anticipated variability within the control of the facility and, on the other hand, to reflect a level of performance consistent with the Clean Water Act requirement that these effluent limitations be based on the ''best'' technologies properly operated and maintained. The daily maximum limitation is an estimate of the 99th percentile of the distribution of the daily measurements. The maximum monthly average limitation is an estimate of the 95th percentile of the distribution of the monthly averages of the daily measurements. The percentiles for both types of limitations are estimated using the products of long-term averages and variability factors.

In the first of two steps in estimating both types of limitations, EPA determines an average performance level (the ''long-term average'') that a facility with well-designed and operated model technologies (which reflect the appropriate level of control) is capable of achieving. This long-term average is calculated from the data from the facilities using the model technologies for the option. EPA expects that all facilities subject to the limitations will design and operate their treatment systems to achieve the long-term average performance level on a consistent basis because facilities with well-designed and operated model technologies have demonstrated that this can be done. In the second step of developing a limitation, EPA determines an allowance for the variation in pollutant concentrations when processed through well designed and operated treatment systems. This allowance for variance incorporates all components of variability including process and wastewater generation, sample collection, shipping, storage, and analytical variability. This allowance is incorporated into the limitations through the use of the variability factors, which are calculated from the data from the facilities using the model technologies. If a facility operates its treatment system to meet the relevant long-term average, EPA expects the facility to be able to meet the limitations. Variability factors assure

that normal fluctuations in a facility's treatment are accounted for in the limitations. By accounting for these reasonable excursions above the long-term average, EPA's use of variability factors results in limitations that are generally well above the actual long-term averages.

EPA recognizes that, as a result of modifications to 40 CFR part 432, some dischargers may need to improve treatment systems, process controls, and/or treatment system operations in order to consistently meet effluent limitations based on revised effluent limitations guidelines and standards. EPA believes that this consequence is consistent with the Clean Water Act statutory framework, which requires that discharge limitations reflect the best available technology.

While the actual monitoring requirements will be determined by the permitting authority, the Agency has assumed thirty samples per month (i.e., daily monitoring) in determining the proposed maximum monthly average limitations. EPA recognizes that small poultry facilities are unlikely to operate on weekends and is soliciting comment on whether their monthly limitations should be based upon 20 days. Increasing or decreasing monitoring frequency does not affect the statistical properties of the underlying distribution of the data used to derive the limitations. However, monitoring less frequently theoretically results in average values that are more variable. As a consequence, average values based on 20 monitoring samples per month from small poultry facilities theoretically could be numerically larger than average values based upon 30 monitoring samples from non-small facilities. Thus, operators of small poultry facilities may find they need to design treatment systems to achieve an average below the long term average basis of the proposed limitations and/or more control over variability of the discharges in order to maintain compliance with the limitations. The MPP Development Document provides a list of both the proposed limitations and those derived using a 20-day monitoring assumption.

The long-term averages, variability factors, and limitations were based upon pollutant concentrations collected from two data sources: EPA sampling episodes and data submitted by industry. When the data from the EPA sampling episodes at a facility met the data editing criteria, EPA used the sampling data and any monitoring data provided by the facility. In the absence of transferable data, data received in the detailed surveys was used to develop LTAs. In particular for regulatory option2 for poultry:

- The further processing portion for TSS is estimated at 9.76 mg/L, which is the largest value in survey data for poultry facilities with further processing operations that has Option2 treatment in place, and
- The rendering portion for Oil and Grease(HEM) is estimated at 19.5 mg/L, which is the largest value in survey data for poultry facilities with rendering operations that has Option2 treatment in place.
- For one conventional pollutant, fecal coliform, the EPA sampling data show that chlorine disinfection followed by dechlorination is extremely effective treatment, and very low long-term averages were calculated for fecal coliform based on chlorine disinfection. However, EPA has decided not to use the long-term averages as calculated based on the fact that ultraviolet disinfection (or other types of disinfection) may overall be better for the environment than chlorine disinfection because they don't produce a residual effect that can be harmful to humans or aquatic life. Since ultraviolet disinfection (or other types of disinfection) are not always as effective as chlorine disinfection, EPA has decided to propose fecal coliform limitations equal to the existing ones, which are currently being met by MPP facilities with varying types of disinfection. EPA intends to further assess ultraviolet and other disinfection technologies following proposal and may set revised limitations for the final rule. EPA solicits data on disinfection technologies and comments on this decision. See MPP Development Document Section 11 for more information.

4. 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 upon 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).

a. New Subcategories/Segments. EPA proposes BPT limitations for conventional pollutants (BOD, TSS, fecal coliform, pH, and oil and grease) and non-conventional pollutants (ammonia as nitrogen, total nitrogen and total phosphorus) for the following subcategories or segments that have not previously been regulated under part 432: Poultry First Processing and Poultry Further Processing. There are no BPT limitations in the current regulation applicable to these types of facilities.

b. Existing Subcategories/Segments. 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. In addition, EPA proposes new BPT limitations for larger MPP facilities. Specifically,

- For facilities in Subcategories A, B, C and D that slaughter more than 50 million pounds (LWK) per year, EPA proposes to add BPT limitations for one non-conventional pollutant (COD) to reflect the better design and operation of the existing BPT treatment technology. The Agency is proposing the same COD BPT limitation for each of these subcategories (Subcategories A, B, C and D).
- For facilities in Subcategories F, G, H and I that produce more than 50 million pounds of finished product per year, EPA proposes to add BPT limitations for one non-conventional pollutant (COD) to reflect the better design and operation of the existing BPT treatment technology. The Agency is proposing the same COD BPT limitation for each of these subcategories (Subcategories F, G, H and I).
- For facilities in Subcategory J that render more than 10 million pounds per year of raw material, EPA proposes to add a BPT limitation for one non-

conventional pollutant (COD) to reflect the better design and operation of the existing BPT treatment technology.

EPA is proposing the addition of COD to reflect the average of the best existing performances based on new information collected for this proposal (*see* Section V). Further, EPA has determined to revise BPT for COD because the biological treatment technology used as a basis for the limitations really represents BPT technology and is widely used in the industry. EPA considers the control of COD as the most appropriate parameter to represent the BPT level of control for non-conventional and conventional pollutants. The bulk parameter and nonconventional pollutant COD is an indicator of organic matter in the wastestream that is susceptible to strong oxidation, and as such would also measure organic material susceptible to biochemical oxidation, as well as some that is more difficult to oxidize biochemically. While it is EPA's view that it can revise BPT limitations for conventional pollutants without passing the BCT cost test (where the BPT effluent reduction ratio is favorable), the Agency is not generally inclined to do so unless the removals achieved by the existing BPT limitations are significantly fewer than would be achieved through revision of BPT. That was not the case here. Revising BPT to incorporate COD will not only remove large amounts of COD, but also achieve significant incidental removals of BOD_5 and TSS. For this reason, EPA has determined that it is not necessary to separately revise the BPT limits for BOD_5 and TSS in this case.

EPA is retaining the existing BPT limitations and proposing no new BPT limitations for ''small'' facilities. EPA used production based thresholds to subcategorized these small facilities (*see* Section III). EPA defines small MPP facilities as MPP facilities that produce less then the production based thresholds defined above (and in Section III). See also Section III.A.1 for a description of why and how EPA developed these production based thresholds.

5. 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; and

(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). See Section VIII.F for details on the calculation of the BCT cost tests.

In developing BCT limits, EPA considered whether there are technologies that achieve greater removals of conventional pollutants than proposed for BPT, and whether those technologies are cost-reasonable according to the prescribed BCT tests. For subcategories A–D, E–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. 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.

6. Consideration of Statutory Factors for BAT and NSPS Technology Options Selection

Based on the record before it, EPA has determined that each proposed model technology is technically available. EPA is also proposing that each is economically achievable for the segment to which it applies. Further, EPA has determined, for the reasons set forth in Section X, 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 III.A.1 above, EPA is not proposing to establish more stringent limitations to 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 there are approximately 107 small meat processing facilities that 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 regulatory option BAT 3, pollutant load reductions attributable to small facilities is less than 0.1 percent of the total expected pollutants load reductions.

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 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.

B. Pretreatment Standards

National pretreatment standards are established for those pollutants in wastewater from indirect dischargers that may pass through, interfere with or are otherwise incompatible with 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 treatment 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. There are approximately 1,500 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 publicly owned treatment works (POTWs) that will interfere with POTW operations, including use or disposal of municipal sludge; (2) prevent the introduction of pollutants into POTWs which 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. While 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 it justifies categorical pretreatment standards for this industry. The following sections discuss the information EPA was able to collect and what information EPA is soliciting in this proposal and planning to collect after proposal.

1. POTW Interference

As noted above, 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 whether or not 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 detailed surveys, approximately one-third of the MPP facilities discharge to POTWs which discharge less than 5 MGD. These POTWs are often not required through their NPDES permits to implement Pretreatment Programs.

EPA typically does not establish pretreatment standards for conventional pollutants (e.g., BOD_5, TSS, Oil and Grease) since POTWs are designed to treat these 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 one day maximum concentration of 100 mg/L oil and grease in the Petroleum Refining Point Source Category (40 CFR 419). This standard is based on the performance of either of two technologies (primary oil removal or DAF). 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 solicits comment on the use of the 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 may cause difficulty in the POTW treatment system and that the performance of trickling filters appear 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 smaller 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 floatation 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 it 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 twenty cases where MPP indirect dischargers interfered with POTW operations (Docket No. W–01–06, Record No. 10037). While some specific details are lacking, these cases generally describe how overloadings of various parameters (e.g., BOD_5, 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 if they 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. However, EPA does not know 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 solicits more detailed information on these identified interference incidents and other POTW interference and pass through incidents. EPA will collect more information from EPA and State pretreatment program coordinators, POTWs, and MPP indirect dischargers after proposal to: (1) Understand whether the general pretreatment prohibition is sufficient to address POTW interference and pass through incidents for this industry; and (2) 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 there are no or limited MPP operations 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 doesn't receive toxic amounts of ammonia. In one such instance, a 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).

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% 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 solicits information on other potential positive and negative impacts on POTW operations if EPA were to set national categorical pretreatment standards for the prevention of interference of 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 POTW and have a detrimental effect on its operations. (Docket No. W–01–06, Record No. 10040). EPA also solicits information on whether MPP indirect dischargers are causing interference issues on a national, on-going basis and whether POTWs are addressing these interference issues in a timely manner once they are identified. Finally, EPA also solicits 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 may cause POTW interference in lieu of national categorical pretreatment standards.

2. POTW Pass Through

As noted above, Federal categorical pretreatment standards are also designed to prevent the introduction of pollutants into POTWs which will pass through the treatment works or will otherwise be incompatible with the treatment works. Generally, to determine if 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. EPA identified the following MPP pollutants, based on EPA sampling efforts, that EPA would normally determine to pass through using EPA's standard methodology (i.e., indirect technology option has a percent removal higher than the POTW percent removal).

TABLE XI.B–1.—MEAT POLLUTANTS OF CONCERN REMOVAL EFFICIENCIES

MPP pollutant of concern	CAS number	PSES indirect option 1 treatment efficiency	POTW treatment efficiency [1]
Oil and Grease	C036	95	86
Copper	7440508	91	84
Molybdenum	7439987	82	19
Zinc	7440666	91	79

Note 1: These POTW removal efficiencies are from the 50-POTW study (Docket No. W–01–06, Record No. 00180).

TABLE XI.B–2.—POULTRY POLLUTANTS OF CONCERN REMOVAL EFFICIENCIES

MPP pollutant of concern	CAS number	PSES indirect option treatment efficiency	POTW treatment efficiency [1]
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

Note 1: 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 floatation (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 pollutants 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 and at the final regulation may issue pretreatment standards based on pass through for all or a sub-set 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 solicits comment on how to examine current POTW performance for all pollutants including those pollutants in Tables XI.B–1 and XI.B–2. EPA will publish its revised analysis of PSES1 treatment efficiencies, loadings removals, and POTW removal efficiencies in the forthcoming NODA for public comment. EPA also solicits data regarding the POTW removal efficiencies for all pollutants identified in Tables VII.C–1 and VII.C–2 (*see* also Section XV for data submission instructions).

EPA seeks information on any cases of significant pass through from MPP indirect dischargers where the local limits were not set or exceeded and comments on whether EPA should promulgate pretreatment standards for certain parameters (e.g., nutrients, TDS) based on their potential pass through of POTWs 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 does 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 it accurately reflects the incidences of pass through for this industry as a whole. MPP Development Document details the national estimates of pollutants of concern that have greater removal efficiencies under each indirect technology option than POTWs for each of the MPP subcategories.

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 XI.B–3 details the summary of EPA's economic analysis of the PSES1 pretreatment option for the various MPP subcategories. EPA includes this information here for public comment. If information presented during the comment period following proposal or the NODA shows that there is sufficient interference or pass through to justify categorical pretreatment standards for this industry, EPA will rely on the information provided here and in the record of this rulemaking to promulgate pretreatment standards. The public is encouraged to comment fully on the following information. With respect to preventing interference incidents, after proposal EPA will evaluate comments and additional information to determine whether another annual production size cut-off for MPP indirect dischargers should be established. Additionally, EPA is soliciting comment on whether it should exempt from categorical pretreatment standards MPP indirect discharges who are below 5% of POTW 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 XI.B–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 (in percent)	Pre-tax annualized cost ($1999 M)	PSES option 1 toxic cost-effectiveness	
			Removals (lb-eq)	$1981/lb-eq
Red Meat First Processors (A–D)	0.57	$7.0	240,421	17
Red Meat Further Processors (F–I)	0.80	$18.8	76,890	143
Independent Renderers (J)	0.50	$1.3	3,918	198
Poultry First Processors (K)	0.55	$10.8	377,651	17
Poultry Further Processors (L)	1.50	$15.3	49,950	178

EPA notes that the PSES1 pretreatment option cost is generally at or below 1% of the facility's net income (profit). Also, based on 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 utilize PSES1. The MPP Detailed Survey also identified the following breakdown of treatment-in-place: (1) 64 facilities utilize no pretreatment or pretreatment less effective than PSES1 (*e.g.,* catch basins); (2) 12 facilities utilize PSES2; (3) 1 facility utilize PSES3; and (4) no facilities utilize PSES4. Based on MPP Detailed Survey data, the average oil and grease concentration from MPP indirect facilities employing 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 EPA did not have sufficient information to demonstrate that effluents from MPP indirect dischargers interfere with, are incompatible with, or pass through

POTW operations on enough of a wide-scale basis 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 or not 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 along 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% of POTW 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 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 XI.F);
- Establish national categorical pretreatment standards for MPP indirect dischargers based on compliance with BMPs or a regulatory BMP alternative.

EPA is soliciting comment on 100 mg/L as a potential pretreatment maximum daily standards for oil and grease and/or ammonia as nitrogen. EPA notes that this is not completely a parallel case and EPA solicits comment on how EPA should consider setting pretreatment standards for ammonia as nitrogen to prevent interference. EPA is basing the 100 mg/L potential pretreatment maximum daily standards on the Petroleum Refining Industry oil and grease and ammonia standards because those standards were designed to prevent POTW interference, which may be a problem for the meat and poultry products industry as well. The Petroleum Refining Industry oil and grease pretreatment standard of 100 mg/L is based on the necessity to minimize POTW interference by minimizing the possibility of slug loadings of oil and grease being discharged to POTWs. (Docket No. W–01–06, Record No. 00167). Ammonia as nitrogen concentrations above 100 mg/L can exhibit inhibitory effects on the activated sludge process and cause POTW interference (Docket No. W–01–06, Record No. 00167). EPA is also soliciting comment on potential concentration pretreatment maximum daily standards for oil and grease and ammonia as nitrogen, respectively based on the performance of PSES1 technology (DAF with chemical flocculant addition, equalization tank). These PSES1 concentration based standards are all below 100 mg/L for oil and grease with the exception of one limit for poultry facilities that do slaughtering and rendering operations (*see* MPP Development Document). EPA solicits comment on whether these potential pretreatment maximum daily standards for oil and grease and ammonia as nitrogen would sufficiently prevent POTW interference. EPA is also soliciting comment whether these standards should be presented as production based standards (e.g., lb-pollutant/1000 lb-LWK) (*see* MPP Development Document).

C. Meat Facilities (Subcategories A, B, C, D, F, G, H and I)

After considering all of the technology options described in Section VII.A, in light of the factors specified in Section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposed to select the technology options identified below as BPT, BAT, BCT, and NSPS for Subcategories A, B, C, D, F, G, H and I of the proposed rule. The proposed effluent limitations apply only to meat facilities that slaughter more than 50 million pounds per year (for Subcategories A, B, C and D) or produce more than 50 million pounds per year of finished products (for Subcategories F, G, H and I). EPA is not revising limitations and standards for meat facilities in Subpart E as all of these facilities are small facilities (*see* Section III.A.1).

