



DRAFT

**A STRATEGY FOR
NATIONAL CLEAN WATER
INDUSTRIAL REGULATIONS**

*Effluent Limitations Guidelines, Pretreatment Standards,
and New Source Performance Standards*

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Introduction

The Environmental Protection Agency (EPA) developed this draft *National Strategy* in order to provide interested stakeholders – industry, academia, equipment manufacturers, States, POTWs, environmental interest groups, and members of the public – the chance to consider how national industrial technology-based regulations (known as effluent guidelines) can best meet the needs of the broader national clean water program in the years ahead.

This draft *National Strategy* outlines a process for developing a biennial plan that is designed to meet both the statutory requirements that are specified in sections 304(b), 304(g), 304(m), 306(b), and 307(b) of the Clean Water Act, as well as the water quality challenges of the 21st century. EPA used the following overarching goals to guide development of this *Strategy*:

- *Reduce Risk to Human Health and the Environment*
- *Provide Transparent Decision-making*

This draft *National Strategy* is divided into three major sections:

- I. Background that describes the history, intent, and contributions of the effluent guidelines program;
- II. Description of the Clean Water Act planning requirements, program litigation history, recommendations from the Effluent Guidelines Task Force, and suggestions from participants at a public meeting EPA held in April 2001 to develop potential planning processes;
- III. Presentation of EPA's current thinking on the process it plans to follow in developing a biennial plan for the program and the criteria EPA expects to use in assessing the need to develop and/or revise effluent guidelines for specific industrial categories.

EPA looks forward to receiving public comments on this draft *National Strategy* and plans to review comments and prepare a revised, final *Strategy* early next year.

I. BACKGROUND INFORMATION

EPA's Office of Water is responsible for implementing the Clean Water Act (or "CWA"), which provides EPA and the States with a variety of programs and tools to protect and restore the Nation's waters. These programs and tools generally rely either on water quality-based controls, such as water quality standards and water quality-based permit limitations, or technology-based controls such as effluent guidelines and technology-based permit limitations. Permits developed using the technology-based industrial regulations have been a critical element of the Nation's clean water program for the past thirty years, and have helped EPA and the States substantially reduce industrial water pollution during that time.

The CWA gives States the primary responsibility for establishing, reviewing, and revising water quality standards. These consist of designated uses for each waterbody (e.g., fishing, swimming, supporting aquatic life), numeric pollutant concentration limits ("criteria") to protect those uses, and an antidegradation policy. EPA develops national criteria for many pollutants, which states may adopt or modify as appropriate to reflect local conditions. While technology-based permits may, in fact, result in meeting State water quality standards, the effluent guidelines program is not specifically designed to ensure that the discharge from each facility meets the water quality standards for that particular waterbody. For this reason, the CWA also requires States to establish water quality-based permit limitations, where necessary to attain and maintain water quality standards, that require industrial facilities to meet requirements that are more stringent than those in a national effluent guideline regulation. Consequently, in the overall context of the CWA, effluent guidelines must be viewed as one tool in the broad arsenal of tools Congress provided to EPA and the States to protect and restore the Nation's water quality.

This section of the draft *National Strategy* describes the key concepts behind the national effluent guidelines program, the genesis of this program as one arm of

the Nation's clean water program, and the contribution of the program in improving the Nation's water quality.

A. What is the Effluent Guidelines Program?

The effluent guidelines program is one component of the Nation's clean water program, established by the 1972 Clean Water Act. The national clean water industrial regulatory program is authorized under sections 301, 304, 306 and 307 of the CWA and is founded on six core concepts.



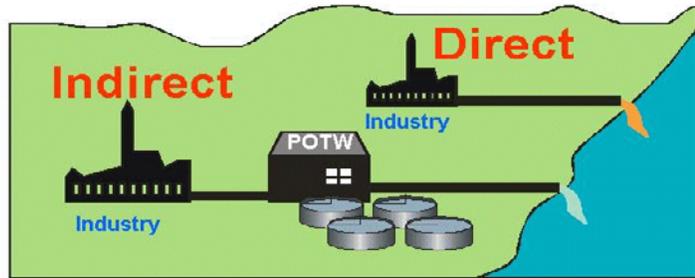
First, the program is designed to address specific industrial categories. To date, EPA has promulgated effluent guidelines that address 55 categories --- ranging from manufacturing industries such as petroleum refining to service industries such as centralized waste treatment. (See Appendix 1.) These regulations apply to between 35,000 and 45,000 facilities that discharge directly to the Nation's waters, as well as another 12,000 facilities that discharge into publicly owned treatment works or "POTWs".

Second, national effluent guideline regulations typically specify the maximum allowable levels of pollutants that may be discharged by facilities within an industrial category or subcategory. While the limits are based on the performance of specific technologies, they do not generally require the industry to use these technologies, but rather allow the industry to use any effective alternatives to meet the numerical pollutant limits.

Third, each facility within an industrial category or subcategory must generally comply with the applicable discharge limits — regardless of its location within the country or on a particular water body. See CWA section 307(b) and (c); and CWA section 402(a)(1). The regulations, therefore, constitute a single, standard, pollution control obligation for all facilities within an industrial category or subcategory.

Fourth, in establishing national effluent guidelines for pollutants, EPA must conduct a critical assessment of (1) the performance of the best pollution control technologies or pollution prevention practices that are available for an industrial category or subcategory as a whole; and (2) the economic achievability of that technology, which can include consideration of costs, benefits, and affordability of achieving the reduction in pollutant discharge.

Direct and Indirect Discharges



Fifth, national regulations apply to three types of facilities within an industrial category: existing facilities that discharge directly to surface waters (i.e., direct discharges); existing facilities that discharge to POTWs (indirect dischargers); and newly constructed facilities (new sources) that discharge to surface waters either directly or indirectly.

Finally, the CWA requires EPA to conduct an annual review of existing effluent guidelines and, if appropriate, to revise these regulations to reflect changes in the industry and/or changes in available pollution control technologies.

B. Genesis of Effluent Guideline Regulations as One Arm of the Nation's Clean Water Program

During the Clean Water Act debates in Congress in 1971 and 1972, there was general agreement about what was needed: reduce pollution levels in the Nation's waters. However, there was less agreement on how this could be accomplished.

Most State water pollution control efforts at that time focused on developing ambient, site-specific, pollution controls that were intended to meet a specific public health or environmental goal for an individual water body. This process had drawbacks: it was slow, complex, and the State-established goals for water body

health varied widely across the country. Consequently, the 1972 CWA represents a delicate balance between supporters of a newer approach (e.g., technology-based standards such as effluent guidelines) and the earlier State/locally-led efforts (e.g., State-determined ambient water quality standards).

“...the Committee bill makes a sharp break with present practice – for the beginning point is not the degree of pollution considered tolerable, but the elimination of polluting discharges to the extent that available technology allows.”

– Senator **John Sherman Cooper**; 1972

The debate over the need for national industrial regulations focused on a number of issues. First, some members of Congress were concerned that individual States might establish different standards for water quality than those in other States in an effort to attract industrial development and economic growth to their State. The willingness of one State to have lower water quality might then create a “race to the bottom” as other States felt compelled to meet or even undercut the less protective and less costly control requirements of their neighbors. Creating a single national pollution control requirement for each industrial category based on the best technology the industry could afford was seen as a way to reduce the potential creation of “pollution havens” and to set the country’s sights on attaining the highest possible level of water quality.

Second, some members of Congress were concerned that relying only on water quality standards to protect water quality might create the potential for States to manage their waters in ways that allowed pollution to reach the maximum allowable levels for a given use (e.g., recreation, fishing). This could create risk of

“This legislation represents a major change in the basic philosophy governing our attempts to eliminate water pollution. In altering our approach from standards of water quality to controls based on effluent limitations, we are starting down a new road, one that will reach the same goal but by a more direct and precise route.”

–Senator **Jennings Randolph**; 1972

impairment to these waters as a result of unexpected new pollution loadings, noncompliance with established limits, and/or unusual conditions in the water body. By requiring that industrial dischargers comply with effluent limits based on the best available technology economically achievable, the CWA would provide more pollution control than was

“The committee recommends the change to effluent limits as the best available mechanism to control water pollution. With effluent limits, the Administrator can require the best control technology: He need not search for a precise link between pollution and water quality.”

“With this recommendation, the committee intends no criticism of the States...nor of the State officials whose programs are superior in many respects to the Federal water pollution control program. To the contrary, it is the committee’s intent to restore the balance of Federal-State effort in the program as contemplated by the 1965 and 1966 acts.”

– Senator **Edmund S. Muskie**; 1972

necessary to meet the water quality standards in some water bodies. This “margin of safety” would, in turn, help protect water bodies from unexpected changes in conditions, keep waters away from the brink of nonattainment, and provide additional capacity to support industrial and economic growth.

Third, in the early 1970's the scientific information concerning the human health

and environmental effects of pollutants was limited. Congress directed EPA to develop this information and provide it to the States (see section 304(a) of the CWA). In doing so, however, Congress recognized that EPA’s effort to understand the health and environmental effects of many pollutants would take time and States would need additional time to adopt this information into water quality standards. Therefore, Congress required national regulations for industrial categories containing discharge limits based on treatment capabilities of available technology. These limits could be in place sooner than water quality standards and would address far more pollutants than could be addressed in water quality standards.

Fourth, some Members of Congress feared that pollutant specific numerical standards that identified allowable levels of a pollutant in a water body could not account for the interactive effects of the pollutant on the aquatic life in the water body, which can be either negative or positive. Where the effect is negative, even compliance with water quality standards for all the

“...the intent is that effluent limitations applicable to point sources be as uniform as possible. The Administrator is expected to be precise in his guidelines so as to assure that similar characteristics regardless of their location or the nature of the water in which the discharge is made, will meet similar effluent limitations.”

–Senator **Edmund Muskie**; 1972

individual pollutants in a water body will not protect the designated use. In some cases, this problem could be mitigated by implementing more stringent pollutant limits based on treatment capability. Furthermore, treatment technologies tend to control multiple pollutants simultaneously.

Finally, there was concern that, in the case of industrial dischargers to POTWs (i.e., indirect dischargers), controls on the POTW alone could not guard against shifts of pollutants to other environmental media. In the case of the industrial dischargers, for example, pollutants are piped to POTWs for treatment along with conventional sewage prior to discharge to water bodies. However, some pollutants may not actually reach the treatment plant because they may leak from sewer pipes to groundwater or may be released to surface waters prior to treatment as a result of overflows of sanitary sewers or of combined storm and sanitary sewers.

A related concern is that pollutants may be removed from the effluent discharged to a water body by becoming part of the sewage sludge from the treatment plant. Much of this sludge is applied to land and pollutants can then run off into water bodies. (Note that Congress amended the Clean Water Act in 1987 to provide for the development of standards for sewage sludge similar to those for water quality.)

What was Congress' solution? — A melding of two approaches, the newer national approach (i.e., technology-based standards known as effluent guidelines) and existing State/local efforts (e.g., State-determined ambient water quality standards).

C. Contribution of the Effluent Guidelines Program to Improving the Nation's Water Quality

In the thirty years since Congress passed the 1972 Clean Water Act, the quality of the Nation's waters has improved dramatically, and the Nations's water programs have matured and expanded. The national effluent guidelines program has been an important tool, and has helped improve water quality by reducing the discharge of pollutants that kill or impair aquatic organisms, degrade aquatic

ecosystems, or cause human health problems through ingestion of contaminated water, fish, or shellfish.

National effluent guidelines are implemented through the National Pollutant Discharge Elimination System (NPDES) permit program, which is responsible for preventing the discharge of almost 700 billion pounds of pollutants each year.¹ Of this total, over 1 billion pounds are toxic pollutants such as heavy metals, over 470 billion pounds are nonconventional pollutants such as nutrients and salts, and almost 220 billion pounds are conventional pollutants such as suspended solids. These pollutants include chemicals known to cause or contribute to cancer, impact reproductive health, hinder mental and motor development in children, impact the central nervous system, and damage major organs such as the liver and kidney.

Effluent guidelines control these pollutants regardless of whether EPA has developed a water quality criteria or whether a State has adopted a numeric water quality standard based on that criteria. Development of water quality criteria by EPA and adoption/modification of these criteria by the States is a significant and lengthy effort. To date, EPA has published criteria documents for over 160 pollutants, approximately one-third of the pollutants examined for control through the effluent guidelines program.

D. Contribution of the Water Quality Program to Improving the Nation's Water Quality

In addition to the technology-based effluent guidelines program, EPA and the States implement a wide range of water-quality based programs also designed to protect and restore the Nation's waters. Many of these programs are used in tandem with effluent guidelines, and can augment and complement the benefits gained by the technology-based program.

For example, water quality standards and criteria are the regulatory and scientific foundation for the Nation's water quality-based programs. Water quality standards – consisting of designated uses for waters, water quality criteria to protect the uses, and antidegradation policies – serve the dual purposes of

¹Based on a review of effluent guideline development documents.

establishing water quality goals for specific water bodies and providing the regulatory basis for establishing certain treatment controls and strategies.

All states, territories, and authorized Indian tribes now have water quality standards in place under the CWA. EPA provides guidance to these jurisdictions for adopting scientifically defensible water quality standards, and reviews and approves those standards. In addition, EPA has promulgated water quality standards for specific pollutants in 18 states, Puerto Rico, and the District of Columbia. (Under the CWA, EPA must adopt water quality standards in cases where it determines they are necessary to fulfill the purposes of the Act.) EPA has also issued national numeric water quality criteria guidance for 165 pollutants, 101 of which are priority toxic pollutants.

Several key provisions of the CWA are linked to water quality standards. For example, water quality standards are used to assess impairments in U.S. waters, to establish targets and load reductions needed in impaired waters through total maximum daily loads (TMDLs), and to set limits on pollutants through enforceable NPDES permits where technology-based limits are insufficient to protect water quality.

The States and EPA have controlled over 48,000 individual industrial facilities through the issuance of individual NPDES permits, and controlled thousands more through general permits. Over 70 percent of our rivers, 68 percent of our estuaries and 60 percent of our lakes now meet applicable water quality standards. Fish are coming back, habitats are recovering, and many miles of formerly contaminated beaches are now safe for swimmers.

E. Addressing the Remaining Challenges

Though there has been considerable progress in improving the quality of the Nation's waters, we still have not achieved water quality objectives in many water bodies. Under EPA and State permit programs, industrial discharge restrictions – in the form of technology-based and water-quality based effluent limitations – have contributed to great improvements. However, significant sources of pollutants remain. Many of these pollutants come from sources that are not related to industrial discharges, such as non-point source runoff from agricultural lands,

stormwater flows from cities, seepage into ground water from nonpoint sources, and the loss of critical habitats such as wetlands.

EPA is committed to developing science, methods, models and other tools to better identify, assess and quantify risks caused from exposure to chemical and biological contaminants. In the short term, EPA will vigorously implement legal requirements to ensure we maintain the gains in water quality made over the last three decades. One facet of EPA's overall approach to resolving the remaining water quality problems is the continued implementation of the national effluent guidelines program to address water quality problems associated with industrial dischargers.

EPA is proposing a process to establish priorities that is predicated on selecting opportunities for the greatest risk reduction using the best programs and tools available. EPA intends to characterize and compare risks based on sound, reliable data and sound analysis. Further, EPA intends to establish priorities and to make choices in consultation with the public and regulated communities based on the potential to cost-effectively reduce levels of risk to public health and the environment.

In this draft *National Strategy*, EPA proposes a decision-making process and identifies the key factors EPA expects to consider as it evaluates the need to revise existing effluent guidelines or to develop new effluent guidelines. In making these decisions, EPA also intends to consider other factors suggested by the public, as appropriate.

II. Planning For National Clean Water Industrial Regulations

In the early years of clean water programs, EPA focused on establishing national regulations for core industrial categories. In the mid-1970's, work on several categories was set aside as EPA shifted its focus to further control toxic pollutants — first as the result of litigation, then in compliance with the 1977 amendments to the Clean Water Act. In 1987, Congress again amended the CWA to, among other things, establish a formal planning process for the effluent guidelines program. This new provision, section 304(m), reiterated EPA's mandatory duty to annually review existing effluent guidelines for potential revision and clarified EPA's duty to identify categories of sources discharging toxic or nonconventional pollutants for which no effluent guidelines exist. EPA's first attempt to comply with the new planning provision resulted in litigation by the Natural Resources Defense Council and Public Citizen, Inc. for failure to comply with section 304(m). EPA entered into a consent decree in 1992 that has governed the program for the past decade. EPA anticipates that it will soon fulfill its commitments under the provisions of that consent decree. The Agency is now considering how it will comply with the 304(m) planning requirements in the future.

This section of the draft *National Strategy* reviews the 304(m) planning requirements and summarizes the litigation and implementation of those requirements to date. It then describes the planning-related recommendations of the Effluent Guidelines Task Force, as well as the recommendations of an invited group of experts who participated in a public meeting convened by EPA in April 2001 to provide their ideas on how best to conduct this planning effort.