1. Subcategories A through D (Meat Slaughtering Facilities)

a. Regulated Pollutants. i. BPT 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 component of the model BPT treatment systems for these subcategories.

ii. BAT. 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.

iii. NSPS. EPA proposes to regulate the same pollutants for NSPS as those for BAT, with the addition of BOD, TSS, oil and grease (measured as HEM) and fecal coliform.

b. Technology Selected. i. BPT. The Agency 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 Section VII, 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 today's 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 results in a cost to net income ratio of 0.28%, which means that approximately 0.28% of a facility's profits would be spent on compliance if they were to implement this option. Also, the results of the BPT cost to effluent reductions benefits is $0.81 ($1999/pound). Thus, this option is considered cost-reasonable.

EPA also evaluated option 3 and option 4 as basis for establishing BPT limitations that would be more stringent than the level of control being proposed

today. However, EPA believes that Option 2 represent BPT (or ''average of the best'') treatment for this industry subcategory. These options were evaluated in the BCT analysis.

ii. BAT. The Agency 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. 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 Analysis Section (*see* Section VIII) presents the methodology for evaluating cost effectiveness for nutrient pollutants. As presented in Section VII.A, three BAT options were under consideration. 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%, so both are considered economically achievable. However, since 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 today. As was the case for BAT–3, the cost to net income of less than 2.4% 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% and yet would prompt annualized costs to increase by 74%, EPA has determined that BAT–3, not BAT–4 is the ''best available'' technology economically achievable for Subcategories A, B, C and D.

iii. NSPS. 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 the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than if would be for an existing source to retrofit their existing system. Therefore, EPA proposes BAT–3 as the technology basis for NSPS for subcategories A–D because EPA believes it represents the best demonstrated technology for this subcategory.

2. Subcategories F through I (Meat Further Processing Facilities)

a. Regulated Pollutants.

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

ii. BAT. 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.

iii. NSPS EPA proposes to regulate the same pollutants for NSPS as those for BAT, with the addition of BOD, TSS, oil and grease (measured as HEM) and fecal coliform.

b. Technology Selected. i. BPT The Agency 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 above, the proposed BPT–2 limits for COD reflects average of the best performance of the existing technology in place at meat processing facilities, which also calls for secondary biological treatment. EPA has determined that the cost and removal comparison for this option is reasonable.

As presented in Section VII.A, 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%, which means that approximately 0.14% of a facility's profits would be spent on compliance if they were to implement this option. Also, the results of the BPT cost to effluent reductions benefits is $1.59 ($1999/pound). Thus, this option is considered cost-reasonable.

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

ii. BAT. The Agency 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. 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 Section VII.A, three BAT options were under consideration. EPA estimates that the 20 facilities in Subparts F through I would achieve a removal 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%, so both are considered economically achievable. However, since 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 today. As was the case for BAT–3, the cost to net income of less than 1.4% 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% and yet would prompt annualized costs to increase by 600%, EPA has determined that BAT–3, not BAT–4 is the ''best available'' technology economically achievable for Subcategories F, G, H and I.

iii. NSPS. 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 the cost to construct the treatment system to achieve Option 4 performance would be significantly less for a new source than if would be for an existing source to retrofit their existing system. Therefore, EPA proposes BAT–3 as the technology basis for NSPS for Subcategories F–I because EPA believes it represents the best demonstrated technology for this subcategory.

D. Independent Rendering Facilities (Subcategory J)

After considering all of the technology options described in Section VII.A, in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposed to select the technology options identified below as BPT, BAT, BCT, and NSPS for Subcategory J of the proposed rule.

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

b. BAT. 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.

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

2. Technology Selected

a. BPT. The Agency 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. 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%, which means that approximately 0.68% of a facility's profits would be spent on compliance if they were to implement this option. Also, the results of the BPT cost to effluent reductions benefits is $0.03 ($1999/pound). Thus, this option is considered cost-reasonable.

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

b. BAT. 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. EPA has determined that this option is cost-effective and economically achievable. As presented in Section VII.A, three BAT options were under consideration. EPA estimates that the 23 existing facilities that would be subject to today's proposal 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%, so this option is considered economically achievable. BAT–3 results in a cost to net income ratio of greater than 5.5%, which is also considered economically achievable. However, since 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 today. The cost to net income of more than 6.7% 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 a greater potential impact. Thus, EPA has determined that BAT–2 is the ''best available'' technology economically achievable for Subcategory J.

c. NSPS. 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 EPA believes it represents the best demonstrated technology economically achievable for this subcategory.

E. Poultry Facilities (Subcategories K and L)

EPA is proposing to establish different effluent limitations to apply only to Poultry facilities that slaughter more than 10 million pounds per year (for Subcategory K) or produce more than 7 million pounds per year of finished products (for Subcategory L).

1. Poultry First Processing Facilities (Subcategory K)

After considering all of the technology options described in Section VII.A, in light of the factors specified in section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposes to select the technology options identified below as BPT, BAT, BCT, and NSPS for Subcategory K of the proposed rule.

a. Regulated Pollutants. i. 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, 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.

ii. BAT. EPA proposes to regulate the same pollutants for BAT as those for BPT.

iii. NSPS. EPA proposes to regulate the same pollutants for NSPS as those for BAT.

b. Technology Selected. i. BPT. The Agency 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 detailed surveys. Option 1 assumes a less aggressive nitrification treatment than Option 2. Based on the survey responses the Agency has reviewed to date we do not believe that there are any small poultry first processors, however, in the event that a small number of facilities exist which were not captured through EPA's survey efforts, 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. As presented in Section VII.A, 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%, which means that approximately 0.34% of a facility's profits would be spent on compliance if they were to implement this option. Also, the results of the BPT cost to effluent reductions benefits is $2.95 ($1999/pound). Option 3 results in a cost to net income of 2.73%, and the results of the BPT cost to effluent reduction benefits is $4.71 ($1999/pound). Thus, both of these options are considered cost-reasonable. However, since 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 today. EPA estimates that BPT–4 results in a cost to net income ratio of 3.56% 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% of pollutants at an additional cost of 28%. In view of the fact that BPT–4 appears to achieve minimal additional 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.

ii. BAT. The Agency is proposing to set BAT equal to BPT for small facilities in Subcategory K EPA was unable to determine whether or not there is an economically achievable BAT treatment technology more stringent than proposed for BPT because no small poultry first processors were identified. EPA based it's decision on the fact that there is no economically achievable BAT treatment technology more stringent than proposed for BPT for poultry further processors.

The Agency is proposing to set BAT equal to BPT for large facilities in Subcategory K because EPA 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 Section VII.A, 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%, so this option is considered economically achievable. Since BAT–3 results in a cost to net income ratio of less than 2.8%, 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 today. The cost to net income of more than 3.6% 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 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%. 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.

iii. NSPS. EPA did not pursue additional, more stringent, options for small facilities in Subcategory K for NSPS because EPA does not expect the cost to construct the treatment system to achieve Option 2 performance would be significantly less for a new source than if would be for an existing source to retrofit their 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 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 their 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.

2. Poultry Further Processing Facilities (Subcategory L)

After considering all of the technology options described in Section VII.A, in light of the factors specified in Section 304(b)(2)(B) and 306 of the Clean Water Act, as appropriate, EPA proposed to select the technology options identified below as BPT, BAT, BCT and NSPS for Subcategory L of the proposed rule.

a. Regulated Pollutants. i. 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 7 million pounds per year (small facilities). EPA proposes establishing BPT limitations for BOD, TSS, Oil and Grease (measured as HEM), fecal coliform, 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 further processing 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.

ii. BAT. EPA proposes to regulate the same pollutants for BAT as those for BPT.

iii. NSPS. EPA proposes to regulate the same pollutants for NSPS as those for BAT.

b. Technology Selected. i. BPT. The Agency is proposing to establish BPT–1 for small facilities in Subcategory L. This is the same technology as described above for Subcategoy K. EPA estimates that there are four small facilities that 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. As presented in Section VII.A, three BPT options were under consideration. For the sixteen 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%, which means that approximately 0.39% of a facility's profits would be spent on compliance if they were to implement this option. Also, the results of the BPT cost to effluent reductions benefits is $3.28 ($1999/pound). Option 3 results in a cost to net income of 4.23%, and the results of the BPT cost to effluent reduction benefits is $7.11 ($1999/pound). Thus, both of these options are considered cost-reasonable. However, since 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 today. EPA estimates that BPT–4 results in a cost to net income ratio of 6.04% and the ratio of cost to effluent reduction benefits is 9.54. 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%. In view of the fact that BPT–4 appears to achieve less pollutant removals and yet would prompt additional total annualized costs of $1.9 million ($1999), EPA has selected BPT–3, not BPT–4, for this Subcategory.

ii. BAT. The Agency is proposing to set BAT equal to BPT for small facilities in Subcategory L because EPA 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%, 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 Section VII.A, three BAT options were under consideration. 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%, so this option is considered economically achievable. BAT–3 results in a cost to net income ratio of less than 4.25%, 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 today. The cost to net income of more than 6% 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%. In view of the fact that BPT–4 appears to achieve reduced 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.

iii. NSPS. EPA did not pursue additional, more stringent, options for small facilities in Subcategory L for NSPS because EPA does not expect the cost to construct the treatment system to achieve Option 2 performance would be significantly less for a new source than if would be for an existing source to retrofit their existing system. Therefore, EPA proposes BAT–1 as the technology basis for NSPS for small facilities in Subcategory L because EPA 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 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 and existing source to retrofit their 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.

F. Regulatory Alternatives for Meat and Poultry Products Industry

EPA is soliciting comment on alternative approaches that the Agency is considering for the meat and poultry products industry. EPA primarily considered these approaches as alternatives to potential numeric pretreatment standards before the Agency determined that it did not have enough information necessary to establish categorical pretreatment standards for this industry (*see* Section XI.B). The purpose of any alternative would be to help facilities in this industry comply with regulations or foster voluntary adoption of environmental management systems that could help organizations reduce environmental impacts from unregulated activities through pollution prevention and other approaches. Specifically, the Agency is considering the following two options.

Under the first option, EPA would not issue pretreatment standards for indirect dischargers in the final rule. Rather, EPA would work with the industry to develop and implement voluntary environmental management systems (EMSs). In a few years, EPA would plan to evaluate the performance of the voluntary program and either conclude that the voluntary program is sufficient, revisit the issue of pretreatment standards for indirect dischargers, and/or consider other appropriate steps.

Under the second option, EPA would promulgate pretreatment standards for non-small indirect dischargers. However, indirect dischargers would also receive the option of meeting regulatory obligations by implementing EMSs that include environmental audit programs (EAPs). Each of these options is discussed below.

EPA is also considering whether an EMS-based compliance alternative similar to the second option could be applied also to direct dischargers. This option is also discussed further below.

1. Application of Regulatory or EMS Alternatives to Meat and Poultry Processors

EPA believes these EMS-based alternatives would be attractive to many meat and poultry processors that discharge wastewater to Publicly Owned Treatment Works (POTWs) if EPA establishes categorical pretreatment standards. The majority of the meat and poultry products facilities are discharging wastewater indirectly through POTWs and besides the use of Dissolved Air Flotation (DAF) or other types of oil and grease treatment and equalization, few of these facilities reported having any significant amount of wastewater treatment to reduce nutrient pollutants. Although the Agency is not proposing to establish nutrient standards for indirect dischargers, the Agency believes that a significant reduction of nutrients can be achieved through the implementation of an EMS or an EAP and the implementation of specific BMPs. Each of these (EMS, EAP and specific BMPs) will be described in more detail in subsequent discussions. Implementation of an EMS or EAP by meat and poultry products facilities could also result in a range of other environmental benefits (*e.g.,* reduced odor, noise, energy and or water consumption). Given the potential benefits of an EMS, EPA is considering an approach in which no pretreatment standards would be developed for meat and poultry products indirect dischargers rather, EPA would initiate an expanded program to work in partnerships with meat industry facilities, organizations, and other interested parties to promote the adoption and implementation of EMSs by these facilities. EPA would develop guidance on how to develop EMSs for meat and poultry product indirect dischargers and then work with our partners at the State Permitting and Control Authorities to inform them and the meat and poultry processors about the potential benefits of implementing an EMS. EPA would monitor actions toward the development of EMSs by meat and poultry processors and evaluate the improvements to water quality and the environment that result. Not later than five years after promulgation of this regulation, EPA would issue a report providing a comprehensive evaluation of the EMS initiative. The EMS or EAP alternatives EPA is considering would allow indirect dischargers the opportunity to avoid installing wastewater treatment and could, therefore, be less costly.

EPA notes that allowing operators the use of an EMS to demonstrate compliance with potential pretreatment standards assumes that the POTW or the controlling authority is knowledgeable and available. EPA also notes that the MPP indirect dischargers of greatest concern are frequently in smaller communities where the POTW typically operates without an approved pretreatment program or the POTW is typically a small-scale operation. EPA solicits comment on whether these rural or small POTW operations are in a position to adequately assess compliance with the EMS regulatory option and to effectively respond to significant deficiencies. EPA also solicits comment on whether the burden for ensuring compliance with this EMS regulatory alternative would fall on the States or EPA Regions as control authorities and whether such evaluations would be much more difficult to perform on a national basis than a numeric standard. EPA also solicits comment on what requirements can prevent facilities, which use the EMS regulatory alternative and still cause pass through or interference at a POTW, from causing such pass through or interference again. EPA also solicits comments on implementation of a voluntary EMS, perhaps as part of the Performance Partnership (see below).

EPA also solicits comment on how this compliance alternative can be applied to direct dischargers. Most direct dischargers have already installed wastewater treatment to comply with their NPDES Permits. Depending on the effectiveness of the BMPs, EPA may consider offering reduced requirements for monitoring wastewater requirements for direct dischargers which implement an EMS. This could include reduction in the frequency of monitoring, or monitoring for a reduced list of specific pollutants. EPA solicits comments on how an EMS compliance alternative could be applied to direct dischargers and whether EPA should consider this as a compliance alternative for direct dischargers.

2. Performance Improvement Partnership With the Meat and Poultry Processing Industry

In parallel with the development of the MPP ELGS proposal, EPA is working in partnership with the meat and poultry processing industry, State and local government agencies, USDA, and other stakeholders to promote improved environmental performance in the meat and poultry products industry. This partnership has been developed under the Agency's Sustainable Industries Partnership Program. Through the Sustainable Industries program, part of the Agency's overall innovations agenda, EPA works with selected industry sectors to voluntarily set industry-wide performance improvement objectives, develop the right tools and incentives to beneficially affect facility performance, address sector-specific regulatory reform needs, and measure results.

The voluntary partnership program for the meat and poultry processing industry is still under development as of the date of this proposed rule. The purpose of the program is to bring environmental improvements that will benefit meat and poultry processing facilities and their surrounding

communities while maintaining extremely high levels of food safety. The program has industry-generated performance objectives, plus four project elements that were identified as important actions to assist and promote better environmental performance by meat and poultry processing facilities and others.

Participants in developing this program include the American Meat Institute (AMI), the American Association of Meat Processors (AAMP), the U.S. Department of Agriculture (USDA), several State agencies, EPA programs and regions, and other interested constituent groups. Combined, the AMI and AAMP membership totals approximately 2,500 members and represents more than 75% of the total production volume for the meat and poultry processing industry.

Although the elements of the voluntary partnership are under development, AMI and AAMP have stated their commitment to the pursuit of continuous environmental improvement and compliance with environmental regulations at the facility level and in the industry at large. Elements of this commitment may include the following, performance-related actions:

(1) To work in partnership with Federal and State government agencies to promote nationwide industry compliance;

(2) To expand education on best practices, including the promotion of appropriate environmental management systems (EMS);

(3) To reduce environmental impacts, including wastewater discharges and solid waste, associated with facility operations;

(4) To work with suppliers and customers to identify and promote pollution prevention practices to achieve cleaner production and reduced waste;

(5) To develop guidance for communicating with employees, suppliers, customers, and the public about the environmental impacts of the industry; and

(6) To conserve and protect natural resources.

In support of the voluntary performance objectives, the Meat and Poultry Processing Partnership Program includes a set of four projects, currently underway, that will help to enable the meat industry as a whole to achieve the voluntary performance objectives. The projects are described briefly.

a. Environmental Management System (EMS). Program partners drafted guidance materials and a training program for the meat industry to broadly implement corporate/facility-appropriate EMSs. The project team has drafted an EMS Guide for the Meat and Poultry Processing Industry, on the plan-do-check-act continuous improvement model. This EMS Guide consists of 10 modules covering policy, planning, implementation and operation, checking and corrective action, and management review.

This voluntary EMS tailored for meat and poultry processors can be used by both small and large meat and poultry processors to implement an EMS. Currently, EPA is partnering with the Iowa Waste Reduction Center (IWRC) and the Iowa Department of Natural Resources (IDNR) to pilot test the Guide with five companies. IWRC and IDNR are providing technical assistance and implementation consulting to the five companies. The pilot will be completed in July 2002 and then EPA will evaluate the pilot and incorporate lessons learned into the final draft of the EMS Guide for Meat and Poultry Processors. The final guide is expected to be completed by September 2002, at which point this tool will be widely marketed throughout the meat and poultry processing industry with the direct involvement of the industry's two major trade groups.