A. Statutory Requirements for Program Planning

The Clean Water Act requires that EPA periodically *review* existing effluent guidelines, pretreatment standards, and standards of performance for new sources and to *revise* them “if appropriate” or, in the case of new source performance standards, “as technology and alternatives change.” See CWA sections 301(d), 304(b), 304(g)(1), 306(b)(1)(B). In addition, the CWA requires EPA to *promulgate* effluent guidelines for new categories of dischargers under certain

circumstances. See CWA section 304(m)(1)(B) and (C). (See the inset box below for section 304(m) requirements, and Appendix 2 for a summary of other CWA provisions regarding the review, revision, and promulgation of effluent guidelines regulations.)

B. Litigation on Program Planning

On October 30, 1989, the 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 Clean Water Act section 304(m). The plaintiffs and EPA eventually 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 was to propose and take final action on both the revision of existing effluent guidelines and the promulgation of new effluent guidelines. It also established a schedule by which EPA was to conduct preliminary studies of several industries. Under the decree, EPA was directed to use the studies as well as other available information to select the categories for which EPA would issue new or revised rules.

Finally, the consent decree provided that section 304(m) plans issued subsequent to the decree which are consistent with its terms shall satisfy EPA's obligations to publish such plans on a biennial basis.

Clean Water Act Section 304(m) Schedule for Review of Guidelines

"(1) Publication: Within 12 months after February 4, 1987, and biennially thereafter, the Administrator shall publish in the Federal Register a plan which shall ----

- "(A) establish a schedule for the annual review and revision of promulgated effluent guidelines, in accordance with subsection (b) of this section;
- (B) identify categories of sources discharging toxic or nonconventional pollutants for which guidelines under subsection (b)(2) of this section and section 1316 of this title have not previously been published; and
- (C) establish a schedule for promulgation of effluent guidelines for categories identified in subparagraph (B), under which promulgation of such guidelines shall be no later than 4 years after February 4, 1987, for categories identified in the first published plan or 3 years after the publication of the plan for categories identified in later published plans."

"(2) Public Review: The Administrator shall provide for public review and comment on the

Since 1992, EPA has promulgated new or revised effluent guidelines for ten industrial categories. Based on a review of technical support documents, EPA estimates these regulations prevent the discharge of over 1 billion pounds of pollutants a year to waters of the U.S., including over 6 million pounds of toxic pollutants, almost 600 million pounds of nonconventional pollutants, and almost 490 million pounds of conventional pollutants. EPA notes that these reductions, while significant, represent less than one percent of the total loadings reductions projected for all effluent guidelines as implemented through the NPDES program (see page 8). This suggests that, rather than continuing to focus on high volume discharges, the Agency shift its focus to addressing remaining risks.

In preparation for the 2004 biennial plan (which will be EPA's first section 304(m) plan developed independently of the consent decree), EPA has begun to explore the process by which it will conduct the annual review of effluent guidelines as required by statute. EPA has also begun to identify the factors it expects to consider when deciding whether or not to promulgate new or revised effluent guidelines.

C. Effluent Guidelines Task Force Recommendations on Planning

Under the consent decree, EPA was required to establish an Effluent Guidelines Task Force to make recommendations for improving the effluent guidelines program. Consequently, in 1992, EPA created a Task Force consisting of members appointed by the Agency from industry, citizen groups, State and local governments, the academic and scientific communities, and EPA's Office of Research and Development.

The Task Force has held public meetings since 1993, and has submitted a number of reports to the Agency making recommendations for improving national clean water industrial regulations. Some of these recommendations are relevant to the 304(m) planning process and are discussed below.

In 1995, the Task Force prepared a report titled *The Effluent Guideline Program: Selection Criteria for Preliminary Industry Studies*. The report, among other things, recommended that the Agency use certain information sources and

criteria to select industries for further study. This report and other Task Force reports are available on-line at <http://www.epa.gov/ost/guide/taskforce/>.

First, the Task Force recommended that EPA begin its screening process by consulting with pretreatment control authorities, States authorized to implement the NPDES, industry, and professional/trade associations regarding their recommendations regarding revisions of existing effluent guidelines and targeting industries for new guidelines.

They specifically recommended that EPA obtain feedback from these stakeholders regarding their satisfaction with the effluent guidelines both in terms of ease of administration and effectiveness. They recommended coordination with the Association of Metropolitan Sewerage Agencies (AMSA) as part of their national pretreatment coordinator's meetings, and with planned conferences sponsored by the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), Water Environment Federation (WEF), American Institute of Chemical Engineers (AIChE), Air and Waste Management Association (AWMA), and American Society of Civil Engineers (ASCE).

The Task Force also recommended that EPA use, as a gross screening tool, lists of facilities discharging into water quality-impaired receiving waters. The Task Force noted the lack of cause-and-effect relationship between an industrial category discharging into an impaired water body and that impairment, but thought that such categories of industries should advance through the preliminary screening phase.

The Task Force further recommended that EPA review its National Sediment Quality Survey to target, on a national basis, industrial dischargers which potentially contribute to sediment contamination, recognizing limitations in the sources of information for this inventory.

In addition, the Task Force recommended that EPA use the Toxic Release Inventory (TRI) to screen industries, but urged EPA to take into consideration the fact that the TRI includes pollutant releases associated with treatment chemicals and pollutants which are compatible with municipal sewage treatment plant processes, that it sometimes contains imprecise information on listed chemical releases and transfers based on approximate estimates, and that it provides

incomplete coverage of pollutants and Standard Industrial Classification (SIC)² codes.

Finally, the Task Force recommended that EPA use the Permit Compliance System (PCS), which contains data on the discharges of NPDES-permitted facilities, to the extent possible, given its data limitations. Specifically, the Task Force encouraged EPA to evaluate whether compliance monitoring of whole effluent toxicity (WET) could be used to identify high priority source categories.

The Task Force also addressed the issue of the criteria EPA should use to prioritize industrial categories for preliminary study. These recommendations do not directly address whether or not a new or revised effluent guideline would be appropriate, but rather present a series of factors to be weighed by the Agency in determining whether further study of the category is warranted. (See box.)

²Establishments are assigned a primary SIC Code on the basis of principal product or service rendered. The RSEI model can sort based on 2-, 3-, or 4-digit SIC codes. North American Industry Classification Codes (NAICS) will not be incorporated into the TRI until reporting year 2004.)

Criteria Recommended by the Effluent Guidelines Task Force

Heed any legal mandates (statutory or judicial) to perform specific studies.

Continue to utilize a measure of toxicity (specifically a metric known as total toxic pounds equivalent (TTPE), which normalizes the toxicity of pollutant discharges to that of copper, e.g., 10 TTPE has the toxicity of 10 pounds of copper).

Give priority to selecting industries not covered by existing effluent guidelines that are highly ranked in terms of TTPE discharged.

Consider both the number of facilities and total wastewater discharge flow, thereby focusing on those categories that collectively have the greatest potential for significant impacts.

Consider alternative control approaches, such as guidance for the local control authority or State permit writer, for categories with few facilities or *de minimis* flow.

Consider categories which have not implemented pollution prevention as a higher priority than those which have.

Give, to the extent practicable, priority to industries targeted for regulations by other media programs. These should provide efficiencies to government and industry, as well as an improved opportunity to explore pollution prevention approaches that minimize the potential for shifting discharges from one environmental medium to another.

Give priority to selecting service industries for preliminary study. (At the time the Task Force made this recommendation, there were several "service industries" that had been identified as part of the Consent Decree: industrial laundries, transportation equipment cleaning facilities, centralized waste treatment facilities, landfills, and industrial hazardous waste combustors.)

Consider the investment cycles of industrial categories so that pollution control can be considered in the early stage of investment planning.

D. Outreach in Plan Development

In 2000, EPA discussed with the Effluent Guidelines Task Force the need to develop a process to meet the statutory planning requirements in a way that supports the national water program's needs and priorities. The Task Force recommended that EPA sponsor a workshop of experts who would be able to suggest data sources and screening criteria for EPA's consideration. Based on those recommendations, EPA sponsored an Effluent Guidelines Planning Workshop on April 2 and 3, 2001 in Baltimore, Maryland. Workshop participants included regulatory authorities, industry representatives, technology experts, academia, and environmental advocacy representatives.

EPA asked attendees to explore approaches for both the annual review of existing effluent guidelines and the identification of new industries for potential effluent guidelines development. The ideas advanced during the workshop varied considerably.

Many of the suggestions relied heavily on obtaining data and input from a wide variety of stakeholders – industry, academia, equipment manufacturers, States, POTWs, environmental interest groups, and members of the public – and using it to rank relative risks to human health and the environment.

Some suggestions started with identifying water quality problems and then trying to identify categories of industry that contribute to them.

Some suggestions started with reviewing each industrial category to determine the cumulative toxicity (measured as TTPE) of each category's discharges.

Other suggestions focused on tracking changes that have occurred in the industry since the effluent guideline was last revised (in the case of existing regulations) or tracking new production processes for industries that are not regulated by an effluent guideline.