This EMS project is strictly a voluntary approach that is part of the larger partnership program with the meat and poultry processing industry. The project is designed to develop and market a tool tailored to the needs of this specific industry, to be used by the industry itself to promote improved performance by individual facilities. The Agency is also seeking comment on the option of using a standardized EMS as a stand-alone alternative to the setting of national numeric pretreatment standards (*see* Section XI.B).

b. Customer-oriented'' compliance assistance tools. Program partners are developing tools to assist meat and poultry processors in maintaining compliance with Federal, State and local environmental requirements. Many meat and poultry processors have indicated that they have difficulty in keeping up with the many environmental regulations surrounding their facilities. Currently, the project team is developing a custom checklist of regulatory requirements, designed specifically for meat and poultry processing facilities. Guidance is also being developed to help small processors dispose of solid waste and biosolids.

The Office of Compliance in EPA's Office of Enforcement and Compliance Assurance, in partnership with industry, academic institutions, environmental groups, and other Federal and State agencies, has established a ''virtual'' (web-based) national Compliance Assistance Center known as the National Agriculture Compliance Assistance Center (Ag Center: *http://es.epa.gov/oeca/ag/*). The Ag Center offers comprehensive, easy-to-understand information on environmentally protective and agriculturally sound approaches to compliance. EPA will use the Ag Center as one of its tools for publicizing the final Effluent Limitation Guideline and related voluntary approaches.

c. External stewardship program with livestock suppliers. Nutrient management by livestock producers is the most important environmental issue facing the overall industry. EPA is developing a replicable external stewardship program for meat and poultry processors to work with their suppliers on pilot projects to test and measure the impact of environmental best management practices (BMPs), with a focus on nutrient management. Project teams in Iowa and other midwest States are working to design and voluntarily implement BMPs and nutrient management plans for livestock producers, building on existing processor-supplier relationships. The goal of this project is to demonstrate that voluntary environmental stewardship by livestock producers can be defined, documented, measured, and progress achieved. Project results will help demonstrate whether voluntary programs can be used to augment existing regulations and eliminate the need for expanded regulatory actions.

d. Best management practice tools. Reducing, chloride, nitrogen and phosphorus pollutants in meat and poultry processing wastewater while maintaining high food quality standards poses a challenge to many meat and poultry processors. In addition, the disposal of meat and poultry processing biosolids and renderable materials such as offal poses a serious threat to the economic viability of small meat and poultry processors. To address these environmental impacts through non-regulatory means, EPA and its partners are developing BMP guidance materials for handling and disposal of rendering materials, and for chloride, nitrogen, and phosphorus discharges. The project team will evaluate these management practices and develop measures of their effectiveness. Long-term deployment of the final tools will occur through the active leadership of the industry's trade associations.

The Meat and Poultry Processing Partnership Program is intended to help improve the environmental performance

of meat and poultry processors across the entire industry and, in the case of the external stewardship project, the performance of livestock suppliers as well. This innovative, non-regulatory program has the potential to affect the practices of all 6,000-plus meat and poultry products facilities, thereby fostering environmental improvement among facilities that are excluded from the proposed ELGS standards. In that regard, it is a reflection of EPA's commitment, along with its partners, to achieve continuous performance improvement and environmental stewardship on an industry-wide scale, above and beyond what is intended to be accomplished with this rule.

This voluntary program was not intended, when designed, specifically as a regulatory alternative to the proposed ELGS, but rather as a complement to the proposed standards. Nevertheless, EPA solicits public comment on whether this program would be an adequate replacement for any potential national numeric pretreatment standards and, if so, whether specific program modifications or enhancements should be adopted in response to the issues discussed in this preamble. That determination would be based, in part, on results that are yet to be achieved by the voluntary partnership. EPA and its partners therefore will evaluate and share publicly the environmental results achieved to date, and during the time period preceding promulgation of the final rule, by the meat and poultry processing industry through its participation in this program, to help determine whether this voluntary performance-based approach should be considered a viable alternative to national numeric pretreatment standards. Information is available at *www.SectorStar.org.*

3. Environmental Management Systems (EMSs)

A simple definition of an EMS is ''a continual cycle of planning, implementing, reviewing, and improving the actions an organization takes to meet its environmental obligations.'' These obligations include, but are in no way limited to regulated activities. EMSs are a potentially powerful tool to reduce the range of environmental impacts that may not be amenable to regulation (e.g., odor, noise, energy consumption, or water consumption). In conjunction with reducing environmental impacts, EMSs offer other benefits including cost savings, increased operational efficiency, risk reduction, improved internal communication, and improved relations with external parties.

The use of environmental management systems is increasing throughout the world, especially since the publication of the ISO 14001 International EMS Standard in 1996. ISO standards are developed by an International Body with the goal of establishing standardized product goals. ISO 14001 established a standardized procedure for developing Environmental Management Systems. Approximately 16,000 organizations, including approximately 1,500 organizations in the U.S. have adopted EMSs based on ISO 14001, including certification to the standard through independent third party audits, and the rate of adoption is increasing rapidly. A much larger number of organizations have adopted EMSs consistent with the overall approach embodied in ISO 14001, but tailored to their own particular operations. Implementation of an EMS, while it has the potential to enhance compliance with regulatory requirements, does not expressly constitute or ensure compliance with legal requirements. Compliance assurance, however, is an express public policy and regulatory goal.

In addition, concerns have been expressed that ISO 14001 may not be appropriate for certain industries or certain small and medium-sized organizations. Several industry groups have developed, or are in the process of developing, voluntary programs which use EMSs. These include, but are not limited to, egg production, biosolids management, and water/wastewater utilities. Other industry groups, such as the American Chemical Council (formerly the Chemical Manufacturer's Association), have had similar programs in place for a number of years.

EPA has been involved in strategically promoting the voluntary adoption of EMSs for several years. The Agency's policy in this area was clearly described in our 1999 Report entitled ''Aiming for Excellence''. This report states that ''we will encourage organizations to use EMSs that improve compliance, pollution prevention, and other measures of environmental performance''. Copies of this report are available at *www.epa.gov/reinvent/taskforce/report99.* EPA has also developed an action plan that identifies a wide range of activities the Agency is or expects to undertake to follow up on the recommendations of the Aiming for Excellence Report dealing with EMSs.

Some of the key EMS-based programs EPA is supporting, in partnership with industry and others, are the National Environmental Performance Track (NEPT), the United Egg Producers XL Project, and the National Biosolids Partnership EMS program. As described previously under the Sustainable Industries Programs, EPA is partnering with IWRC and IDNR and five meat and poultry companies to pilot test the ''EMS Guide for the Meat and Poultry Processing Industry.''

Contents of an EMS

The factors described in more detail below would be included in EMSs developed voluntarily under the alternative being considered by the Agency:

Environmental Policy—a written statement of policy, defined by top facility management that includes commitments to: Compliance with both legal requirements and voluntary commitments; pollution prevention, and continual improvement of environmental performance in order to reduce negative impacts on the environment over time; involving the public in an appropriate fashion in EMS development and implementation, and sharing information about environmental performance of the EMS with the community and sharing information about environmental performance of the EMS with the public.

Environmental Planning—identify and document all environmental aspects and impacts of the facility and determine which of these are most significant.

- Document both applicable environmental legal requirements and voluntary commitments.
- Set and document measurable objectives and measurable targets to meet policy commitments and legal requirements and to reduce the facility's significant environmental impacts.
- Describe and document programs to achieve the objectives, targets and commitments in the EMS, including the means and time frames for their completion.

Implementation of Policy and Plan—The following actions provide mechanisms for implementing and maintaining the EMS policy and plan.

- Establish roles and responsibilities for meeting objectives and targets of the overall EMS and compliance with legal requirements, including a top management representative with authority and responsibility for the EMS.
- Define procedures for: (1) Communicating relevant information regarding the EMS, including the facility's environmental performance, throughout the organization; (2) providing appropriate incentives for personnel to meet the EMS requirements; and (3) document and

record control, including where documents related to the EMS will be located and who will maintain them.

• Provide for general environmental training programs for all employees, and specific training for those whose jobs and responsibilities involve activities directly related to achieving objectives and targets and to compliance with legal requirements.

• Establish operation and maintenance programs for equipment and for other operations that are related to legal compliance and other significant environmental aspects.

• Develop a documented emergency preparedness and response program.

Community Involvement/External Communications—The following actions provide mechanisms for incorporating community involvement and external communications.

• Ensure that interested community members and others are given the opportunity to provide input to the facility as it sets objectives and targets in its EMS

• Maintain regular communications with these stakeholders on the performance of the EMS as it is implemented and address relevant issues raised by these stakeholders.

• Report publicly on EMS performance by, for example, making information from self and third party audits available to the public. EPA solicits comment on the most appropriate method of sharing the audit results, including website publication, as well as their content and frequency.

Corrective Action—The following actions provide mechanisms for identifying and correcting operation controls and procedures to ensure EMS effectiveness.

• Adoption of necessary operational controls and procedures to ensure that the EMS is effectively implemented.

• Implementation of an active program for assessing performance and preventing and detecting non-conformance with legal and other requirements (including regulatory compliance) of the EMS

• Maintain records that document EMS implementation and compliance

Management Review—Operators should document management review of performance against the established objectives and targets and the effectiveness of the EMS in meeting policy commitments.

Environmental Management System and Audit Program

As discussed earlier in this proposal, EPA is interested in considering the possible use of EMSs in various aspects of its relationships with the meat and poultry processing industry. EMSs can provide significant internal benefits to organizations such as improved internal communication and better integration of environmental considerations into business decisions. However, EPA is also interested in considering whether EMSs could serve as method of promoting overall environmental accountability to ensure real pollution reductions external. One potential method of ensuring greater accountability and confidence is to include independent third party auditing as a component of an EMS program. Third party auditing is designed to provide facilities with an independent evaluation of their EMSs, based on a particular set of EMS elements or standards.

While third party EMS audits are primarily designed to evaluate the overall suitability of a management *system,* as opposed to particular metrics related to regulatory compliance or environmental performance, they do examine how and if an organization is meeting the environmental objectives it has set for its own operations, including compliance and reduced impacts from unregulated activities.

Therefore, EPA is also considering establishing in the final regulation an option that would allow the meat and poultry products industry to develop an Environmental Management System (EMS) program that would also include independent third party audits by a qualified organization. Indirect dischargers would have the option of meeting potential pretreatment standards or agreeing to participate in the EMS/Audit Program. Third party auditing could substitute for a review by the control authority. Facilities participating in the program would develop EMSs with the elements described above.

Eligibility Criteria

EPA could offer the EMS regulatory alternative to all facilities. Alternatively, EPA could limit the alternative's availability to facilities meeting certain criteria. EPA solicits comment on eligibility criteria for determining whether facilities should be allowed to adopt EMSs in lieu of installing otherwise required wastewater treatment. The purpose of the criteria would be to screen the facilities to ensure they can demonstrate an appropriate compliance history and commitment. For example, EPA could specify in the final rule that if the facility has had a particular type of violation within a certain number of years (e.g., five) the owner/operator would have to demonstrate that the violation was corrected and steps taken to prevent recurrence. EPA may also wish to specify that persons whose compliance history includes certain types of serious violations (e.g., criminal violations) must comply with numeric effluent limits. The regulatory authority may be in the best position to determine at the outset whether a facility's compliance history should exclude it from participation. EPA solicits comments on whether all facilities should be allowed to participate or on other potentially appropriate criteria, as well as on the timing of the screening. EPA also wants to know whether the regulatory authority has the time and resources to research these facilities and whether the need for the review merits the resources required.

Frequency of Third Party Auditing

EPA is considering requiring facilities to complete an initial and follow up audits in the range from each year to every three years, but solicits comment on other frequencies. EPA is also seeking comment on whether a facility's internal audit might substitute for a third party audit in certain years if the previous third party audit indicated that the facility was making good progress on implementing its EMS. EPA also solicits comment on how to define 'making good progress' in such situations. Finally, at some point, each facility would need to complete a full reaudit of its environmental management plan by an independent third party. EPA solicits comment on the frequency of these full reaudits.

Qualifications of Third Party Auditors

For any third party EMS auditing program to be successful, all parties must have confidence in the individuals conducting the audits. Under this proposal, third party auditors could be certified by EPA or another organization as lead auditors under the relevant ISO guidelines with sufficient additional experience in the field of food safety or wastewater management to enable the auditors to, among other things, competently assess facility conformance with objectives and requirements and applicable BMPs. A similar approach is being used in the biosolids industry, where third party auditors must hold credentials as an ISO 14001 lead auditor *and* have a minimum of 5 years experience in biosolids and wastewater management.

Alternatively, EPA could develop a separate set of qualifications for auditors. We are seeking comment on the relevant qualifications for third party auditors and suggestions for existing organizations that might be in

a position to manage an auditing program.

Content of Audit Reports and Sharing of Information

Third party audit information is essential to maintain ongoing communications with the community and other key stakeholders. However, EPA recognizes the burden that providing this information may pose to individual facilities. EPA also recognizes that some of the information in the audit may be considered CBI by the facility. Therefore, we are seeking comment on the most efficient way to make this information available to the public and on what limits if any should be placed on this information. For example, the information could be made available through the web site of the control authority or State regulatory agency, as opposed to requiring the facility to make it available. The content of this information is also an important consideration. EPA proposes to limit the scope of this information to information derived from the EMS audit, including that which relates to the BMPs designed to control pollutants discharged in wastewater, and not necessarily information about all aspects of facility operations. Some of the information that is contained in actual audit reports may be of little interest to the community. In contrast, information that focuses on the areas of strength and needed improvement as a result of the audit may be quite useful. EPA solicits comment on the specific information from audits that should be publicly available as well as the most efficient and effective way of accomplishing this.

Ensuring Auditor Consistency and Integrity

Ensuring that auditors perform their duties in a consistent and objective manner is essential. A May 2001 National Academy of Public Administrators (NAPA) report on third party auditing of EMS under ISO 14001, for example, noted that, given public policy implications, it is important to ensure credible and consistent results so that all who rely on the EMSs, including the public, have appropriate expectations of what it represents (Docket No. W–01–06, Record No. 10041). EPA believes there should be a mechanism for periodically evaluating the effectiveness of the third party audit program and considering appeals to auditor decisions. The Agency solicits comment on how this can best be accomplished and the roles that various parties, including States, should play.

Correction of Nonconformance/Return to Regulatory Coverage

EPA assumes that facilities wishing to take advantage of this alternative will make a good faith effort to successfully implement their environmental management programs. However, some facilities will inevitably experience serious nonconformance, potentially including noncompliance with meeting the goals of the EMS including BMPs to control pollutant discharges. Such problems can range from minor deficiencies with implementation of environmental management programs that have minimal environmental impact and can be easily corrected to serious problems which lead to imminent and substantial endangerments, have significant environmental impacts, or reflect criminal conduct.

EPA's intent is to balance the need to provide facilities with incentives to seek the third party alternative described in this proposal with the need to ensure that regulatory authorities can react promptly and effectively to serious problems that may result in a facility being returned to regulatory coverage. There are a number of options EPA could consider to address this issue. These are not mutually exclusive and include (1) allowing facilities with minor audit nonconformance and/or noncompliance to correct these problems in lieu of returning to regulatory coverage, (2) requiring facilities with major nonconformance and/or noncompliance to address the issue within a specified period of time and have the corrective action reviewed by the auditor or regulatory agency, or (3) requiring that any major noncompliance with the EMS result in a return to regulatory coverage. EPA solicits comment on the best approach or combination of approaches from those listed above or any other approach for addressing nonconformance and noncompliance with regulatory requirements, including, for example, determining who is responsible for noncompliance when there are actual discharges, and when such discharges will be treated as violations of the Clean Water Act. EPA also solicits comment on whether, when, and how related information should be shared with the public.

Reporting and Recordkeeping

To assure compliance with regulatory alternatives to numerical effluent limits, EPA believes it must be able to monitor EMS/EAP implementation and performance. EPA's preferred approach would be to maintain records on-site for 3 years. EPA solicits comment on types of records and reports that might be appropriate for this purpose and where and how long they would be maintained, including their availability to regulators and/or the public.

Best Management Practices

Both the EMS and EAP alternative approaches include commitments to meeting effluent standards through treatment or commitments to implementation of BMPs. EPA has identified several BMPs that are believed to be effective at reducing the pollutant loads discharged in process wastewater from meat and poultry products facilities. Implementation of these BMPs would be a mandatory component of the EAP when it serves as a compliance alternative to potential pretreatment standards. The BMPs that are described below are currently being used at meat and poultry processing facilities and were identified by industry representatives as having the greatest potential to reduce nutrient pollutants from the effluent at meat and poultry processing facilities.