One suggestion proposed using the selection process as an incentive to encourage industries to implement voluntary pollution reduction efforts — by giving lowest priority to industries that have reduced their pollutant loadings the most in recent years.

Another suggestion addressing innovative approaches focused on in-plant trading of pollutant discharges as a possible incentive to encourage reductions in overall discharges.

The processes suggested by individuals at this workshop, the associated selection criteria, and the discussions at the workshop helped inform the structure of the draft *National Strategy* published here today. A summary of the meeting, ideas generated in preparation for



the meeting, and a list of attendees is included in the record. This information is also available on the internet at <http://www.epa.gov/waterscience/guide/plan.html>.

To supplement the results of the workshop, the Office of Water (OW) solicited additional information from a variety of sources, both within EPA and in the States. OW participated in teleconferences with EPA Regional Pretreatment Coordinators, EPA Water Quality Permit Specialists, and the NPDES Regional Program Managers. EPA solicited State concerns at these discussions, as well as directly in phone interviews with a number of representatives from State environmental protection departments.

III. A NATIONAL PLAN FOR CLEAN WATER INDUSTRIAL REGULATIONS

This draft *National Strategy* sets forth a planning process to review national effluent guidelines and establish priorities to address the water quality challenges of the 21st century. In developing this process, EPA was guided by two major goals:

- **Reduce risk to human health and the environment**
- **Provide transparent decision-making**

This section of the draft *National Strategy* describes the planning process, including a discussion of the key factors EPA believes are appropriate in determining the need to develop new or revise existing effluent guideline regulations, and the type of information that EPA expects to consider when deciding whether to begin effluent guideline regulation development or revision.

This section then presents the proposed review process itself. It describes how EPA intends to evaluate readily available information on potential risk to human health or the environment, to solicit input from a wide variety of stakeholders on this and other appropriate factors, to gather additional information on the industrial categories that most warrant further study, to evaluate whether effluent guidelines are the most efficient approach to achieving environmental

improvements in those categories, and to present the results to the public. EPA plans to screen and select industrial categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan. Finally, this section describes new information and procedures EPA would like to develop to better support this proposed planning process in the future.

A. Key Factors for Selecting Industrial categories for Effluent Guideline Development or Revision

EPA has established effluent guidelines for 55 categories of industry (See Appendix 1) and has subsequently assessed, and promulgated as appropriate, revisions to these categories. For most of these categories, these regulations achieve 90 to 99 percent reduction in pollutant discharge when compared to uncontrolled, untreated wastes, based on a review of technical support documents. EPA anticipates that as we work with stakeholders to gather and analyze data in our review process, effluent guidelines will be only one of many tools and mechanisms to resolve remaining environmental problems. The review process being proposed today is designed not only to assess whether effluent guideline development or revision is the appropriate tool to reduce risk, but also to identify what other tools may be more efficient and effective to achieve our clean water goals.

In developing the review process described in this draft *National Strategy*, EPA first examined the Clean Water Act (CWA) provisions regarding review, promulgation, or revision of effluent guidelines (See Appendix 2). EPA then reviewed its past bases for making final regulatory decisions - including decisions not to regulate new industrial categories or revise existing regulations. EPA found that the mere existence of technologies that perform better than the current industry norm is less of an indicator of the ultimate need for a new or revised effluent guideline than the extent to which the industry is controlling pollutants that pose a risk to human health or the environment. This is particularly true in the case of industrial categories currently regulated by effluent guideline regulations.

Revision of Existing Effluent Guidelines

Based upon a review of past actions, EPA has identified four major factors that could lead EPA to conclude that a revision of an existing effluent guideline would be necessary and appropriate. These factors are derived from sections 301(b)(2) and 304(b) of the CWA, which specify the factors EPA must consider when selecting the best available technology economically achievable for an industrial category. In addition, section 304(b) authorizes EPA to consider other factors as the Administrator deems appropriate.

Just as EPA can rely on these statutory factors in selecting or rejecting technologies, EPA is similarly authorized to consider these factors prior to initiating a rulemaking to revise existing effluent guidelines, e.g., to examine whether the current technology basis for the guideline remains the best available technology economically achievable for that industry category. Indeed, Section 304(m)(1)(A) of the CWA specifically refers to Section 304(b) in connection with the effluent guidelines planning process.

EPA will also consider additional factors as it deems appropriate in the context of each biennial plan. Prior to making a decision regarding whether to initiate an effluent guidelines rulemaking, EPA expects to consider not only the factors described below but also any other factors it determines to be appropriate at that time in the context of each biennial plan.

First, EPA believes that the revision of an effluent guideline should be dependent upon the extent to which the pollutants remaining in an industry category's discharge pose a substantial risk to human health or the environment.

Second, the revision should also be dependent on EPA's identification of an applicable and demonstrated technology, process change, or pollution prevention alternative that can effectively reduce the pollutants remaining in the industry category's

**EXISTING EFFLUENT GUIDELINES:
Major Factors EPA Expects to Consider**

- The extent to which the industry category is discharging pollutants that pose a risk to human health or the environment.
- The identification of an applicable and demonstrated technology, process change, or pollution prevention approach that would substantially reduce the remaining risk.
- The cost, performance, and affordability of the technology, process change, or pollution prevention approach that would substantially reduce that risk.
- Implementation/efficiency considerations (see box below).

wastewaters and thereby substantially reduce the remaining risk to human health or the environment associated with those pollutants.

The third factor encompasses the cost, performance, and affordability of the technology, process change, or pollution prevention measures identified using the second factor. If the cost of the improvement is too great in comparison to the human health or environmental benefits associated with the pollutant reductions achieved, or if the financial condition of the industry category indicates significant difficulties to achieve the reductions, EPA would be reluctant to select the effluent guideline for revision. In this case, Agency resources would be more effectively spent developing other more efficient, less costly approaches to reducing pollutant loadings.

<p style="text-align: center;">Examples of Implementation/Efficiency Considerations</p> <ul style="list-style-type: none">- Has the industry changed such that the existing effluent guidelines are inappropriate or inadequate?- Is there confusion on the part of the permitting authority and/or industry as to whether or not the existing effluent guideline should be applied, and if so, how it should be applied?- Are there issues with regard to implementation, performance monitoring, or enforceability?- Is the current effluent guideline a barrier to the use of newer, more effective technologies with multi-media benefits?
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The fourth factor incorporates implementation and efficiency considerations. Under this factor, EPA would consider whether existing effluent guidelines could be revised, for example, to eliminate inefficiencies or impediments to technological innovation, or to promote innovative approaches such as water quality trading, including within-plant trading. This factor might also prompt EPA to decide not to revise an effluent guideline for an industry category where the pollutant source is already being addressed by another regulatory program, such as TMDLs, or by non-regulatory programs that may more effectively address the problem. While EPA has not tied this factor directly to risk, the Agency hopes that any efficiencies resulting from revisions relating to this factor would allow permitting authorities and industry to devote their resources to other areas posing greater risk to human health and the environment. See the box for some examples of implementation/efficiency considerations.

The following three scenarios illustrate how the first two factors would be considered. Under the first scenario, the industry category discharges pose no risk to human health or the environment. In this scenario, the ability to substantially

reduce risk does not exist. In the absence of information indicating otherwise, EPA would likely conclude that effluent guideline revision for this category is unnecessary.

Under the second scenario, the industry category discharge poses some risk to human health or the environment, but EPA has not identified a technology, process change, or pollution prevention approach that would substantially reduce that risk. In this scenario, there is no technology basis to justify a revision to the effluent guideline for that category at the current time. However, the risk to human health or the environment would signal that the Agency resources could effectively be spent supporting development of improved technologies. The greater the human health or the environmental harm, the higher priority EPA would place on supporting technology development.

Under the third scenario, the industry category poses risk to human health or the environment, and EPA has identified a technology, process change or pollution prevention approach that would substantially reduce human health or environmental risk beyond current performance. Here, a variety of metrics could be used to evaluate human health or environmental risk ranging from estimates of risk based on loadings and exposures to information on geographic concentration and distribution of potential loading reductions. In this scenario, EPA would probably proceed with preliminary development of an effluent guideline revision in order to determine whether the third (economic) factor, discussed above, also supported a revision.

Promulgation of Effluent Guidelines for New Industrial Categories

As part of its planning obligations under the CWA, EPA must assess the need for effluent guidelines for industrial categories that presently are not subject to technology-based limitations on a case-by-case basis. See CWA section 304(m)(1)(B). EPA has identified four major factors that could lead EPA to conclude that national effluent guidelines regulations would be necessary and appropriate for such industrial categories.