Many of these best management practices simply prevent raw materials or by-products from coming in contact with wastewater, thus reducing the pollutant load which reaches the water stream. All meat and poultry processing and rendering facilities must use water to clean their equipment and facilities to maintain a clean, hygienic environment and keep food safe from bacterial contamination. Prior to the disinfecting water cleaning, collecting as much of the solid by-products that may have accumulated around work areas will reduce the pollutants that reach water. Many of these by-products have value as rendered product and, thus, should not become a solid waste requiring disposal to land.

EPA believes that preventing solid raw materials and byproducts such as offal from entering the wastewater stream has the potential to greatly reduce the loading of nitrogen that is discharged from meat and poultry products facilities. The nitrogen is still in organic form and does not have the opportunity to begin the biochemical breakdown that occurs in wastewater which releases ammonia. Once the nitrogen has been converted to ammonia it is much more difficult to remove from the wastewater stream. Likewise phosphorus loadings in wastewater should also be reduced when solid materials are kept out of the wastewater.

The implementation of some of the BMPs described herein may require reconfiguring equipment or work areas within the facility to facilitate dry clean-

up methods. These reconfigurations can probably be done over time as there will be some trade-off between labor requirements necessary to conduct the dry clean-up in the more difficult areas and the costs associated with retrofitting these areas with equipment that facilitates this dry clean-up. However, as a compliance alternative to potential pretreatment standards, the regulation would specify that the facility operator must be able to demonstrate implementation of the required BMPs in order to be eligible for this EAP alternative.

Some of the BMPs identified by EPA are specific to a particular aspect of the production, such as slaughtering. Slaughtering facilities can accomplish reductions in the nutrient pollutants discharged by maximizing blood collection and using dry clean-up techniques prior to sanitation. Dry collection and handling of other offal and by-products are also effective practices. Some meat and poultry processing facilities use water to transport offal and other by-products away from the processing area either to the on-site rendering facility or to trucks for transport to an off-site renderer. This can result in loss of these by-products when the material is separated from the wastewater and promote chemical break down of these by-products which converts organic nitrogen to water soluble ammonia.

Manure management can also be a consideration at slaughter facilities. Facilities should ensure that manure is properly handled and when possible handled as a solid waste rather than adding it to the facilities wastewater stream. Practices would include dry cleaning of pens and trucks prior to wet cleaning and sanitizing. In addition, there may be pollution prevention practices that can be implemented in association with manure management involving removing the animals from feed at some point prior to shipping them to the slaughterhouse.

Facilities that do not slaughter animals, but do further processing of meat and poultry products should also maximize the use of dry collection and cleaning of the facilities prior to sanitation. There are also concerns with some of the specific processes such as pickling, spicing and marinating which are used to make meat and poultry products. These processes involve preparing a solution containing salts, sugars, phosphates and nitrites among other things. These solutions should be managed to minimize waste and loss. Some of the practices that EPA is considering include using multiple, smaller batches of these solutions to reduce the volume and pollutant loads when a batch requires disposal. These practices include collection, screening, and reuse of spent pickle from injection or tumbler machines. EPA is also considering ways that the product could be removed and packaged following this process in such a way as to minimize the loss of the solution. Facilities would also be asked to develop a protocol for determining when a solution requires disposal to maximize the usefulness of these solutions and reduce the overall volume disposed. Facilities should also examine and maintain the equipment used in these processes to minimize spills and leaks.

Finally, specific best management practices that are being considered for the rendering sector include managing the raw materials to prevent leaks and spills especially for materials that may be entering the rendering facility as a liquid such as blood or oil and grease. Losses of rendered product following the cooking process should be avoided by providing and maintaining traps in the cooking vapor lines and controlling pressure reduction and agitation after cooking.

All meat and poultry products facilities should minimize water usage and employ water conservation practices including installing operator controlled nozzles on hoses and other sources of water. Facilities should also examine the chemicals used to sanitize equipment. Whenever possible the use of sanitizers containing phosphorus should be avoided.

EPA will continue to evaluate these management practices and work with stakeholders to identify measures, monitoring or recordkeeping that EPA could use to ensure the proper implementation of these BMPs. EPA expects to fully describe these measures in a subsequent notice and seek public comment on them.

Assessment of Alternatives

To assess the extent to which an EMS or an EAP alternative can achieve comparable pollutant reduction performance as the end-of-pipe effluent standard, EPA needs data which document the pollutant reductions achieved by implementing the BMPs. The specific performance data that EPA is seeking includes effluent concentrations taken from wastewater discharges prior to and after implementing the BMPs for nutrient pollutants. The nutrient pollutants should be analyzed using EPA's approved methods, found at 40 CFR part 136 for Total Kjeldahl Nitrogen (TKN), Ammonia, Nitrates, Dissolved Phosphorus and Total Phosphorus. EPA also solicits concentration information on Hexane Extractable Material which measures oil and grease (HEM method for oil and grease), 5-day Biochemical Oxygen Demand (BOD_5), Biochemical Oxygen Demand and Total Suspended Solids (TSS). In addition to the concentration information, EPA needs to know the production practices, the wastewater flow and production rates associated with the concentration measurements. The longer the time period during which data is collected both before and after implementation of BMPs the more helpful the data will be to EPA.

EPA will also need to evaluate the costs associated with implementing the BMPs and the EMS or EAP to determine whether they are comparable to costs estimated for compliance with today's wastewater treatment that are being considered for possible pretreatment standards. EPA encourages the industry and the public to provide information on the costs associated with implementing an EMS or EAP, including costs to hire consultants and staff time necessary to develop and implement an EMS or EAP. EPA has included some cost and estimates of labor requirements for the implementation of EMS that were provided to EPA and reflect the implementation of EMSs to manage biosolids. EPA is also interested in data that documents materials necessary to implement the BMPs. Facilities are asked to also provide data which documents cost savings such as reduced water usage resulting in lower water bills.

EPA would also welcome any data on the actual performance of EMSs. This could include data that demonstrates other environmental benefits associated with implementing EMSs or EAPs such as reductions in energy or water usage, improvements in food safety or reductions in odor or air emissions, or data on EMS limitations. EPA is also interested in knowing about other BMPs that would be as effective as those identified in today's notice.

In summary, EPA is soliciting comment on a variety of alternative approaches that can be implemented in the meat and poultry products industry to beneficially affect industry-wide and facility performance and measure results. Through the Sustainable Industries Program, stakeholders will identify and test the best methodologies and approaches to collecting information and data to measure environmental results of various voluntary concepts (i.e. BMP's, EAP's and EMS). This effort will begin during the initial period immediately following

proposal of this regulation. The results and an evaluation of various alternative approaches will be included in a subsequent Notice of Data Availability (NODA), which will also describe in detail an alternative approach and solicit comment.

XII. Regulatory Implementation

A. Implementation of Part 432 Through the NPDES Permit Program and the National Pretreatment Program

Under sections 301, 304, 306 and 307 of the CWA, EPA promulgates national effluent limitations guidelines and standards of performance for major industrial categories for three classes of pollutants: (1) Conventional pollutants (i.e., total suspended solids, oil and grease, biochemical oxygen demand, fecal coliform, and pH); (2) toxic pollutants (e.g., toxic metals such as chromium, lead, nickel, and zinc; toxic organic pollutants such as benzene, benzo-a-pyrene, and naphthalene); and (3) non-conventional pollutants (e.g., ammonia-N, fluoride, iron, total phenols, and 2,3,7,8–tetrachlorodibenzofuran).

As discussed in Section II, EPA considers development of six types of effluent limitations guidelines and standards for each major industrial category, as appropriate:

Abbreviation/Effluent Limitation Guideline or Standard

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

Pretreatment standards apply to industrial facilities with wastewater discharges to POTWs. The effluent limitations guidelines and new source performance standards apply to industrial facilities with direct discharges to navigable waters.

1. NPDES Permit Program

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES permit program is designed to limit the discharge of pollutants into navigable waters of the United States through a combination of various requirements including technology-based and water quality-based effluent limitations. This proposed regulation contains the technology-based effluent limitations guidelines and standards applicable to the meat and poultry processing industry to be used by permit writers to derive NPDES permit technology-based effluent limitations. Water quality-based effluent limitations (WQBELs) are based on receiving water characteristics and ambient water quality standards, including designated water uses. They are derived independently from the technology-based effluent limitations set out in this proposed regulation. The CWA requires that NPDES permits must contain for a given discharge, the more stringent of the applicable technology-based and water quality-based effluent limitations.

Section 402(a)(1) of the CWA provides that in the absence of promulgated effluent limitations guidelines or standards, the Administrator, or her designee, may establish technology-based effluent limitations for specific dischargers on a case-by-case basis. Federal NPDES permit regulations provide that these limits may be established using ''best professional judgment'' (BPJ) taking into account any proposed effluent limitations guidelines and standards and other relevant scientific, technical and economic information.

Section 301 of the CWA, as amended by the Water Quality Act of 1987, requires that BAT effluent limitations for toxic pollutants are to have been achieved as expeditiously as possible, but not later than three years from date of promulgation of such limitations and in no case later than March 31, 1989. See 301(b)(2). Because the proposed revisions to 40 CFR part 432 will be promulgated after March 31, 1989, NPDES permit effluent limitations based on the revised effluent limitations guidelines must be included in the next NPDES permit issued after promulgation of the regulation and the permit must require immediate compliance.

2. New Source Performance Standards

New sources must comply with the new source performance standards and limitations of the MPP rule (once it is finalized) at the time they commence discharging MPP process wastewater. Because the final rule is not expected within 120 days of the proposed rule, the Agency considers a discharger a new source if construction of the source begins after promulgation of the final rule (40 CFR 122.2; 40 CFR 403.3). EPA expects to take final action on this proposal in December 2003.

However, the currently codified NSPS continue to have force and effect for a limited universe of new sources. Specifically, following promulgation of any revised NSPS, the existing NSPS would continue to apply for a limited period of time to new sources that commenced discharging MPP process wastewater within the time period beginning ten years before the effective date of a final rule revising part 432. Thus, if EPA promulgates revised NSPS for part 432 in December 2003, and those regulations take effect in January 2004, any direct discharging new source that commenced discharge after January 1994 but before February 2004 would be subject to the currently codified NSPS for ten years from the date it commenced discharge or during the period of depreciation or amortization of such facility, whichever comes first. See CWA section 306(d). After that ten year period expires, any new or revised BAT limitations would apply with respect to toxics and nonconventional pollutants. Limitations on conventional pollutants would be based on the current NSPS for conventional pollutants unless EPA promulgates revisions to BPT/BCT for conventional pollutants that are more stringent than these NSPS requirements. EPA is reproducing in the MPP Development Document the NSPS codified in the 2001 edition of the Code of Federal Regulations for use during the applicable ten-year period.

3. National Pretreatment Standards

40 CFR Part 403 sets out national pretreatment standards which have three principal objectives: (1) To prevent the introduction of pollutants into publicly owned treatment works (POTWs) that will interfere with POTW operations, including use or disposal of municipal sludge; (2) to prevent the introduction of pollutants into POTWs which will pass through the treatment works or will otherwise be incompatible with the treatment works; and (3) to improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

The national pretreatment and categorical standards comprise a series of prohibited discharges to prevent the discharge of ''any pollutant(s) which cause Pass Through or Interference.'' (*see* 40 CFR 403.5(a)(1)) Local control authorities are required to implement the national pretreatment program including application of the federal categorical pretreatment standards to their industrial users that are subject to such categorical pretreatment standards, as well as any pretreatment standards derived locally (i.e., local limits) that are more restrictive than the federal standards. This proposed regulation

does not revise federal categorical pretreatment standards (PSES and PSNS) applicable to meat and poultry processing facilities regulated by 40 CFR part 432.

The federal categorical pretreatment standards for existing sources must be achieved not later than three years following the date of publication of the final standards. If EPA were to promulgate PSNS in the final rule, MPP new sources would be required to comply with the new source performance standards of the MPP rule (once it is finalized) at the time they commence discharging MPP process wastewater. Because the final rule is not expected within 120 days of the proposed rule, the Agency considers an indirect discharger a new source if its construction commences following promulgation of the final rule (40 CFR 122.2; 40 CFR 403.3). EPA expects to take final action on this proposal in December 2003.

In addition, § 403.7 of the Clean Water Act provides the criteria and procedures to be used by a Control Authority to grant a categorical industrial user (CIU) variance from a pollutant limit specified in a categorical pretreatment standard to reflect removal by the POTW treatment plant of the pollutant. Procedures for granting removal credits are specified in 40 CFR 403.11.

B. Upset and Bypass Provisions

A ''bypass'' is an intentional diversion of the streams from any portion of a treatment facility. An ''upset'' is an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. EPA's regulations concerning bypasses and upsets for direct dischargers are set forth at 40 CFR 122.41(m) and (n) and for indirect dischargers at 40 CFR 403.16 and 403.17.

C. Variances and Modifications

The CWA requires application of effluent limitations established pursuant to section 301 or pretreatment standards of section 307 to all direct and indirect dischargers. However, the statute provides for the modification of these national requirements in a limited number of circumstances. Moreover, the Agency has established administrative mechanisms to provide an opportunity for relief from the application of the national effluent limitations guidelines and pretreatment standards for categories of existing sources for toxic, conventional, and nonconventional pollutants.

1. Fundamentally Different Factors Variances

EPA will develop effluent limitations or standards different from the otherwise applicable requirements if an individual discharging facility is fundamentally different with respect to factors considered in establishing the limitation of standards applicable to the individual facility. Such a modification is known as a ''fundamentally different factors'' (FDF) variance.

Early on, EPA, by regulation provided for the FDF modifications from the BPT effluent limitations, BAT limitations for toxic and nonconventional pollutants and BPT limitations for conventional pollutants for direct dischargers. For indirect dischargers, EPA provide for modifications from pretreatment standards. FDF variances for toxic pollutants were challenged judicially and ultimately sustained by the Supreme Court. (*Chemical Manufacturers Assn* v. *NRDC,* 479 U.S. 116 (1985)).

Subsequently, in the Water Quality Act of 1987, Congress added new section 301(n) of the Act explicitly to authorize modifications of the otherwise applicable BAT effluent limitations or categorical pretreatment standards for existing sources if a facility is fundamentally different with respect to the factors specified in section 304 (other than costs) from those considered by EPA in establishing the effluent limitations or pretreatment standard. Section 301(n) also defined the conditions under which EPA may establish alternative requirements. Under Section 301(n), an application for approval of a FDF variance must be based solely on (1) information submitted during rulemaking raising the factors that are fundamentally different or (2) information the applicant did not have an opportunity to submit. The alternate limitation or standard must be no less stringent than justified by the difference and must not result in markedly more adverse non-water quality environmental impacts than the national limitation or standard.

EPA regulations at 40 CFR part 125, subpart D, authorizing the Regional Administrators to establish alternative limitations and standards, further detail the substantive criteria used to evaluate FDF variance requests for direct dischargers. Thus, 40 CFR 125.31(d) identifies six factors (*e.g.,* volume of process wastewater, age and size of a discharger's facility) that may be considered in determining if a facility is fundamentally different. The Agency must determine whether, on the basis of one or more of these factors, the facility in question is fundamentally different from the facilities and factors considered by EPA in developing the nationally applicable effluent guidelines. The regulation also lists four other factors (*e.g.,* infeasibility of installation within the time allowed or a discharger's ability to pay) that may not provide a basis for an FDF variance. In addition, under 40 CFR 125.31(b) (3), a request for limitations less stringent than the national limitation may be approved only if compliance with the national limitations would result in either (a) a removal cost wholly out of proportion to the removal cost considered during development of the national limitations, or (b) a non-water quality environmental impact (including energy requirements) fundamentally more adverse than the impact considered during development of the national limits. EPA regulations provide for an FDF variance for indirect dischargers at 40 CFR 403.13. The conditions for approval of a request to modify applicable pretreatment standards and factors considered are the same as those for direct dischargers.

The legislative history of section 301(n) underscores the necessity for the FDF variance applicant to establish eligibility for the variance. EPA's regulations at 40 CFR 125.32(b)(1) are explicit in imposing this burden upon the applicant. The applicant must show that the factors relating to the discharge controlled by the applicant's permit which are claimed to be fundamentally different are, in fact, fundamentally different from those factors considered by EPA in establishing the applicable guidelines. The criteria for applying for and evaluating applications for variances from categorical pretreatment standards are included in the pretreatment regulations at 40 CFR 403.13(h)(9). An FDF variance is not available to a new source performance subject to NSPS or PSNS.

2. Economic Variances

Section 301(c) of the CWA authorizes a variance from the otherwise applicable BAT effluent guidelines for nonconventional pollutants due to economic factors. The request for a variance from effluent limitations developed from BAT guidelines must normally be filed by the discharger during the public notice period for the draft permit. Other filing time periods may apply, as specified in 40 CFR 122.21(1)(2). Specific guidance for this type of variance is available from EPA's Office of Wastewater Management.

3. Water Quality Variances

Section 301(g) of the CWA authorizes a variance from BAT effluent guidelines for certain nonconventional pollutants due to localized environmental factors. These pollutants include ammonia, chlorine, color, iron, and total phenols.

D. Production Basis for Calculation of Permit Limitations

1. Background

The effluent limitations guidelines and standards for BPT, BAT, and NSPS proposed today are expressed as mass limitations in pounds (of pollutant) per 1000 pounds (of production unit). EPA is soliciting comment on PSES and PSNS numeric standards that are concentration-based. The NPDES regulations (40 CFR 122.45(f)) require permit writers to implement mass-based limitations for direct dischargers, but allows an exception when the limits are expressed in terms of other units of measurement (*e.g.,* concentration) and the General Pretreatment Standards (40 CFR 403.6(d)) provide that the control authority may impose mass limitations on industrial users which are using dilution to meet applicable pretreatment requirements or where mass limitations are appropriate. EPA believes that MPP facilities that have been using the best pollution prevention and water conservation practices may also request that the permit writer or POTW use mass-based limits in their permits or control mechanism. The Agency is providing detailed information on water use levels for specific unit operations in Section 6 of the MPP Development Document for today's proposal. EPA believes this information will be useful to permit writers and control authorities in those instances where they deem it appropriate to set mass-based limits.

2. Mass-Based Limitations and Standards

The effluent limitations guidelines and standards for BPT, BAT, and NSPS proposed today are expressed as mass limitations in pounds (of pollutant) per 1000 pounds (of production unit). Production units include Live Weight Killed (LWK), Equivalent Live Weight Killed (ELWK), Finished Product (FP) and Raw Material (RM). The mass limitation is derived by multiplying an effluent concentration (determined from the analysis of treatment system performance) by an appropriate wastewater volume (''production-normalized flow'') determined for each MPP operation expressed in gallons/1000 pounds of product. EPA developed the production normalized flows used to develop the limits in the proposed rule from survey questionnaire responses from MPP facilities. (The production-normalized flows are provided in Section VI.A.)

A facility subject to today's proposed regulation can use a combination of various treatment alternatives and/or water conservation practices to achieve a particular effluent limitation or standard. The model treatment systems (see Section XI) illustrate at least one means available to achieve the proposed effluent limitations guidelines and standards.

As discussed above in Section XII.D.1, both the NPDES permit regulations and the General Pretreatment Regulations discuss the use of mass-based limitations and standards. In order to convert the proposed effluent limitations and standards expressed as pounds/1,000 pounds of product to a monthly average or daily maximum permit limit, the permitting or control authority would use a production rate with units of 1,000 pounds/day. The NPDES permit regulations (40 CFR 122.45(b)(2)) require that NPDES permit limits be based on a ''* * * reasonable measure of actual production.'' A similar requirement is found in the General Pretreatment regulations (40 CFR 403.6(c)(3)). The production rates used for NPDES permitting for the MPP industry have commonly been the highest annual average production from the prior five year period prorated to a daily basis.

The objective in determining a production estimate for a facility is to develop a measure of production which can reasonably be expected to prevail during the next term of the permit. This is used in combination with the production-based limitations to establish a maximum mass of pollutant that may be discharged each day and month. However, if the permit production rate is based on the maximum month, then the permit could allow excessive discharges of pollutants during significant portions of the life of the permit. These excessive allowances may discourage facilities from ensuring optimal waste management, water conservation, and wastewater treatment practices during lower production periods. On the other hand, if the average permit production rate is based on an average derived from the highest year of production over the past five years, then facilities may have trouble ensuring that their waste management, water conservation, and wastewater treatment practices can accommodate shorter periods of higher production. This might require facilities to target a more stringent treatment level than that on which the limits were based during these periods of high production. To accomplish this, facilities would likely have to develop more efficient treatment systems and better water conservation and waste management practices during these periods. The Agency solicits comments on related costs and any technical difficulties that meat and poultry processing facilities might have in meeting limits during short periods of high production. EPA also solicits other options for consideration.

The proposed limitations neither require the installation of any specific control technology nor the attainment of any specific flow rate or effluent concentration. A facility subject to today's proposed regulation can use various treatment alternatives or water conservation practices to achieve a particular effluent limitation or standard. The model treatment systems described here illustrate at least one means available to achieve the proposed effluent limitations guidelines and standards.

E. Best Management Practices

Sections 304(e), 308(a), 402(a), and 501(a) of the CWA authorize the Administrator to prescribe BMPs as part of effluent limitations guidelines and standards or as part of a permit. EPA's BMP regulations are found at 40 CFR 122.44(k). Section 304(e) of the CWA authorizes EPA to include BMPs in effluent limitations guidelines for certain toxic or hazardous pollutants for the purpose of controlling ''plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage.'' Section 402(a)(1) and NPDES regulations (40 CFR 122.44(k)) also provide for best management practices to control or abate the discharge of pollutants when numeric limitations and standards are infeasible. In addition, Section 402(a)(2), read in concert with Section 501(a), authorizes EPA to prescribe as wide a range of permit conditions as the Administrator deems appropriate in order to ensure compliance with applicable effluent limitations and standards and such other requirements as the Administrator deems appropriate.

Dikes, curbs, and other control measures are being used at some MPP facilities to contain leaks and spills as part of good ''housekeeping'' practices.'' However, on a facility-by-facility basis a permit writer may choose to incorporate BMPs into the permit. See MPP Development Document for this proposed rule for a detailed discussion of pollution prevention and best management practices used in the MPP industry.

As described elsewhere in today's notice, EPA is considering an alternative to potential numeric pretreatment limitations and standards that would involve implementing BMPs as part of an Environmental Management System (EMS) (*see* Section XI.B).

XIII. Administrative Requirements

A. Executive Order 12866: ''Regulatory Planning and Review''

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined that this proposed rule is a ''significant regulatory action'' under the terms of Executive Order 12866. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

B. Regulatory Flexibility Act (RFA) as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 et seq.

The RFA generally requires an agency to prepare a regulatory flexibility analysis for any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's rule on small entities, small entity is defined as: (1) A small business based on full time employees (FTEs) or annual revenues established by SBA; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

The definitions of small business for the meat products industries are in SBA's regulations at 13 CFR 121.201. These size standards were updated effective October 1, 2000. SBA size standards for the meat and poultry products industry (that is, for NAICS codes 311611, 311612, 311613, and 311615) define a ''small business'' as one which has 500 or fewer employees.

EPA estimates that small businesses own 71 facilities out of 246 facilities that would be regulated under the rule as proposed. EPA based this estimate on information from the screener survey and SBA as described in Section VIII.M. EPA assumes that it is unlikely that any small company owns more than one facility. EPA has fully evaluated the economic impact of the proposed rule on the affected small companies. None of the facilities owned by small companies have a cost/sales ratio greater than one percent. For this proposal, EPA is using the ratio of annualized compliance costs to net income as its central measure of economic achievability (see Section VIII.E for a definition of this measure). EPA estimates that, based on its model facilities, 38 of the 71 facilities owned by small companies have cost/net income ratios between five and nine percent, eight facilities have cost/net income ratios between two and three percent, while the other 25 facilities owned by small companies have cost/net income ratios less than one percent. EPA also calculated the ratio of cost to sales as a supplement to the cost/net income ratio. (More detail on these estimates is provided in the EA.) After considering the economic impact of today's proposed rule on small entities, including consideration of alternative regulatory approaches being proposed, I certify that this action will not have significant economic impact on a substantial number of small entities.

Although this proposed rule will not have a significant economic impact on a substantial number of small entities, EPA nonetheless has tried to reduce the impact of this rule on small entities. EPA is not proposing any new requirements on 5411 (or the vast majority of) facilities. Most of these are owned by small businesses and many of the smallest could likely experience serious economic impacts if requirements were imposed. EPA considered regulating an additional subset of this group of 5411 facilities, the 731 largest indirect discharging facilities, 462 of which are owned by small businesses. If the costs of Option 1 for PSES standards were imposed on these facilities, EPA estimates that 235 of the 462 facilities owned by small companies would have a cost/net income ratio between one and two percent while the other 227 facilities owned by small companies would have a cost/net income ratio of less than one percent. Thus, even if EPA had proposed Option 1 PSES standards for indirect dischargers the combined proposal would not have had a significant impact on a substantial number of small entities.

EPA has held several teleconferences with representatives of the American Association of Meat Processors (AAMP) which has almost a third of its association members with less than 10 FTE at the company level. We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

C. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub.L. 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under Section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year.

Before promulgating an EPA rule for which a written statement is needed, Section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative, if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments,

including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. The total annual cost of this rule is estimated to be $80 million. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA. The facilities which are affected by today's proposal are direct dischargers engaged in the slaughtering or processing of meat and poultry and the rendering of by-products resulting from these activities. These facilities would be subject to today's proposed requirements through the issuance or renewal of an NPDES permit either from the Federal EPA or authorized State governments. These facilities should already have NPDES permits as the Clean Water Act requires a permit be held by any point source discharger before that facility may discharge wastewater pollutants into surface waters. Therefore, today's proposal could require these permits to be revised to comply with revised federal standards, but should not require a new permit program be implemented.

EPA is not proposing to establish pretreatment standards for this point source category which are applied to indirect dischargers and overseen by Control Authorities. Local governments are frequently the Control Authority but since this regulation proposes no pretreatment standards, there would be no impact imposed on local governments. Thus, today's rule is not subject to the requirements of section 203 of UMRA.

D. Executive Order 13045: ''Protection of Children From Environmental Health Risks and Safety Risks''

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under E.O. 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health and safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to E.O. 13045 because it is not economically significant under E.O. 12866, nor does it concern an environmental health or safety risk that may have a disproportionate effect on children.

E. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' This proposed rule does not have tribal implications, as specified in Executive Order 13175. This proposed rule will not have substantial direct effects on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule.

EPA specifically solicits additional comment on this proposed rule from tribal officials.

EPA has compared 492 tribal zip codes obtained from EPA's America Indian Environmental Office (AIEO) to the 5,270 zip codes from EPA's Hazard Analysis and Critical Control Points (HACCP) database. EPA identified approximately 64 MPP facilities located in 36 tribal zip codes. Of these 64 MPP facilities, 50 are classified as very small (<10 employees), 13 as small (10–499 employees), and only one facility as large (≥500 employees). EPA expects the proposed rule would not affect any of the very small facilities. It would only cover some of the facilities employing 10 to 499 employees and the one facility employing greater than or equal to 500 employees. (EPA cannot determine from the HACCP database which of these facilities are indirect dischargers and which are direct dischargers, although the large majority of these facilities are indirect dischargers.)

F. Paperwork Reduction Act

This proposed rule contains no new information collection requirements. Therefore, this rule is not subject to the Paperwork Reduction Act. OMB has previously approved information collection requirements for CWA direct dischargers to comply with their NPDES permits and for indirect dischargers to comply with pretreatment requirements. Burden estimates for direct dischargers to comply with this rule are contained in the ''National Pollutant Discharge Elimination System (NPDES)/ Compliance Assessment/Certification Information'' ICR (OMB control no. 2040–0110). Burden estimates for indirect discharging facilities to comply with 40 CFR Part 403 are included in the ''National Pretreatment Program (40 CFR part 403)'' ICR (OMB control no. 2040–0009).

Copies of the ICR document(s) may be obtained from Sandy Farmer, by mail at the Office of Environmental Information, Collection Strategies Division; U.S. Environmental Protection Agency (2822); 1200 Pennsylvania Ave., NW, Washington, DC 20460, by e-mail at *farmer.sandy@epa.gov,* or by calling (202) 260–2740. A copy may also be downloaded off the internet at *http://www.epa.gov/icr.* Include the ICR and /or OMB number in any correspondence.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

However, should EPA proceed with the Regulatory Alternative for indirect dischargers there could be new information collection requirements. The Agency will develop an Information Collection Request seeking clearance for any additional information collection requirements when we have fully evaluated and developed this alternative.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed

in 40 CFR part 9 and 48 CFR Chapter 15.

G. Executive Order 13132: ''Federalism''

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have Federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. EPA estimates that, when promulgated, these revised effluent guidelines and standards will be incorporated into NPDES permits without any additional costs to authorized States.

Further, the revised regulations would not alter the basic State-Federal scheme established in the Clean Water Act under which EPA authorizes States to carry out the NPDES permitting program. EPA expects the revised regulations to have little effect, if any, on the relationship between, or the distribution of power and responsibilities among, the Federal, State and local governments. Thus, Executive Order 13132 does not apply to this rule.

H. Executive Order 12898: ''Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations''

The requirements of the Environmental Justice Executive Order are that EPA will review the environmental effects of major Federal actions significantly affecting the quality of the human environment. For such actions, EPA reviewers will focus on the spatial distribution of human health, social and economic effects to ensure that agency decision makers are aware of the extent to which those impacts fall disproportionately on covered communities.'' This is not a major action. Further, EPA does not believe this rulemaking will have a disproportionate effect on minority or low income communities because the technology-based effluent limitations guidelines are uniformly applied nationally irrespective of geographic location. The proposed regulation will reduce the negative effects of meat and poultry products industry waste in our nation's waters to benefit all of society, including minority and low-income communities. The cost impacts of the rule should likewise not disproportionately affect low-income communities given the relatively low economic impacts of the rule.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) of 1995 (Pub L. 104–113 Sec. 12(d) 15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standard bodies. The NTTAA directs EPA to provide Congress, through the Office of Management and Budget (OMB), explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This rulemaking involves technical standards. The proposed rule requires certain facilities that produce meat or poultry products to monitor for fecal coliform, COD, BOD_5, TSS, oil & grease, ammonia, total phosphorus, and total nitrogen (sum of nitrate/nitrite and Total Kjeldahl Nitrogen (TKN)). EPA performed a search to identify potentially voluntary consensus standards that could be used to measure the parameters in today's proposed guideline. EPA's search revealed that consensus standards for these paramenters exist and are already specified in the tables at 40 CFR 136.3. In addition, EPA is proposing to add a voluntary consensus standard (Method 300.0) for measuring nitrate/nitrite. EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

J. Executive Order 13211: ''Energy Effects''

This rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. As part of the Agency's consideration of Non-Water Quality Impacts, EPA has estimated the energy consumption associated with today's proposed requirements. EPA estimates that meat and poultry processing facilities will decrease their energy consumption by 144 million KWH/yr which is approximately 6 percent of current energy used by this industrial sector. The decrease is associated with the proposed BAT technologies for the poultry and meat subcategories, which would result in treatment to remove nitrogen prior to discharge. Denitrification, following nitrification, which most direct discharging facilities currently have in place, will reduce energy usage. To remove the nitrates and nitrites generated by nitrifying ammonia, a typical facility is likely to use the oxygen attached to the nitrogen compounds to further break down the BOD, which means that the facility can actually reduce the need to add oxygen to the system through aeration of the wastewater. Shutting off the aeration equipment will reduce the energy used in operating the treatment system. EPA estimates that there will be no change in the energy requirements to operate the treatment system for the rendering subcategory as a result of today's proposed rule as the proposed rule does not change the technology basis (nitrification) for rendering facilities. See Section X.A of today's notice for more discussion of how these energy usages were determined. Therefore, we have concluded that this rule is not likely to have any adverse energy effects.

K. Plain Language

Executive Order 12866 requires each agency to write all rules in plain language. We invite your comments on how to make this proposed rule easier to understand. For example, have we organized the material to suit your needs? Are the requirements in the rule clearly stated? Does the rule contain technical language or jargon that is not clear? Would a different format (grouping and order of sections, use of headings, paragraphing) make the rule easier to understand? Would more (but shorter) sections be better? Could we improve clarity by adding tables, lists, or diagrams? What else could we do to make the rule easier to understand?