These factors are nearly identical to the factors discussed above with respect to the revision of existing effluent guidelines, and are derived from the same statutory bases. In addition, the factors reflect Congress' expectation that EPA will

address “significant amounts” of toxic pollutant discharges through national technology-based regulations. See S. Rep. No. 50, 99th Cong., 1st Sess. (1985); WQA87 Leg. Hist. 31.

As with the decision whether to revise existing effluent guidelines, the first factor EPA expects to consider is the extent to which the industry category is discharging pollutants that pose a risk to human health or the environment. As a threshold consideration, EPA does not believe that it is necessary, nor was it Congress’s intent, to develop a national effluent guideline regulation for categories of sources that are not likely to pose a significant risk to human health or the environment. See S. Rep. No. 50, 99th Cong., 1st Sess. (1985); WQA87 Leg. Hist. 31.

In determining whether discharges from an industrial category pose a significant risk, EPA expects to consider both the total amount of pollutants discharged by the industrial category, and the toxicity of that discharge. In the case of indirect dischargers, EPA expects to consider both the interaction of the discharge with the POTW treatment system (i.e., whether the discharge interferes with POTW operation and performance) and the nature of the discharge to the environment (i.e., the amount of those pollutants expected to pass through the POTW treatment system).

Additionally, the number of facilities in the industrial category can also play a role in this determination. Establishing a national effluent guideline for one or two facilities, or for a category of facilities that are all located in one State, may not be appropriate (unless growth in the industrial category is anticipated). Rather, EPA might work with State and local regulatory agencies to ensure that discharges from these sources are adequately addressed through technology-based effluent limitations or local limitations calculated on the basis of best professional judgement, without an over-arching national regulation.

Under the second factor, EPA would expect to consider whether there is a demonstrated, applicable technology, process change, or pollution prevention approach that could control pollutants that pose a risk to human health or the

environment beyond current industry performance. EPA would expect to determine current industry performance based on each facility's current set of permit limits (if applicable), which can vary considerably from one facility to the next.

As with the decision whether to revise existing effluent guidelines, the third factor is the cost, performance, and affordability of the technology, process change, or pollution prevention measures identified using the second factor. EPA's past experience shows that the analysis of the costs associated with treatment technologies, pollution prevention activities, or process changes, as well as the analysis of the financial condition of the industry category, are important factors in determining whether an available measure is "best" or "economically achievable."

The fourth factor that EPA expects to consider in selecting industrial categories for national effluent guidelines regulation incorporates implementation and efficiency considerations. This factor, for example, might prompt EPA to decide not to develop an effluent guideline for an industry category where the pollutant source is already being addressed by another regulatory program, such as TMDLs, or non-regulatory programs that may more effectively address the problem.

EPA may also consider additional factors when deciding whether to initiate a national effluent guidelines rulemaking for an industrial category presently regulated on a case-by-case basis. Prior to making such a decision, EPA expects to consider not only the factors described above but also any other factors it determines to be appropriate in the context of each biennial plan.

**NEW EFFLUENT GUIDELINES:
Major Factors EPA Expects to Consider**

- The extent to which the industry category is discharging pollutants that pose a risk to human health or the environment.
- The identification of an applicable and demonstrated technology, process change, or pollution prevention approach beyond current industry performance that could control pollutants to reduce the risk.
- The cost, performance, and affordability of a demonstrated technology, process change, or pollution prevention approach beyond current industry performance that could control pollutants to reduce the risk.
- Implementation/efficiency considerations (see box above).

B. Information to Evaluate the Key Factors

In order to consider the factors presented above, EPA expects it would need to analyze the following types of information. The list below is based on the recommendations of the Effluent Guidelines Task Force and the suggestions put forth by participants in the Effluent Guidelines Planning Workshop.

The estimated environmental impact (human health or ecological risk) posed by the industry category.

The estimated number of facilities in the category (or subcategory), as well as the overall structure, including the size of firms (small businesses versus large corporations), direct versus indirect discharges, and geographic concentration.

Information on the current practices for control of wastewater pollutants, including estimates of pollutant loadings (total and toxic pound-equivalent).

Information on any technology, process change, or pollution prevention approach that can substantially reduce the discharge of pollutants.

The projected incremental reduction in loadings beyond current levels using the approach or approaches identified above.

The estimated cost to the industry category as a whole to implement the suggested approach.

The estimated cost of the approach to the industry category with respect to the incremental reduction in pollutant loadings (i.e., cost reasonableness or cost effectiveness).

The cost to sales ratio associated with the approach for an average facility.

The projected environmental or human health benefits associated with the approach.

Other information relevant in making decisions (such as potential for multimedia benefits, the relationship of projected benefits to costs, and any requests for clarification/revision by regulators or stakeholders).

EPA management expects to use this information and other information submitted by the public to determine if effluent guideline development or revision is appropriate. EPA plans to screen and select industrial categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan.

The Agency intends to make its decision-making process more transparent to interested parties. To do this, EPA would make summaries of this information (as well as the supporting information and analyses) available for any industries for which EPA has completed this assessment at the time it proposes and/or finalizes the biennial plan.

C. Proposed Planning Process

The Effluent Guidelines Task Force and participants in the Effluent Guidelines Planning Workshop noted that there is no single, aggregated source of the information needed to evaluate the key factors. They suggested a variety of approaches for review. All of these approaches included a cursory screening effort of all industries followed by further study of a subset of categories that most warrant further examination. EPA has followed that general approach in this planning document.

EPA believes that such an approach to the review of existing effluent guidelines and new industrial categories is consistent with Congress' intent for EPA to perform an annual review. EPA also believes it is good practice to conduct a broad screening review and then focus resources on performing detailed review and analysis for industries that are most likely to pose the greatest human health or environmental risk.

Solicitation of Stakeholder Recommendations

As recommended by the Effluent Guidelines Task Force, the Agency believes that an important first step in the planning process is to consult with NPDES authorized states, pretreatment control authorities, and professional associations to obtain their recommendations pertaining to revising existing effluent guidelines and identifying industries for new guidelines. These stakeholders can help to identify water quality concerns related to industrial categories as well as changes in industry which affect the administration and effectiveness of existing regulations. EPA intends to use a variety of mechanisms to solicit input from these stakeholders, coordinating with major organizations to use regularly planned conferences and meetings to the maximum extent possible.

EPA recognizes that there are other stakeholders who may have concerns or data indicating the need for new or revised regulations. Many of these stakeholders are not represented by a major organization, and would need to be provided a more direct opportunity to provide input to the Agency. EPA intends to use two mechanisms to obtain their recommendations. First, EPA plans to publish in the Federal Register a notice indicating its intention to develop a biennial plan, and seeking comment and supporting information from the public on industrial categories for which there is a need for development or revision of effluent guideline regulations. Second, EPA plans to use its internet web-site to provide a more convenient forum for information exchange with a broader audience.

Initial Screening and Review

Although the many suggestions EPA received from stakeholders for conducting an annual review varied significantly in detail, each involved an initial screen of readily available information followed by a more detailed review of a subset of industrial categories. EPA's proposed planning process includes this step. Accordingly, EPA's annual review of existing guidelines would consist of an evaluation of readily available-screening level data to create an initial list of potential categories that warrant further examination. In addition to the information obtained from the stakeholder outreach in step one, this review would include an evaluation of data available to EPA through databases and literature. This review and the information sources are discussed in more detail below.

Stakeholders suggested three distinct approaches for the initial screening steps:

- 1) Examine the human health and environmental impact of individual categories – then focus on the categories with the greatest impact, working with knowledgeable stakeholders to identify technology, process change, or pollution prevention advances that may help to substantially reduce risk from those industrial categories.
- 2) Track technological advances in the areas of process engineering, pollution prevention, and treatment – then focus on the industrial categories for which those advances could substantially reduce risk to human health or the environment.
- 3) Work with industry and State and local governments to identify regulatory revisions that are warranted due to implementation and efficiency considerations – then focus on revisions that will improve the ease of administering the effluent guideline, or remove barriers to alternative technologies with greater multi-media benefits.

The Agency sees value in all of these approaches. First, it makes sense for the EPA to focus resources on reducing risks from identified water quality impacts, identifying industrial categories causing the greatest human health and environmental harm, and identifying technologies that can significantly reduce this harm. This focus is also consistent with another EPA role: promoting the development of new technologies to solve environmental problems.

Second, by tracking trends in the industry, EPA will be more proactive in preventing water quality problems as growth in an industry category occurs or as new processes are implemented. By working with industry as it changes, EPA can play a vital role in ensuring that protection of water quality is considered in the development of new production processes. This will prevent the impairment of water quality due to industrial growth and economic expansion.