XIV. Solicitation of Data and Comments

A. General and Specific Comment Solicitation

EPA solicits comments on various issues specifically identified in the preamble as well as any other issues that are not specifically addressed in today's notice. Specifically, EPA solicits information, data, and comment on the following topics:

- Additional information and data on the performance and associated costs of all wastewater treatment technologies currently or potentially capable of treating MPP wastewaters;
- EPA's intended use of data (e.g, monitoring data) to perform a ''real-world'' check on the achievability of the limitations and standards;
- The potential of MPP facilities to reduce water consumption and new technologies or practices that can effectively reuse water;
- Description of all types of flocculants or treatment aids used in MPP WWTP and their concentrations that are commonly not accepted by independent renderers;
- Differences in production and wastewater generation and characteristics between non-religious and religious meat and poultry facilities;
- Whether EPA should approve the use of Method 300.0 for the meat and poultry industry;
- EPA's notation for oil and grease limitations and standards in the proposed rule;
- Whether EPA should regulate total residual chlorine;
- EPA's methodology for determining LTAs and variability factors used in this proposal;
- Need for a different monthly average limitations for small and non-small facilities;
- Whether EPA should set more stringent standards for either direct or indirect new sources;
- Additional methods for estimating and monetizing benefits associated with the proposed rule;
- The economic analysis in this proposal and the methods it is considering for subsequent analyses, particularly the use of cash flow as a measure of resources available to finance environmental compliance and suggestions for alternative methodologies;
- Whether TDS limitations and standards are necessary and which industry subcategories (if any) should be subject to these potential limitations and standards;
- Additional data and information related to instances of MPP indirect dischargers causing POTW interference or pass through (*see* Section XI.B);
- Information on whether or not EPA should regulate indirect dischargers (*see* Section XI.B);
- Additional data and information related to MPP facilities implementing EMSs or BMPs (*see* Section XI.F);
- Information on whether or not EPA should establish regulatory alternatives to potential pretreatment standards for indirect dischargers (*see* Section XI.F).
- Additional data and information on exotic and other meat and poultry product facilities (e.g., horse, goats, elk, deer, buffalo, ostriches, quail, pheasants, rabbits, and other small game). EPA is soliciting additional data and information on the industry profile for these meat and poultry product facilities including type of operations, annual production, number of employees per facility, typical wastewater characteristics, typical methods of wastewater management and treatment.

B. Regulatory Alternative to Potential Numerical Pretreatment Standards

EPA is describing a regulatory alternative to numerical pretreatment standards which would require meat and poultry products facilities to implement specific BMPs as part of a facility-wide Environmental Management System. See Section XI.F for the discussion of this regulatory alternative. EPA solicits comments on this alternative. Would it be a protective of the environment? Would meat and poultry products facilities choose this regulatory alternative?

EPA is also seeking data and information on the costs and burdens and even cost savings associated with implementing an EMS and the specific BMPs. Environmental improvements associated with implementing the BMPs, expressed in terms of pollutant reductions in wastewater discharges and other environmental improvements associated with the implementation of an EMS.

EPA solicits comments on the establishment of pretreatment standards for oil & grease on the basis of interferences of POTW performance. As discussed in Section XI.B, EPA has identified a number of instances where the discharge of untreated meat and poultry products wastewater has led to interference with a POTW treatment system.

XV. Guidelines for Submission of Analytical Data

EPA requests that commenters to today's proposed rule submit analytical, flow, and production data to supplement data collected by the Agency during the regulatory development process. To ensure that commenter data may be effectively evaluated by the Agency, EPA has developed the following guidelines for submission of data.

A. Types of Data Requested

EPA requests paired influent and effluent treatment data for each of the technologies identified in the technology options (*see* Section VII.A) as well as any additional technologies applicable to the treatment of MPP wastewater. EPA prefers paired influent and effluent treatment data, but also solicits unpaired data as well. Data from systems treating only non-process MPP wastewater (e.g., sanitary wastewater or non-contact cooling water) will not be evaluated by EPA.

For the systems treating MPP process wastewater, EPA requests paired influent and effluent treatment data from 24-hour composite samples of flowing wastewater streams (except for analyses requiring grab samples, such as oil and grease). This includes end-of-pipe treatment technologies and in-process treatment, recycling, or water reuse. Submission of effluent data alone is acceptable, but the commenters should provide evidence that the influent concentrations contain treatable levels of the pollutants. If commenters sample their wastewaters to respond to this proposal, EPA encourages them to sample both the influent and effluent wastestreams.

EPA prefers that the data be submitted in an electronic format. In addition to providing the measurement of the pollutant in each sample, EPA requests that sites provide the detection limit (rather than specifying zero or 'ND') if the pollutant is non-detected in the wastestream. Each measurement should be identified with a sample collection date, the sampling point location, and the flow rate at that location. For each sample or pollutant, EPA requests that the chemical analytical method be identified.

In support of the treatment data, commenters should submit the following items if they are available: A process diagram of the treatment system that includes the sampling point locations; treatment chemical addition rates; laboratory reports; influent and effluent flow rates for each treatment unit during the sampling period; production in each subcategory (daily values are preferred, but either production or estimated production during the sampling period are also acceptable); sludge or waste oil generation rates; a brief discussion of the treatment technology sampled; and a list of MPP operations contributing to

the sampled wastestream. If available, information on capital cost, annual (operation and maintenance) cost, and treatment capacity should be included for each treatment unit within the system.

B. Analytes Requested

EPA considered metal, organic, conventional, and other nonconventional pollutant parameters for regulation. Based on analytical data collected, EPA initially identified 30 pollutants of concern for the meat processing segment of the industry and 27 pollutants of concern for the poultry processing segment of the industry (*see* Section VII.C and MPP Development Document). The Agency requests analytical data for any of the pollutants of concern and for any other pollutant parameters that commentors believe are of concern in the MPP industry. Of particular interest are BOD_5, TSS, Ammonia as Nitrogen, and pH data. Commentors should use the methods listed in Table XV.C–1 or equivalent methods (generally, those approved at 40 CFR 136 for compliance monitoring), and should document the method used for all data submissions. The methods are described in more detail in the MPP Development Document.

C. Quality Assurance/Quality Control (QA/QC) Requirements

EPA based today's proposed regulations on analytical data collected by EPA using rigorous QA/QC checks specified in the analytical methods listed in Table XV.C–1. These QA/QC checks include procedures specified in each of the analytical methods, as well as procedures used for the MPP sampling program in accordance with EPA sampling and analysis protocols. These QA/QC procedures include sample preservation and the use of method blanks, matrix spikes, matrix spike duplicates, laboratory duplicate samples, and QC standard checks (e.g., continuing calibration blanks). Because of these rigorous checks, EPA has high confidence in its data. Thus, EPA requests that submissions of analytical data include any available documentation of QA/QC procedures. However, EPA will still consider data submitted without detailed QA/QC information. If commenters sample their wastewaters to respond to this proposal, EPA encourages them to provide detailed documentation of the QA/QC checks for each sample. EPA also requests that sites collect and analyze 10 percent field duplicate samples to assess sampling variability, and sites provide data for equipment blanks for volatile organic pollutants when automatic compositors are used to collect samples.

TABLE XV.C–1.—ANALYTICAL METHODS FOR USE WITH MPP WASTEWATERS

Parameter	Method used in EPA sampling (alternative methods)
Aeromonas	9260L
Acidity	305.1
Alkalinity	310.1
Ammonia as Nitrogen	350.2
BOD 5-Day	405.1
BOD 5-Day (Carbonaceous)	405.1, SM5210
Carbaryl	632
Chemical Oxygen Demand (COD).	410.1 410.2 410.4 5220B
Chloride	300.0 325.3
Dichlorvos	1657
E. coli	9221F
Metals	1620 (200.7, 245.1)
Volatile Organics	1624 (624)
Semivolatile Organics	1625 (625)
Malathion	1657
Nitrate/Nitrite	300.0 353.1 353.2
Nitrogen, Total Kjeldahl	351.2 351.3
Oil and Grease	413.2
Oil and Grease (as HEM)	1664
cis-Permethrin	1660
trans-Permethrin	1660
pH	150.1 (SM 4500 H^+ B)
Phosphorus, Total	365.2 365.3
Salmonella	FDA–BAM
Tetrachlorvinphos (stirofos)	1657
Total Dissolved Solids (TDS)	160.1
Total Organic Carbon (TOC)	415.1
Total Orthophosphate	300.0 365.2
Total Suspended Solids (TSS)	160.2

Note: Standard Method (SM).

Appendix A: Definitions, Acronyms, and Abbreviations Used in This Document

AAMP—The American Association of Meat Processors

Administrator—The Administrator of the U.S. Environmental Protection Agency.

Agency—The U.S. Environmental Protection Agency

AMI—American Meat Institute

AMSA—Association of Metropolitan Sewerage Agencies

BAT—The best available technology economically achievable, applicable to effluent limitations for industrial discharges to surface waters, as defined by Section 304(b)(2)(B) of the CWA.

BCT—The best control technology for conventional pollutants, applicable to discharges of conventional pollutants from existing industrial point sources, as defined by Section 304(b)(4) of the CWA

BOD_5—Biochemical Oxygen Demand measured over a five day period.

BPJ—Best Professional Judgment

BPT—The best practicable control technology currently available, applicable to effluent limitations, for industrial discharges to surface waters, as defined by Section 304(b)(1) of the CWA.

CFR—Code of Federal Regulations

Clean Water Act (CWA)—The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251 *et seq.*), as amended.

Clean Water Act (CWA) Section 308 Questionnaire—A questionnaire sent to facilities under the authority of Section 308 of the CWA, which requests information to be used in the development of national effluent guidelines and standards.

Conventional Pollutants—Constituents of wastewater as determined by section 304(a)(4) of the CWA (and EPA regulations), *i.e.,* pollutants classified as biochemical oxygen demand, total suspended solids, oil and grease, fecal coliform, and pH.

Daily Discharge—The discharge of a pollutant measured during any calendar day or any 24-hour period that reasonably represents a calendar day.

Direct Discharger—A facility that discharges or may discharge treated or untreated wastewaters into waters of the United States.

DMR—Discharge Monitoring Report.

Effluent Limitation Guideline (ELGS)—Under CWA section 502(11), any restriction, including schedules of compliance, established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean (CWA sections 301(b) and 304(b)).

Existing Source—For this rule, any facility from which there is or may be a discharge of pollutants, the construction of which is commenced before the publication of the final regulations prescribing a standard of performance under section 306 of the CWA.

Facility—All contiguous property and equipment owned, operated, leased, or under the control of the same person or entity.

FDF—Fundamentally Different Factor

Finished Product—The final manufactured product produced on site, including products intended for consumption with no additional processing as well as products intended for further processing, when applicable.

First Processing—Operations which receive live meat animals or poultry and produce a raw, dressed meat or poultry product, either whole or in parts.

FTE—Full Time Equivalent Employee

Further Processing—Operations which utilize whole carcasses or cut-up meat or poultry products for the production of fresh or frozen products, and may include

the following types of processing: cutting and deboning, cooking, seasoning, smoking, canning, grinding, chopping, dicing, forming or breading.

Hazardous Waste—Any waste, including wastewater, defined as hazardous under RCRA, TSCA, or any State law.

HEM—A measure of oil and grease in wastewater by mixing the wastewater with hexane and measuring the oils and greases that are removed from the wastewater with n-hexane. Specifically EPA Method 1664, see 40 CFR 136.3, Table IB.

Indirect Discharger—A facility that discharges or may discharge wastewaters into a publicly-owned treatment works.

LTA (Long-Term Average)—For purposes of the effluent guidelines, average pollutant levels achieved over a period of time by a facility, subcategory, or technology option. LTAs were used in developing the effluent limitations guidelines and standards in today's proposed regulation.

Live Weight Killed (LWK)—The total weight of the total number of animals slaughtered during a specific time period.

Maximum Monthly Discharge Limitation—The highest allowable average of ''daily discharges'' over a calendar month, calculated as the sum of all ''daily discharges'' measured during the calendar month divided by the number of ''daily discharges'' measured during the month.

Meat—The term ''meat'' includes all animal products from cattle, calves, hogs, sheep, lambs, horses, goats and exotic livestock (e.g. elk, buffalo, deer) etc., except those defined as Poultry for human consumption. This category may include certain species not classified as ''meat'' by USDA FSIS and that may or may not be under USDA FSIS voluntary inspection.

MPP—Meat and Poultry Products

Minimum Level—The level at which an analytical system gives recognizable signals and an acceptable calibration point.

NAICS—North American Industry Classification System. NAICS was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America.

National Pollutant Discharge Elimination System (NPDES) Permit—A permit to discharge wastewater into waters of the United States issued under the National Pollutant Discharge Elimination System, authorized by section 402 of the CWA.

Nitrification Capability—The capability of a POTW treatment system to oxidize ammonia or ammonium salts initially to nitrites (via *Nitrosomonas* bacteria) and subsequently to nitrates (via *Nitrobacter* bacteria). Criteria for determining the nitrification capability of a POTW treatment system are: bioassays confirming the presence of nitrifying bacteria; and analyses of the nitrogen balance demonstrating a reduction in the concentration of ammonia or ammonium salts and an increase in the concentrations of nitrites and nitrates.

Non-Conventional Pollutants—Pollutants that are neither conventional pollutants nor priority pollutants listed at 40 CFR 401.15 and part 423 appendix A.

Non-Water Quality Environmental Impact—Deleterious aspects of control and treatment technologies applicable to point source category wastes, including, but not limited to air pollution, noise, radiation, sludge and solid waste generation, and energy used.

NRA—National Renderers Association

NRDC—Natural Resources Defense Council

NSPS—New Sources Performance Standards, applicable to industrial facilities whose construction is begun after the effective date of the final regulations (if those regulations are promulgated after June 25, 2002). EPA is scheduled to take final action on this proposal in December 2003. See 40 CFR 122.2.

NTTA—National Technology Transfer and Advancement Act

NWPCAM—The National Water Pollution Control Assessment Model (version 1.1) is a computer model to model the instream dissolved oxygen concentration, as influenced by pollutant reductions of BOD_5, Total Kjeldahl Nitrogen, Total Suspended Solids, and Fecal Coliform.

LWK and ELWK—Live Weight Killed and the Equivalent Live Weight Killed

Outfall—The mouth of conduit drains and other conduits from which a facility effluent discharges into receiving waters.

Pass Through—The term ''Pass Through'' means a Discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Point Source—Any discernable, confined, and discrete conveyance from which pollutants are or may be discharged. See CWA section 502(14).

Pollutants of Concern (POCs)—Pollutants commonly found in meat and poultry processing wastewaters. Generally, a chemical is considered as a POC if it was detected in untreated process wastewater at 5 times a baseline value in more than 10% of the samples.

Poultry—Broilers, other young chickens, hens, fowl, mature chickens, turkeys, capons, geese, ducks, exotic poultry (e.g. ostriches), and small game such as quail, pheasants, and rabbits. This category may include species not classified as ''poultry'' by USDA FSIS and that may or may not be under USDA FSIS voluntary inspection.

Priority Pollutant—One hundred twenty-six compounds that are a subset of the 65 toxic pollutants and classes of pollutants outlined pursuant to section 307 of the CWA.

PSES—Pretreatment standards for existing sources of indirect discharges, under Section 307(b) of the CWA, applicable (for this rule) to indirect dischargers that commenced construction prior to promulgation of the final rule.

PSNS—Pretreatment standards for new sources under section 307(c) of the CWA.

Publicly Owned Treatment Works (POTW)—A treatment works as defined by section 212 of the Clean Water Act, which is owned by a State or municipality (as defined by section 502(4) of the Clean Water Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Clean Water Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

Raw Material—The basic input materials to a renderer composed of animal and poultry trimmings, bones, meat scraps, dead animals, feathers and related usable by-products.

RCRA—The Resource Conservation and Recovery Act of 1976 (RCRA) (42 U.S.C. 6901 *et seq.*), which regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous wastes.

RED MEAT—See the definition for ''MEAT''.

RFA—Regulatory Flexibility Act

SAP—Sampling and Analysis Plan

SBREFA—Small Business Regulatory Enforcement Fairness Act of 1996

SCC—Sample Control Center

SER—Small Entity Representative

SIC—Standard Industrial Classification (SIC)—A numerical categorization system used by the U.S. Department of Commerce to catalogue economic activity. SIC codes refer to the products, or group of products, produced or distributed, or to services rendered by an operating establishment. SIC codes are used to group establishments by the economic activities in which they are engaged. SIC codes often denote a facility's primary, secondary, tertiary, etc. economic activities.

Stearin—An ester of glycerol and stearic acid found in MPP wastewaters.

Total Nitrogen—Sum of nitrate/nitrite and TKN.

TKN—Total Kjeldahl Nitrogen

TSS—Total Suspended Solids

List of Subjects in 40 CFR Part 432

Environmental protection; Meat and meat products; Poultry and poultry products; Waste treatment and disposal; Water pollution control.

Dated: January 30, 2002.

Christine Todd Whitman,

Administrator.

For the reasons set forth in this preamble, 40 CFR part 432 is proposed to be revised to read as follows:

PART 432—MEAT AND POULTRY PRODUCTS POINT SOURCE CATEGORY

Sec.

Authority: Secs. 301, 304, 306, 307, 308, 402 and 501 of the Clean Water Act, as amended; 33 U.S.C. 1311, 1314, 1316, 1317, 1318, 1342 and 1361.

§ 432.1 General applicability.

As defined more specifically in each subpart, this part applies to discharges of process wastewater resulting from sources engaged in the slaughtering, dressing and packing of mammals, including cattle, calves, hogs, sheep, lambs, and poultry, including chickens, turkeys, fowl and ducks; production of sausages, luncheon meats, cured, smoked and canned or other prepared meat and poultry products from

purchased carcasses and other materials; or production of animal oils, meat meal and the rendering of grease and tallow from animal fat, bones and meat scraps. These manufacturing activities are generally reported under one or more of the following Standard Industrial Classification (SIC) codes: 0751, 2011, 2013, 2015, 2047, 2048 and 2077 (1987 Manual) and under one or more of the following North American Industry Classification System (NAICS) codes: 311611, 311612, 311615, 311613, 311111, 311119, 311999 and 11234.