Third, EPA sees value in taking steps to improve the ease of administering effluent guidelines (an implementation/efficiency factor), or to remove barriers to new approaches, such as water quality trading, or technologies with greater multi-

media benefits. For example, the "water bubble" is a regulatory flexibility mechanism included in the Iron and Steel regulation at 40 CFR 420.03 to allow for intra-plant trading of conventional and toxic pollutants between outfalls at any single steel mill. The bubble has been used at some facilities to realize cost savings and/or to facilitate compliance. Most of the time, these improvements can be accomplished through guidance, technical assistance, and training. However, EPA has found regulatory revision to be necessary in some instances. By working with permitting authorities, industry, and the public to identify and resolve these considerations, the effluent guidelines program will be implemented more effectively with less confusion and lower costs, and provide greater environmental protection.

Evaluate Human Health and Environmental Impacts

There are a number of tools (models, databases, and reports) that EPA may utilize to evaluate human health and environmental impacts. Several of these are discussed in the sections that follow. However, this is not an exhaustive list, and the Agency intends to consider all available resources as appropriate.

Human Health: One of the criteria included in this step is the likelihood of risk to humans, i.e., adverse human health impacts resulting from exposure to pollutant discharges associated with a source category. Human exposure can occur through drinking water, fish ingestion, and contact recreation, although not all exposures to pollutants are damaging to human health. EPA plans to estimate relative contributions to human health impacts using existing screening models and data. As these models are refined and databases are expanded, and as new ones become available, EPA will incorporate these improvements into this screening process. EPA plans to screen and select industrial categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan.

One of the readily available tools to assess the relative risk of specific source categories is EPA's Risk-Screening Environmental Indicators (RSEI) model. RSEI is a multimedia, screening-level tool for examining toxic chemical releases from several perspectives. RSEI uses fate and transport modeling to estimate

surrogate doses³ associated with reported TRI chemical discharges to air and water pathways. It then weights these estimates using each chemical's toxicity via inhalation or ingestion, and the size of the populations exposed to each chemical. Based upon these estimates, industrial categories, chemicals, geographic areas, and facilities can be ranked by relative risk associated with human health effects.

Currently, the primary database providing chemical release and transfer information to the RSEI model is the Toxic Release Inventory (TRI). EPA recognizes that there are limitations associated with the discharge information reported to the TRI. For example, some specific industries are not required to report to TRI. For other industries, only some facilities report to TRI. Furthermore, much of the release information reported to TRI is estimated (rather than measured), and only ranges of releases are provided in some instances. The RSEI model is not restricted to TRI reporting, however, and EPA may elect to use a different primary database or supplement the TRI information with other release data in the future.

RSEI is able to provide a ranking of relative risk for all facilities reporting to TRI. It can also be used to rank groups of facilities, such as all facilities under the same Standard Industrial Classification (SIC) code, by relative risk. SIC codes are one way to identify an industrial source category. In addition to the limitations discussed above, the results of this approach must be reviewed carefully to determine if highly ranked categories are either the result of many facilities, which could indicate that an examination of the category is warranted, or the result of few facilities with large discharges, which may indicate reporting errors, site-specific problems, or a general lack of information on a particular source category.

Environmental Impacts: Another criterion considered in this screening step is the likelihood of adverse ecological impacts resulting from pollutant discharges associated with a source category. EPA will estimate relative contributions to ecological impacts using the relative hazard and the quantity of those pollutants being discharged by each source category. There are a number of data sources that may provide this type of information. EPA plans to screen and select industrial

³Surrogate dose is a measure related to the amount of chemical contacted by an individual per kilogram body weight per day. To estimate the surrogate dose, an exposure evaluation is conducted for each relevant emissions and exposure pathway and then combined with human exposure assumptions to estimate the magnitude of the surrogate dose.

categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan.

To begin, the Agency plans to review information on existing river and stream impairments and attempt to identify the sources responsible for those impairments. The reports generated under CWA sections 303(d) and 305(b) provide information on water quality impairments, and the pollutants and sources of pollutants associated with these impairments. Most of the information is based on data collected and evaluated by the States, tribes, and other jurisdictions. As with TRI, EPA recognizes that there are limitations associated with using this information as a screening tool. First, not all of the Nation's waters are assessed, and those that are assessed are based on a variety of data sources (e.g., ambient monitoring, water quality modeling, and land use data). Each State uses its own approach for evaluating and reporting on waters, and only limited data are currently available on sources of the impairments.

EPA is beginning work to link sources of pollutants with impaired waters. This effort will link the facilities discharging pollutants as identified in the Permit Compliance System (PCS) database with impaired water bodies identified using the National Hydrography Dataset (NHD). PCS contains information on facilities that have been issued direct discharge permits to discharge wastewater into waters of the U.S. Generally, it includes information for all major dischargers and POTWs, but each State uses its discretion in determining whether to include information for minor dischargers. For regulated pollutants, PCS includes permit restrictions and the actual wastewater discharge monitoring.

The information on impairments (identified initially using 303(d) and 305(b) reports) will be traced upstream to potential sources using the NHD which contains digital spatial data about surface water features including streams and rivers. EPA hopes that the NHD and other ongoing research efforts will allow it to better understand the fate and transport of pollutant discharges and their upstream sources. In addition to the limitations of State reporting practices discussed above, the results of this analysis must be reviewed carefully, in order to verify input data and identify water-body specific anomalies.

Future information sources currently under development for ecological impacts include EPA's Watershed Assessment, Tracking & Environmental Results (WATERS) tool. EPA envisions that the data sources in WATERS would supplement the information reported under 303(d) and 305(b), especially since these reports are only generated biannually.⁴ WATERS unites water quality information previously available only on individual State agency homepages with information from several EPA websites.

State and Federal water quality managers, as well as interested citizens, can use WATERS to quickly identify the status of individual water bodies of interest to them. It can also be used to generate summary reports on all waters of a State. The next release of WATERS (July 2002) will include information on nutrients, drinking water intakes, recreational beaches, no discharge zones, water quality monitoring stations, and water quality assessments from section 305(b) of the CWA.

Another source of information is data generated by the U.S. Geological Survey (USGS) under its National Water Quality Assessment (NAWQA) program. Under NAWQA, USGS scientists collect and interpret data about water chemistry, hydrology, land use, stream habitat, and aquatic life in more than 50 major river basins and aquifers covering nearly all 50 states. National summary reports, published under the signature title "The Quality of Our Nation's Waters," describe water quality from a national perspective.

The first report in this series covers nutrients and pesticides. Subsequent reports may address such topics as radon and arsenic in ground water, industrial chemicals in streams and ground water, and stream ecology. These reports will provide information based on actual monitoring data that the EPA can use in determining pollutants causing ecological impacts and their potential sources. The Agency plans to analyze these reports and the data on which they are based as part of its evaluation of the ecological impacts criterion. EPA intends to utilize USGS models, such as the SPATIally Referenced Regressions On Watershed Attributes (SPARROW) model (designed for regional interpretation of water-quality monitoring data), to support its analysis of USGS data. The Agency plans to try to

⁴EPA notes that listing requirements for 303(d) and 305(b) are currently being revised through development of the Watershed Rule.

identify the potential sources of these impacts in a manner similar to the approach described for 303(d) and 305(b) data above (i.e., by tracing the impacts upstream using georeferenced data on potential sources).

Technology Advances and Process Changes

EPA plans to conduct a screening level analysis of changes in industry, and advances in analytical method techniques, treatment technology, and pollution prevention practices by evaluating readily available information. For example, EPA plans to regularly review trade journals, participate in professional conferences, review Department of Commerce and Department of Energy project reports on industrial technologies with potential environmental benefits or resource efficiencies, and consult with permit writers, pretreatment coordinators, industry representatives and the public.

Since much of the information that is readily available on technology advancements is anecdotal, EPA is considering an effluent guidelines planning questionnaire that would be distributed to specific industrial categories and State regulators to expand on the available data. This questionnaire would be sent to those industrial categories that EPA has identified as discharging pollutants that pose a risk to human health and the environment but for which data on available treatment technologies and pollution prevention practices are lacking. EPA would use data collected in these questionnaires to assess the key factors for selecting industrial categories for effluent guideline development or revision (See section III.A). EPA is also soliciting information on other sources of up-to-date systematic information on technology use in industry.

In addition, EPA, together with Vanderbilt University, is holding a technology conference entitled “Industrial Wastewater and Best Available Treatment (BAT) Technologies: Performance Reliability, and Economics” in February, 2003.