§ 432.2 General definitions.

As used in this part:

(a) The general definitions and abbreviations in 40 CFR part 401 shall apply.

(b) *ELWK (equivalent live weight killed)* means the total weight of the total number of animals slaughtered at locations other than the slaughterhouse or packinghouse, which animals provide hides, blood, viscera or renderable materials for processing at that slaughterhouse, in addition to those derived from animals slaughtered on site.

(c) *Fecal coliform* means the bacterial count, as determined by approved methods of analysis for Parameter 1 in Table 1A at 40 CFR 136.3.

(d) *Finished Product* means the final fresh or frozen products resulting from the further processing of meat or poultry whole or cut-up carcasses.

(e) *Further processing* means operations which utilize whole carcasses or cut-up meat or poultry products for the production of fresh or frozen products, and may include the following types of processing: cutting and deboning, cooking, seasoning, smoking, canning, grinding, chopping, dicing, forming and/or breading.

(f) *LWK (live weight killed)* means the total weight of the total number of animals slaughtered during the time period to which the limitations or standards apply, i.e. daily or monthly.

(g) *Meat* means products derived from the slaughter and processing of cattle, calves, hogs, sheep, lambs, and any meat that is not listed under the definition of poultry.

(h) *Packinghouse* means a plant that both slaughters animals and subsequently processes carcasses into cured, smoked, canned or other prepared meat products.

(i) *Poultry* means products derived from the slaughter and processing of broilers, other young chickens, mature chickens, hens, turkeys, capons, geese, ducks, small game fowl such as quail or pheasants, and small game such as rabbits.

(j) *Raw Material* means the basic input materials to a renderer composed of animal and poultry trimmings, bones, blood, meat scraps, dead animals, feathers and related usable by-products.

(k) The other parameters regulated in this part are listed with approved methods of analysis in Table 1B at 40 CFR 136.3, and are defined as follows:

(1) *Ammonia (as N)* means ammonia measured as nitrogen.

(2) *BOD_5* means 5-day biochemical oxygen demand.

(3) *COD* means chemical oxygen demand.

(4) *O&G* means total recoverable oil and grease.

(5) *O&G (as HEM)* means total recoverable oil and grease measured as n-hexane extractable material.

(6) *Total Nitrogen* means the total of nitrate/nitrite and total kjeldahl nitrogen.

(7) *Total Phosphorus* means all of the phosphorus present in the sample, regardless of form, as measured by the persulfate digestion procedure.

(8) *TSS* means total suspended solids.

(l) *Slaughterhouse* means a facility that slaughters animals and has as its main product fresh meat as whole, half or quarter carcasses or small meat cuts.

(m) The nitrate/nitrite part of total nitrogen may be measured by EPA Method 300.0.

§ 432.3 General pretreatment standards.

Any source subject to this part that introduces process wastewater pollutants into a publicly owned treatment works (POTW) must comply with 40 CFR part 403.

§ 432.4 General limitation or standard for pH.

The pH must remain within the range 6 to 9 in any discharge subject to BPT, BAT, NSPS, or BCT limitations or standards in this part.

Subpart A—Simple Slaughterhouses

§ 432.10 Applicability.

This part applies to discharges of process wastewater resulting from the production of meat carcasses, in whole or in part, by simple slaughterhouses.

§ 432.11 Special definitions.

For the purpose of this subpart:

Simple slaughterhouse means a slaughterhouse which accomplishes very limited by-product processing, if any, usually no more than two operations such as rendering, paunch and viscera handling, or processing of blood, hide or hair.

§ 432.12 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg. [1]
BOD_5	0.24	0.12
Fecal Coliform	([2])	([2])
O&G [3]	0.12	0.06
TSS	0.40	0.20

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 most probable number (MPN) per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg. [1]
BOD_5	0.04	0.02
TSS	0.08	0.04

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(3) Processing of blood derived from animals slaughtered at locations off site: The same limitations for BOD_5 and TSS specified in paragraph (a)(2) of this section apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg. [1]
BOD_5	0.06	0.03

SUPPLEMENTAL LIMITATIONS (BPT)—Continued

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
TSS	0.12	0.06

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(5) Dry rendering of material derived from animals slaughtered at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.02	0.01
TSS	0.04	0.02

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK).

(1) Animals slaughtered on-site: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a)(1) of this section; and a limitation for COD is as follows:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.1450	0.1180

[1] Pounds per 1000 lbs (or g/kg) LWK.

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in paragraph (a)(2) of this section apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

(3) Processing of blood derived from animals slaughtered at locations off site: The same supplemental limitations for BOD_5 and TSS specified in paragraph (a)(2) of this section apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in paragraph (a)(4) of this section apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section and the following supplemental limitation for COD applies in addition to the COD limitation specified in paragraph (b)(1) of this section.

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.1550	0.1260

[1] Pounds per 1000 lbs (or g/kg) raw material.

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in paragraph (a)(5) of this section apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section and the supplemental limitations for COD specified in paragraph (b)(4) of this section apply in addition to the COD limitation specified in paragraph (b)(1) of this section.

(6) Further processing of animals slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the COD limitation specified in paragraph (b)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.278	0.226

[1] Pounds per 1000 lbs (or g/kg) finished product.

(7) Rendering of raw materials from animals slaughtered on-site: The following supplemental limitations for COD apply in addition to the COD limitation specified in paragraph (b)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.1550	0.1260

[1] Pounds per 1000 lbs (or g/kg) raw material.

§ 432.13 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart that slaughters more than 50 million pounds per year (in units of LWK) must achieve the following effluent limitations representing the application of BAT:

(a) Animals slaughtered on-site:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0655	0.0143
Total Nitrogen	0.0561	0.0230
Total Phosphorus	0.0497	0.0238

[1] Pounds per 1000 lbs (or g/kg) LWK.

(b) Further processing of animals slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a) of this section:

SUPPLEMENTAL LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0704	0.0153
Total Nitrogen	0.0965	0.0396
Total Phosphorus	0.0917	0.0439

[1] Pounds per 1000 lbs (or g/kg) finished product.

(c) Rendering of by-products from animals slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a) of this section:

SUPPLEMENTAL LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0438	0.0096
Total Nitrogen	0.0601	0.0247
Total Phosphorus	0.0472	0.0226

[1] Pounds per 1000 lbs (or g/kg) raw material.

§ 432.15 New source performance standards (NSPS).

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

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site: The standards for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.12(a)(1); and standards for ammonia (as N) are as follows:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.34	0.17

[1] Pounds per 1000 lbs (or g/kg) LWK.

(2) Processing of blood derived from animals slaughtered at locations off site: The supplemental standards for BOD_5 and TSS specified in § 432.12(a)(2) and the following supplemental standards for ammonia (as N), apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

SUPPLEMENTAL STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.06	0.03

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(3) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental standards for BOD_5 and TSS specified in § 432.12(a)(4) and the following supplemental standards for ammonia (as N) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

SUPPLEMENTAL STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.10	0.05

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(4) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental standards for BOD_5 and TSS specified in § 432.12(a)(5) and the following supplemental standards for ammonia (as N) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

SUPPLEMENTAL STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.04	0.02

[1] Pounds per 1000 lbs (or g/kg) ELWK.

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK)

(1) Animals slaughtered on-site:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0655	0.0143
BOD_5	0.0442	0.0208
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.0835	0.0210
Total Nitrogen	0.0561	0.0230
Total Phosphorus	0.0497	0.0238
TSS	0.0178	0.0137

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.

(2) Further processing of animals slaughtered on site, or at locations off site: The following supplemental standards apply in addition to the corresponding standard specified in paragraph (b)(1) of this section:

SUPPLEMENTAL STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0704	0.0153
BOD_5	0.0520	0.0245
O&G (as HEM)	0.1430	0.0362
Total Nitrogen	0.0965	0.0396
Total Phosphorus	0.0917	0.0439
TSS	0.0262	0.0201

[1] Pounds per 1000 lbs (or g/kg) finished product.

(3) Rendering of by-products from animals slaughtered on site, or at locations off site: The following supplemental standards apply in addition to the corresponding standard specified in paragraph (b)(1) of this section:

SUPPLEMENTAL STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0438	0.0096
BOD_5	0.0578	0.0272
O&G (as HEM)	0.1170	0.0297
Total Nitrogen	0.0601	0.0247
Total Phosphorus	0.0472	0.0226
TSS	0.0163	0.0125

[1] Pounds per 1000 lbs (or g/kg) raw material.

§ 432.17 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: Limitations for BOD_5, TSS, O&G, O&G (as HEM) and fecal coliform are the same as the corresponding limitations specified in § 432.12.

Subpart B—Complex Slaughterhouses

§ 432.20 Applicability.

This part applies to discharges of process wastewater resulting from the production of meat carcasses, in whole or in part, by complex slaughterhouses.

§ 432.21 Special definitions.

For the purpose of this subpart: *Complex slaughterhouse* means a slaughterhouse which accomplishes extensive by-product processing, usually at least three operations such as rendering, paunch and viscera handling, or processing of blood, hide or hair.

§ 432.22 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.42	0.21
Fecal Coliform	([2])	([2])
O&G [3]	0.16	0.08
TSS	0.50	0.25

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and

TSS specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK). (1) Animals slaughtered on-site: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a)(1) of this section; and the effluent limitations for COD specified in § 432.12(b)(1) apply.

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(6) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for COD specified in § 432.12(b)(6) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(7) Rendering of raw materials from animals slaughtered on-site: supplemental limitations for COD specified in § 432.12(b)(7) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

§ 432.23 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart that slaughters more than 50 million pounds per year (in units of LWK) must achieve the following effluent limitations representing the application of BAT:

(a) Animals slaughtered on-site: The effluent limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(a) apply.

(b) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(b) apply in addition to the corresponding limitation specified in § 432.13(a).

(c) Rendering of animals slaughtered on site, or at locations off site: The supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(c) apply in addition to the corresponding limitation specified in § 432.13(a).

§ 432.25 New source performance standards (NSPS).

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

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site: The standards for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.22(a)(1); and the standards for ammonia (as N) are as follows:

PERFORMANCE STANDARDS

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.48	0.24

[1] Pounds per 1000 lbs (or g/kg) LWK.

(2) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(2), apply in addition to the corresponding standard specified in paragraph (a)(1) of this section.

(3) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(4) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(3) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section.

(4) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(4) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK). (1) Animals slaughtered on-site, the effluent standards for BOD_5, TSS, O&G (as HEM), fecal coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(1) apply.

(2) Further processing of animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(2) apply in addition to the corresponding standard specified in § 432.15(b)(1).

(3) Rendering of by-products from animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(3) apply in addition to the corresponding standard specified in § 432.15(b)(1).

§ 432.27 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitations specified in § 432.22.

Subpart C—Low-processing Packinghouses

§ 432.30 Applicability.

This part applies to discharges of process wastewater resulting from the production of meat carcasses, in whole or in part, by low-processing packinghouses.

§ 432.31 Special definitions.

For the purpose of this subpart: *Low-processing packinghouse* means a packinghouse that processes no more, and usually less, that the total animals killed at that plant.

§ 432.32 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.34	0.17
Fecal Coliform	([2])	([2])
O&G [3]	0.16	0.08
TSS	0.48	0.24

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK). (1) Animals slaughtered on-site: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a)(1) of this section; and the effluent limitations for COD specified in § 432.12(b)(1) apply.

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(6) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for COD specified in § 432.12(b)(6) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(7) Rendering of raw materials from animals slaughtered on-site: supplemental limitations for COD specified in § 432.12(b)(7) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

§ 432.33 Effluent limitations attainable by the application of the best available technology economically achievable (BAT)

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart that slaughters more than 50 million pounds per year (in units of LWK) must achieve the following effluent limitations representing the application of BAT:

(a) Animals slaughtered on-site: The effluent limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(a) apply.

(b) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(b) apply in addition to the corresponding limitation specified in § 432.13(a).

(c) Rendering of animals slaughtered on site, or at locations off site: The supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(c) apply in addition to the corresponding limitation specified in § 432.13(a).

§ 432.35 New source performance standards (NSPS).

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

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.32(a)(1); and standards for ammonia (as N) are as follows:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	0.48	0.24

[1] Pounds per 1000 lbs (or g/kg) LWK.

(2) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(2), apply in addition to the corresponding standard specified in paragraph (a)(1) of this section.

(3) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(4) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(3) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section.

(4) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(4) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK). (1) Animals slaughtered on-site:

The effluent standards for BOD_5, TSS, O&G (as HEM), fecal coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(1) apply.

(2) Further processing of animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(2) apply in addition to the corresponding standard specified in § 432.15(b)(1).

(3) Rendering of by-products from animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(3) apply in addition to the corresponding standard specified in § 432.15(b)(1).

§ 432.37 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitations specified in § 433.32.

Subpart D—High-Processing Packinghouse

§ 432.40 Applicability.

This part applies to discharges of process wastewater resulting from the production of meat carcasses, in whole or in part, by high-processing packinghouses.

§ 432.41 Special definitions.

For the purpose of this subpart: *High-processing packinghouse* means a packinghouse which processes both animals slaughtered at the site and additional carcasses from outside sources.

§ 432.42 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK). (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	[2]0.48	0.24
Fecal Coliform	([3])	([3])
O&G [4]	0.26	0.13
TSS [2]	0.62	0.31

[1] Pounds per 1000 lbs (or g/kg) LWK.

[2] The values for BOD_5 and TSS are for average plants, i.e., plants where the ratio: avg.wt. of processed meat products/avg. LWK is 0.55. Adjustments can be made for high-processing packinghouses operating at other such ratios according to the following equations: lbs BOD_5/1000 lbs LWK = 0.21 + 0.23 (v − 0.4) and lbs TSS/1000 lbs LWK = 0.28 + 0.3 (v − 0.4), where v equals the following ratio: lbs processed meat products/lbs LWK.

[3] Maximum of 400 MPN per 100 ml at any time.

[4] May be measured as hexane extractable material (HEM).

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK). (1) Animals slaughtered on-site: Limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a)(1) of this section; and the effluent limitations for COD specified in § 432.12(b)(1) apply.

(2) Processing (defleshing, washing and curing) of hides derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(3) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section.

(4) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(4) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(5) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations specified in § 432.12(a)(5) apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section; and the supplemental limitations for COD specified in § 432.12(b)(4) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(6) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for COD specified in § 432.12(b)(6) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

(7) Rendering of raw materials from animals slaughtered on-site: The supplemental limitations for COD and specified in § 432.12(b)(7) apply in addition to the corresponding limitation specified in § 432.12(b)(1).

§ 432.43 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart that slaughters more that 50 million pounds per year (in units of LWK) must achieve the following effluent limitations representing the application of BAT:

(a) Animals slaughtered on-site: The limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(a).

(b) Further processing of animals slaughtered on site, or at locations off site: The supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(b) apply in addition to the corresponding limitation specified in § 432.13(a).

(c) Rendering of animals slaughtered on site, or at locations off site: The

supplemental limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.13(c) apply in addition to the corresponding limitation specified in § 432.13(a).

§ 432.45 New source performance standards (NSPS).

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

(a) Facilities that slaughter no more than 50 million pounds per year (in units of LWK): (1) On-site slaughter or subsequent meat, meat product or by-product processing of carcasses of animals slaughtered on-site: The standards for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.42(a)(1); and standards for ammonia (as N) are as follows:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.80	0.40

[1] Pounds per 1000 lbs (or g/kg) LWK.

(2) Processing of blood derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(2) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(2), apply in addition to the corresponding standards specified in paragraph (a)(1) of this section.

(3) Wet or low-temperature rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(4) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(3) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section.

(4) Dry rendering of material derived from animals slaughtered at locations off site: The supplemental limitations for BOD_5 and TSS specified in § 432.12(a)(5) and the supplemental standards for ammonia (as N) specified in § 432.15(a)(4) apply in addition to the corresponding standard specified in paragraph (a)(1) of this section:

(b) Facilities that slaughter more than 50 million pounds per year (in units of LWK).

(1) Animals slaughtered on-site, the effluent standards for BOD_5, TSS, O&G (as HEM), fecal coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(1) apply.

(2) Further processing of animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(2) apply in addition to the corresponding standard specified in § 432.15(b)(1).

(3) Rendering of of by-products from animals slaughtered on site, or at locations off site: The supplemental standards for BOD_5, TSS, O&G (as HEM), Ammonia (as N), Total Nitrogen and Total Phosphorus specified in § 432.15(b)(3) apply in addition to the corresponding standard specified in § 432.15(b)(1).

§ 432.47 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitations specified in § 432.42.

Subpart E—Small Processors

§ 432.50 Applicability.

This part applies to discharges of process wastewater resulting from the production of finished meat products such as fresh meat cuts, smoked products, canned products, hams, sausages, luncheon meats, or similar products by a small processor.

§ 432.51 Special definitions.

For the purpose of this subpart:

(a) *Finished product* means the final product, such as fresh meat cuts, hams, bacon or other smoked meats, sausage, luncheon meats, stew, canned meats or related products.

(b) *Small processor* means an operation that produces up to 6000 lbs (2730 kg) per day of any type or combination of finished products.

§ 432.52 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

EFFLUENT LIMITATIONS (BPT)

Regulated Parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	2.0	1
Fecal Coliform	([2])	([2])
O&G[3]	1.0	0.5
TSS	2.4	1.2

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

§ 432.55 New source performance standards (NSPS).

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

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	1.0	0.5
Fecal Coliform	([2])	([2])
O&G[3]	0.5	0.25
TSS	1.2	0.6

[1] Pound per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

§ 432.57 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS and O&G are the same as the corresponding standard specified in § 432.55.

Subpart F—Meat Cutters

§ 432.60 Applicability.

This part applies to discharges of process wastewater resulting from the fabrication or production of fresh meat cuts, such as steaks, roasts, chops, etc. by a meat cutter.

§ 432.61 Special definitions.

For the purpose of this subpart:

(a) *Finished product* means the final product, such as fresh meat cuts including, but not limited to, steaks, roasts, chops, or boneless meats.

(b) *Meat cutter* means an operation which fabricates, cuts, or otherwise produces fresh meat cuts and related finished products from larger pieces of meat (carcasses or not carcasses), at rates greater than 6000 lbs (2730 kg) per day.

§ 432.62 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that generate no more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.036	0.018
Fecal Coliform	([2])	([2])
O&G [3]	0.012	0.006
TSS	0.044	0.022

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a) of this section; and limitations for COD are as follows.

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.0654	0.0531

[1] Pounds per 1000 lbs (or g/kg) of finished product.

§ 432.63 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT: (a) Facilities that generate no more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia	8.0	4.0

[1] mg/L (ppm).

(b) Facilities that generate more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia	0.0165	0.0036
Total Nitrogen	0.0226	0.0093
Total Phosphorus	0.0215	0.0103

[1] mg/L (ppm).

§ 432.65 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: (a) Facilities that generate no more than 50 million pounds per year of finished products:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.030	0.015
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.012	0.006
TSS	0.036	0.018

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.

(b) Facilities that generate more than 50 million pounds per year of finished products:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0165	0.0036
BOD_5	0.0122	0.0058
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.0337	0.0085
Total Nitrogen	0.0226	0.0093
Total Phosphorus	0.0215	0.0103
TSS	0.0062	0.0047

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.

§ 432.67 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.62.

Subpart G—Sausage and Luncheon Meats Processors

§ 432.70 Applicability.

This part applies to discharges of process wastewater resulting from the production of fresh meat cuts, sausage, bologna and other luncheon meats by a sausage and luncheon meat processor.

§ 432.71 Special definitions.

For the purpose of this subpart:

(a) *Finished product* means the final product as fresh meat cuts, which includes steaks, roasts, chops or boneless meat, bacon or other smoked meats (except hams) such as sausage, bologna or other luncheon meats, or related products (except canned meats).

(b) *Sausage and luncheon meat processor* means an operation which cuts fresh meats, grinds, mixes, seasons, smokes or otherwise produces finished products such as sausage, bologna and luncheon meats at rates greater than 6000 lbs (2730 kg) per day.

§ 432.72 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

(a) Facilities that generate no more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.56	0.28
Fecal Coliform	([2])	([2])
O&G [3]	0.2	0.10
TSS	0.68	0.34

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a) of this section; and limitations for COD are as follows.

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
COD	0.2780	0.2260

[1] Pounds per 1000 lbs (or g/kg) of finished product.

§ 432.73 Effluent limitations attainable by the application of the best available technology economically achievable (BAT)

Except as provided by 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT: (a) Facilities that generate no more than 50 million pounds per year of finished products: The limitations for ammonia (as N) are the same as specified in § 432.63(a).

(b) Facilities that generate more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia	0.0704	0.0153
Total Nitrogen	0.0965	0.0396
Total Phosphorus	0.0917	0.0439

[1] mg/L (ppm).

§ 432.75 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: (a) Facilities that generate no more than 50 million pounds per year of finished products:

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.48	0.24
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.20	0.10
TSS	0.58	0.29

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.

(b) Facilities that generate more than 50 million pounds per year of finished products:

PERFORMANCE STANDARDS (NSPS):

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0704	0.0153
BOD_5	0.0520	0.0245

PERFORMANCE STANDARDS (NSPS):—Continued

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.1430	0.0362
Total Nitrogen	0.0965	0.0396
Total Phosphorus	0.0917	0.0439
TSS	0.0262	0.0201

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.

§ 432.77 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.72.

Subpart H—Ham Processors

§ 432.80 Applicability.

This part applies to discharges of process wastewater resulting from the production of hams, alone or in combination with other finished products, by a ham processor.

§ 432.81 Special definitions.

For the purpose of this subpart:

(a) *Finished products* means the final product as fresh meat cuts, which includes steaks, roasts, chops or boneless meat, smoked or cured hams, bacon or other smoked meats, sausage, bologna or other luncheon meats (except canned meats).

(b) *Ham processor* means an operation producing hams, alone or in combination with other finished products, at rates greater than 6000 lbs (2730 kg) per day.

§ 432.82 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT: (a) Facilities that generate no more than 50 million pounds per year of finished products:

EFFLUENT LIMITATION (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.62	0.31
Fecal Coliform	([2])	([2])
O&G [3]	0.22	0.11
TSS	0.74	0.37

[1] Pounds per 1000 lbs (or g/kg) of finished product.
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a) of this section; and limitations for COD are the same as the COD limitations specified in § 432.62(b).

§ 432.83 Effluent limitations attainable by the application of the best available technology economically achievable (BAT)

Except as provided by 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT:

(a) Facilities that generate no more than 50 million pounds per year of finished products: The limitations for ammonia (as N) are the same as specified in § 432.63(a).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as specified in § 432.73(b).

§ 432.85 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: (a) Facilities that generate no more than 50 million pounds per year of finished products: The standards for BOD_5, TSS, O&G and Fecal Coliform are the same as the corresponding limitation specified in § 432.82(a).

(b) Facilities that generate more than 50 million pounds per year of finished products: The standards for BOD_5, TSS, O&G (as HEM), Fecal Coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding standard specified in § 432.75(b).

§ 432.87 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.82.

Subpart I—Canned Meats Processors

§ 432.90 Applicability.

This part applies to discharges of process wastewater resulting from the production of canned meats, alone or in combination with any other finished products, by a canned meats processor.

§ 432.91 Special definitions.

For the purpose of this subpart:

(a) *Canned meats processor* means an operation which prepares and cans meats (stew, sandwich spreads, or similar products), alone or in combination with other finished products, at rates greater than 6000 lbs (2730 kg) per day.

(b) *Finished products* means the final product, such as fresh meat cuts which includes steaks, roasts, chops or boneless meat, smoked or cured hams, bacon or other smoked meats, sausage, bologna or other luncheon meats, stews, sandwich spreads or other canned meats.

§ 432.92 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT: (a) Facilities that generate no more than 50 million pounds per year of finished products:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.74	0.37
Fecal Coliform	([2])	([2])
O&G [3]	0.26	0.13
TSS	0.90	0.45

[1] Pounds per 1000 lbs (or g/kg) of finished product.

[2] Maximum of 400 MPN per 100 ml at any time.

[3] May be measured as hexane extractable material (HEM).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in paragraph (a) of this section; and limitations for COD are the same as the COD limitations specified in § 432.62(b).

§ 432.93 Effluent limitations attainable by the application of the best available technology economically achievable (BAT)

Except as provided by 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT: (a) Facilities that generate no more than 50 million pounds per year of finished products: The limitations for ammonia (as N) are the same as specified in § 432.63(a).

(b) Facilities that generate more than 50 million pounds per year of finished products: The limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as specified in § 432.73(b).

§ 432.95 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: (a) Facilities that generate no more than 50 million pounds per year of finished products: The standards for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.92(a).

(b) Facilities that generate more than 50 million pounds per year of finished products: The standards for BOD_5, TSS, O&G (as HEM), Fecal Coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding standard specified in § 432.75(b)

§ 432.97 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.92.

Subpart J—Renderers

§ 432.100 Applicability.

This part applies to discharges of process wastewater resulting from the production of meat meal, dried animal by-product residues (tankage), animal oils, grease and tallow, perhaps including hide curing, by a renderer.

§ 432.101 Special definitions.

For the purpose of this subpart:

(a) *Raw material* (*RM*) means the basic input materials to a renderer composed of animal and poultry trimmings, bones, meat scraps, dead animals, feathers and related usable by-products.

(b) *Renderer* means an independent or off-site rendering operation, which is conducted separate from a slaughterhouse, packinghouse or poultry dressing or processing operation, uses raw material at rates greater than 10 million pounds per year, produces meat meal, tankage, animal fats or oils, grease, and tallow, and may cure cattle hides, but excludes marine oils, fish meal, and fish oils.

(c) *Tankage* means dried animal by-product residues used in feedstuffs.

(d) *Tallow* means a product made from beef cattle or sheep fat that has a melting point of 40°C or greater.

§ 432.102 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

(a) Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
BOD_5	0.34	0.17
COD	0.184	0.111
Fecal Coliform	([2])	([2])
O&G[3]	0.20	0.10
TSS	0.42	0.21

[1] Pounds per 1000 lbs (or g/kg) of raw material.

[2] Maximum of 400 MPN per 100 ml at any time.

[3] May be measured as hexane extractable material (HEM).

(2) The limitations for BOD_5 and TSS specified in paragraph (a) of this section were derived for a renderer which does no cattle hide curing as part of its operations. If a renderer does conduct hide curing, the following empirical formulas should be used to derive supplemental limitations for BOD_5 and TSS which apply in addition to the corresponding limitation specified in paragraph (a) of this section:

lbs BOD_5/1000 lbs RM = 17.6 × (no. of hides)/lbs RM

kg BOD_5/kkg RM = 8 × (no. of hides)/kg RM

lbs TSS/1000 lbs RM = 24.2 × (no. of hides)/lbs RM
kg TSS/kkg RM = 11 × (no. of hides)/kg RM

§ 432.103 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided by 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT:

EFFLUENT LIMITATIONS (BAT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia	0.0194	0.0103

[1] Pounds per 1000 lbs (gm/kg) of raw material (RM).

§ 432.105 New source performance standards (NSPS).

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

PERFORMANCE STANDARDS (NSPS)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0194	0.0103
BOD_5	0.0436	0.0209
Fecal coliform	([2])	([2])
O&G[3]	0.2350	0.0594
TSS	0.1780	0.0887

[1] Pounds per 1000 lbs (gm/kg) of raw material (RM).
[2] Maximum of 400 MPN per 100 ml at any time.
[3] May be measured as hexane extractable material (HEM).

(b) The standards for BOD_5 and TSS specified in paragraph (a) of this section were derived for a renderer which does no cattle hide curing as part of the plant operations. If a renderer does conduct hide curing, the same empirical formulas specified in § 432.102(b) should be used to derive supplemental standards for BOD_5 and TSS which apply in addition to the corresponding standard specified in paragraph (a) of this section.

§ 432.107 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

(a) Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD,$_5$ TSS, O&G and fecal coliform are the same as the corresponding limitation specified in § 432.105(a).

(b) The limitations for BOD_5 and TSS specified in paragraph (a) of this section were derived for a renderer which does no cattle hide curing as part of the plant operations. If a renderer does conduct hide curing, the following empirical formulas should be used to derive supplemental limitations for BOD_5 and TSS which apply in addition to the corresponding limitation specified in paragraph (a) of this section:
lbs BOD_5/1000 lbs RM = 7.9 × (no. of hides)/lbs RM
kg BOD_5/kkg RM = 3.6 × (no. of hides)/kg RM
lbs TSS/1000 lbs RM = 13.6 × (no. of hides)/lbs RM
kg TSS/kkg RM = 6.2 × (no. of hides)/kg RM

Subpart K—Poultry First Processing

§ 432.110 Applicability.

This part applies to discharges of process wastewater resulting from the slaughtering of poultry, further processing of poultry and rendering of material derived from slaughtered poultry.

§ 432.111 Special definitions.

For the purpose of this subpart:
Poultry first processing means slaughtering of poultry and producing whole, half, quarter or smaller meat cuts. Poultry first processing also includes cutting deboning and grinding of poultry when these operations are performed on site at a slaughtering facility. However, when cutting, deboning and grinding is performed at locations off site, these operations are considered further processing operations.

§ 432.112 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT: (a) Facilities that slaughter no more than 10 million pounds per year (in units of LWK).

(1) Poultry first processing:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.1630	0.0356
BOD_5	0.1200	0.0568
Fecal Coliform	([2])	([2])
O&G (as HEM)	1.330	0.335
TSS	0.2120	0.0991

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.

(2) Further processing of poultry slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0400	0.0087
BOD_5	0.0458	0.0215
O&G (as HEM)	0.5150	0.1290
TSS	0.0623	0.0290

[1] Pounds per 1000 lbs (or g/kg) finished product.

(3) Rendering of by-products from poultry slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (a)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0771	0.0168
BOD_5	0.0324	0.0152
O&G (as HEM)	0.2950	0.0745
TSS	0.2400	0.1120

[1] Pounds per 1000 lbs (or g/kg) raw material.

(b) Facilities that slaughter more than 10 million pounds per year (in units of LWK) (1) Poultry first processing:

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.163	0.0356
BOD_5	0.120	0.0568
Fecal Coliform	([2])	([2])
O&G (as HEM)	1.31	0.33
Total Nitrogen	0.2239	0.0921
Total Phosphorus	0.1760	0.0843
TSS	0.0609	0.0467

[1] Pounds per 1000 lbs (or g/kg) LWK.
[2] Maximum of 400 MPN per 100 ml at any time.

(2) Further processing of poultry slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (b)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0400	0.0087
BOD_5	0.0453	0.0213
O&G (as HEM)	0.2290	0.0579
Total Nitrogen	0.0548	0.0226
Total Phosphorus	0.0431	0.0206
TSS	0.0149	0.0114

[1] Pounds per 1000 lbs (or g/kg) finished product.

(3) Rendering of by-products from poultry slaughtered on site, or at locations off site: The following supplemental limitations apply in addition to the corresponding limitation specified in paragraph (b)(1) of this section:

SUPPLEMENTAL LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0771	0.0168
BOD_5	0.0324	0.0152
O&G (as HEM)	0.1980	0.0500
Total Nitrogen	0.0601	0.0247
Total Phosphorus	0.0472	0.0226
TSS	0.0271	0.0208

[1] Pounds per 1000 lbs (or g/kg) raw material.

§ 432.113 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided by 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BAT: The limitations for Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding limitation specified in § 432.112.

§ 432.115 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: The standards for BOD_5, TSS, O&G (as HEM), Fecal Coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding limitation specified in § 432.112.

§ 432.117 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G (as HEM) and Fecal Coliform are the same as the corresponding limitation specified in § 432.112.

Subpart L—Poultry Further Processing

§ 432.120 Applicability

This part applies to discharges of process wastewater resulting from further processing of poultry.

§ 432.122 Effluent limitations attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BPT: (a) Facilities that further process no more than 7 million pounds per year (in units of finished product):

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0400	0.0087
BOD_5	0.0458	0.0215
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.5150	0.1290
TSS	0.0623	0.0290

[1] Pounds per 1000 lbs (or g/kg) of finished product.

[2] Maximum of 400 MPN per 100 ml at any time.

(b) Facilities that further process more than 7 million pounds per year (in units of finished product):

EFFLUENT LIMITATIONS (BPT)

Regulated parameter	Maximum daily [1]	Maximum monthly avg.[1]
Ammonia (as N)	0.0400	0.0087
BOD_5	0.0453	0.0213
Fecal Coliform	([2])	([2])
O&G (as HEM)	0.229	0.0579
Total Nitrogen	0.0548	0.0226
Total Phosphorus	0.0431	0.0206
TSS	0.0149	0.0114

[1] Pounds per 1000 lbs (or g/kg) finished product.

[2] Maximum of 400 MPN per 100 ml at any time.

§ 432.123 Effluent limitations attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for Fecal Coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding limitation specified in § 432.122.

§ 432.125 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following performance standards: The standards for BOD_5, TSS, O&G (as HEM), Fecal Coliform, Ammonia (as N), Total Nitrogen and Total Phosphorus are the same as the corresponding limitation specified in § 432.122.

§ 432.127 Effluent limitations attainable by the application of the best control technology for conventional pollutants (BCT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the application of BCT: The limitations for BOD_5, TSS, O&G (as HEM) and Fecal Coliform are the same as the corresponding limitation specified in § 432.122.

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