**Specific Topics of EPA/Vanderbilt's
Technology Conference Include:**

- Performance and Reliability of Existing and Alternative Technologies
- New and Innovative Wastewater Treatment Technologies
- Pollution Prevention Techniques and Process Alternatives to Reduce or Modify Pollutant Loads
- Modeling and Optimization of Wastewater Treatment Technologies
- Cost Analyses for Wastewater Treatment and Pollution Prevention Technologies

Representatives of academia, government, and industry are invited to examine and discuss industry trends and technology advances. Participants will have the opportunity to provide and obtain information on state of the art techniques for improving their water pollution control activities. EPA anticipates this conference will be a good source of relevant, up-to-date information on technology advances, pollution prevention techniques, and process changes. EPA will use the lessons learned through this conference to plan periodic conferences to inform future section 304(m) plans, as appropriate.

Implementation/Efficiency Considerations

Another criterion to identify categories for which revised or new guidelines may be needed is the existence of problems in either implementation of, compliance with, or enforcement of existing effluent guidelines. In addition, EPA will consider information on innovative approaches to pollutant and risk reduction, such as in-plant trading. Sources of this information include State and regional pretreatment coordinators, permit writers, industry representatives, and concerned citizens. EPA will use the results of the early stakeholder outreach in step one to determine which categories should be examined further for possible effluent guideline revision.

Second-Level Screening of Industries for Further Investigation

EPA envisions that the outcome of its initial screening process will be several discrete lists of industrial categories. EPA plans to use the following criteria to help establish priorities among these categories for further study. EPA plans to screen and select industrial categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan.

Effluent Guidelines Currently Under Development

EPA suspects that in any given year, the categories for which new or revised effluent guideline development is currently underway will appear on the lists of categories generated in the initial screening step. Since rulemaking is already

underway, study is part of that rulemaking process and covered in the rulemaking schedule portion of the section 304(m) plan. EPA is currently developing effluent guidelines for several categories. Table 1 below lists these categories:

Table 1: Guidelines Currently Under Development/Revision

Industry Category	Code of Federal Regulations
Metal Products and Machinery	40 CFR 438
Concentrated Animal Feeding Operations	40 CFR 412
Meat and Poultry Products	40 CFR 432
Construction and Development	40 CFR 450
Aquatic Animal Production	40 CFR 451
Pulp and Paper Phase III	40 CFR 430

Effluent Guidelines Promulgated Within the Past Seven Years

Similar to categories for which effluent guidelines are currently under development, EPA suspects that many categories with effluent guidelines that have recently been promulgated, but not yet implemented, will appear on the lists of categories generated in the screening step. In these instances, unless EPA has information indicating that the specific sources that are driving the identification were not addressed by the new guidelines, further study of these categories would not be a priority. In general, EPA would probably remove categories for which effluent guidelines have been promulgated within the past seven years from the lists, and not consider them for further study at that time. A seven-year time frame takes into account the lag time that occurs as effluent guidelines are implemented. In addition, there are unlikely to be dramatic changes in the industry category during the first seven years after promulgation of a new or revised guideline. In cases where EPA is aware of the growth of a new segment within a source

category⁵, effluent guidelines may be appropriate and EPA would continue to list the subcategory for further consideration.

Voluntary Loadings Reductions by Industry

One of the participants in the Effluent Guidelines Planning Workshop suggested that EPA consider creating an incentive for industrial categories to reduce pollutant loadings on their own. This participant suggested that EPA not revise or develop effluent guidelines for source categories that demonstrate continual improvement through voluntary effluent reductions.

EPA agrees that voluntary efforts should be encouraged and rewarded, especially where those voluntary reductions have been widely adopted within an industry and have led to significant reductions in pollutant discharges. EPA may choose not to revise an existing effluent guideline or develop a new effluent guideline for an industrial category that has demonstrated that significant progress is being made through voluntary industry effort to reduce risk to human health and the environment.

EPA proposes to use information in the PCS system to identify categories for which loadings have decreased over the past 5 years. As explained previously, PCS provides discharge monitoring data for a subset of facilities that have been issued direct discharge permits to discharge wastewater into waters of the U.S. The system can be used to sort loadings (in pounds per year) of a large number of pollutants by SIC code. The Agency will also adjust these loadings to reflect relative toxicity using the Toxic Weighting Factors (TWFs) it has developed to assess the loadings reductions and cost effectiveness of effluent guidelines. EPA plans to review these total and toxicity-adjusted loadings profiles to identify industries that show the greatest decrease in loadings over the past five years.

EPA recognizes that there are limitations associated with the discharge information reported to the PCS. For example, PCS only contains discharge monitoring data from facilities with individual permits. For some industries, PCS only contains discharge monitoring data for a subset of facilities (for example,

⁵One example is the newly promulgated subcategory for synthetic based fluids under the oil and gas extraction point source category.

major discharges). PCS may not contain information on all of the pollutants of concern because it only contains information on pollutants currently regulated in a facility's discharge permit. In addition to the limitations discussed above, the results of this analysis must be reviewed carefully to verify input data and identify any anomalies in the results.

EPA also recognizes that this methodology may identify industrial categories with load reductions due primarily to production decreases. Similarly, this methodology may retain for further consideration industrial categories with voluntary pollutant reductions that are masked from notice due to production increases. Despite these limitations, the Agency believes that this is an acceptable screening approach. The Agency expects to review PCS data in conjunction with industry-level production data as a way to address these issues.

EPA also intends to evaluate decreases in water loadings of pollutants relative to possible increases in release of these same pollutants to other environmental media, for example, volatilization to air or land disposal of sludge.

To help supplement PCS and other data, EPA will consider general trends in pollutant discharge using the RSEI model, and will evaluate census data and economic changes in industry categories. EPA will compare the results from all of these sources to the information gathered from outreach to State and local governments, industry, the public, and citizen's groups.

There are a number of voluntary pollution prevention programs sponsored by EPA and industry groups that may also be a source of information on industry-wide pollutant loadings. In many instances, these programs foster pollutant reductions to air and land, as well as water.

Further Investigation

Once EPA has completed the screening level steps explained above, it would need to prioritize the remaining industries for further study. The number of categories for which EPA will be able to conduct further study may vary from year to year depending upon known sources of information, known complexity of the industry category, and available resources.

EPA expects to give highest priority for further study to industrial categories that appear to present the greatest human health or environmental risk based upon the screening level data. EPA plans to screen and select industrial categories for regulation based on the latest methodologies and information available. All appropriate information will be placed in the public record at the time the Agency publishes each proposed and final biennial plan.

EPA acknowledges that the screening-level data that forms the basis for our priority-setting will likely be only preliminary. We anticipate that some studies, once started, may be discontinued based upon further information indicating that effluent guideline development or revision is not appropriate.

During this phase, EPA intends to continue to collect and analyze as much information as possible on all of the relevant factors listed in Section III.B above (pages 26 and 27). The Agency will also consider using proxy data where necessary and available.

In the first stage of in-depth study, EPA would work to validate and expand on the basic information collected on each category during the initial screening step. EPA also would begin identifying data gaps that need to be filled, in order to allow the consideration of the relevant factors presented in Section III.B. In order to ensure that the best possible data are made available during the study phase, EPA would work closely with stakeholders, including industry, States and local governments, academia, environmental groups, and members of the public to gather and analyze the relevant information.

Decision on Effluent Guidelines Rulemaking Activities

After considering the results of the studies, EPA would then determine whether development or revision of an effluent guideline is appropriate. Final determinations would be presented in the next biennial effluent guidelines plan. If EPA determines that developing a new or revised effluent guideline is not appropriate, EPA would attempt to identify other Agency actions that may be appropriate to address any remaining risk. Such action may include the issuance of compliance or permitting guidance, technical assistance to the States or industry, or a voluntary partnership to support broader environmental goals. For example, EPA

may determine that a targeted program to implement comprehensive Environmental Management Systems is a more efficient approach to dealing with certain types of environmental issues.

D. Schedule for the Proposed Annual Review Process

Schedule for Annual Review Process	
Solicitation of Stakeholder Recommendations	February through April, and at other times in concert with national conferences
Screening (1 st and 2 nd level screening)	April through August, annually
Further investigation of industries selected for further study	September until completed
Conduct Outreach Meetings	As needed to identify data sources, present available data, and verify accuracy
Decision on Effluent Guidelines Rulemaking Activities	Prior to publication of biennial Effluent Guidelines Plan (based upon studies completed to date)

E. Biennial Effluent Guidelines Plan

EPA intends to publish and seek comment on a draft biennial plan for 2004/2005 that describes the results of the annual review process: 1) the outcomes of both stages of the screening process, 2) EPA's tentative selection of industrial categories for further study, and 3) the rationale for this selection of industrial categories for further study. In addition, the notice would summarize additional information collected and analyzed on specific industrial categories beyond the initial screening step, and would identify current data gaps.

During the public comment period, EPA intends to hold outreach meetings to discuss its findings with interested parties. Verifying its findings at this point in the process will enable EPA to “reality-check” the results of its analyses and also identify potential oversights or errors. EPA also plans to use these meetings as an opportunity to solicit additional information to fill in data gaps, and to identify partners for further data collection efforts.

After considering comment on the draft plan, EPA will publish a biennial Effluent Guidelines Plan that describes EPA’s decisions and summarizes key information supporting those decisions. The Plan will include a schedule for any guidelines that will be developed/revised. Because the study phase may take longer for some industrial categories than others, this plan will indicate a schedule for the completion of studies that have not yet been completed.

F. Solicitation of Stakeholder Recommendations

EPA is aware that a broad range of stakeholders is interested in this draft Strategy, including members of industry, environmental groups, academia, and the general public. In addition to welcoming comments from our stakeholders on the draft Strategy as a whole, there are several specific issues discussed in the draft document about which EPA requests comments.

Key Factors for Evaluating Existing Effluent Guidelines: EPA identified four major factors, derived from sections 301(b)(2) and 304(b) of the CWA, that could lead EPA to conclude that a revision of an existing effluent guideline would be appropriate: 1) the extent to which the industry category is discharging pollutants that pose a risk to human health or the environment; 2) the identification of an applicable and demonstrated technology, process change, or pollution prevention approach that would substantially reduce the remaining risk; 3) the cost, performance, and affordability of the technology, process change, or pollution prevention approach that would substantially reduce that risk; and 4) implementation and efficiency considerations, such as whether revising a guideline is the most effective approach for reducing the risk. In addition, section 304(b) authorizes EPA to consider other factors as the Administrator deems appropriate. EPA requests comments on its proposed use of these factors, and invites the public to suggest additional or different factors.

The Agency is also interested to receive comments on whether each of the four factors identified above should be ranked, and if so, whether different weights should be applied to each. EPA also requests suggestions as to the information the Agency should use to prioritize industrial categories that pass both the primary and secondary screening reviews described in the draft Strategy.

Key Factors for Developing New Effluent Guidelines: EPA identified four major factors that could lead EPA to conclude that new national effluent guidelines regulations would be necessary and appropriate for industrial categories. These factors are identical to the factors discussed above with respect to the revision of existing effluent guidelines, and are derived from the same statutory bases. (The main difference is that an industry category with no existing guideline in place may have greater variation in current discharges and pollutant reduction technologies in place. This depends on what technology-based limits permit writers have established using best professional judgment and what limits they have established to protect water quality.) These factors reflect Congress' expectation that EPA will address "significant amounts" of toxic pollutant discharges through national technology-based regulations. S. Rep. No. 50, 99th Cong., 1st Sess. 24-25 (1985). EPA requests comments on its proposed use of these factors and invites the public to identify other or different factors for EPA's consideration.

The Agency is also interested to receive comments on whether each of these factors should be ranked, and if so, whether different weights should be applied to each. EPA also requests suggestions as to the information the Agency should use to prioritize industrial categories that pass both the primary and secondary screening reviews described in the draft Strategy.

Sources of Water Quality Impairments: An impaired water is one that does not achieve the water quality standards adopted by a State, Tribe, or EPA under CWA section 303(c). Building on ongoing work by EPA, States, Tribes, and others, the Agency is working to identify links between industrial sources of pollutants with pollutants identified as the causes of impairments in impaired waters. This effort links the categories of facilities discharging pollutants as identified in Agency's Permit Compliance System (PCS) database with types of impairments of water bodies identified using the U.S. Geological Survey's National Hydrography Dataset (NHD) and State and Tribal reported data from the

reports generated under CWA sections 303(d) and 305(b). (Section 303(d) requires States to develop lists of waterbodies for which technology-based limitations and other requirements are not sufficient to ensure attainment of water quality standards. Section 305(b) requires States to report to EPA every other year on the quality of their waters.) EPA requests suggestions on other sources of relevant information, particularly data relating to facilities that discharge to publicly owned treatment works (POTWs).

Voluntary Loading Reductions: EPA is considering an incentive for industrial categories to reduce pollutant loadings through voluntary programs. A stakeholder suggested that EPA not develop effluent guidelines for source categories that demonstrate continual improvement through voluntary effluent reductions. EPA agrees that voluntary efforts should be encouraged and rewarded, and is proposing that source categories that have accomplished voluntary pollutant discharge reductions should be given a lower priority for new or revised effluent guidelines.

EPA is also considering whether to indicate a quantitative voluntary reduction goal that source categories seeking a deferral of consideration for new or revised guidelines should try to achieve. EPA is considering a goal, suggested by a stakeholder, of a 10 percent reduction in total load, or in toxic-equivalent load over a five-year period (the standard permit term). EPA emphasizes that the goal would not be binding on either the Agency or the industry; EPA would retain the discretion to decide whether to develop an effluent guideline. EPA would consider voluntary load reductions on an industry-by-industry basis in making its planning decisions (and may make decisions irrespective of the general, non-binding goal). The Agency requests comment on this entire issue. EPA also invites comment on whether a different general goal, such as a 25 percent reduction in total or toxic-equivalent load, would be more appropriate.

EPA proposes to use information in the PCS system to identify categories for which loadings have decreased over the past 5 years, but requests suggestions on alternative sources of this information. EPA also invites comment on how it might assess voluntary pollutant reductions in industrial categories with increased production over five years. Finally, EPA invites comment on ways to evaluate claims of decreases in water loadings of toxicity relative to possible increases in

release of these emissions to other environmental media, for example volatilization to air or land disposal of sludge.

Technology Innovation, Market-based Incentives, and Multi-media Pollutant Reduction: In addition to the above discussion of voluntary loading reductions, EPA seeks comment on others ways the Agency might structure the effluent guidelines program to encourage and reward technology innovation. EPA invites stakeholders to suggest industry categories for which development or revision of an effluent guideline may provide an opportunity for multi-media pollutant reduction. EPA also seeks comment on the role of market-based incentives, including pollutant trading, in the effluent guidelines program.

In addition, EPA encourages comments on the extent to which the Agency should consider multi-media pollutant reduction opportunities in deciding which guidelines to develop or revise. For example, should the Agency assign greater weight to revising a guideline that has the opportunity to reduce the loading of 100 million pounds of nutrients into surface waters impaired by nutrient pollution, or one that might reduce nutrient loading by 80 million pounds but also reduce noxious odors and emissions of greenhouse gases?

Level of Effort Devoted to Effluent Guidelines: Since Congress passed the 1972 Clean Water Act, EPA has promulgated effluent guidelines that address over 50 industry categories. These regulations apply to between 35,000 and 45,000 facilities that discharge directly to the nation's waters, as well as another 12,000 facilities that discharge into publicly owned treatment works. These regulations are responsible for preventing the discharge of almost 700 billion pounds of pollutants each year.

In addition to the technology-based effluent guidelines program, EPA and the States implement a wide range of water-quality based programs also designed to protect and restore the Nation's waters. For example, the water quality standards adopted by all States, Territories and 20 authorized Tribes are the regulatory and scientific foundation for the Nation's water quality-based programs. Water quality standards are used to assess impairments in U.S. waters, to establish targets and load reductions needed in impaired waters through total maximum daily loads (TMDLs), and to set limits on pollutants through enforceable NPDES permits where technology-based limits are insufficient to protect water quality.

Under EPA and State permit programs, industrial discharge restrictions – in the form of technology-based and water-quality based effluent limitations – have controlled over 48,000 individual industrial facilities through the issuance of individual NPDES permits, and controlled thousands more through general permits. Fish are coming back, habitats are recovering, and many miles of formerly contaminated beaches are now safe for swimmers. However, we have not achieved water quality objectives in many water bodies. Many of the remaining pollutants come from sources that are not related to industrial discharges, such as non-point source runoff from agricultural lands, stormwater flows from cities, seepage into ground water from nonpoint sources, and loss of critical habitats such as wetlands.

One facet of EPA's overall approach to resolving the remaining water quality problems is the continued implementation of the national effluent guidelines program to address water quality problems associated with industrial dischargers. As EPA moves forward to address the remaining water quality problems, EPA invites comment on whether it should devote the same, less, or greater resources to the effluent guidelines program as it has in the past.

IV. Glossary

Clean Water Act (CWA) : The primary federal law that protects our Nation's waters, including lakes, rivers, wetlands, and coastal areas. It is codified in 33 U.S.C. section 1251, *et seq.*

Consent Decree: Equivalent to a court order. The consent decree under which EPA developed most of its effluent guidelines since 1992 was filed on January 31, 1992, in the case presently entitled Natural Resources Defense Council, et al. v. Whitman, Civ. No. 89-2980 (RCL) (D.D.C.). The consent decree has been amended several times since 1992. It defines EPA's obligations under Clean Water Act section 304(m) during the pendency of the decree.

Criteria: See "Water Quality Criteria" below.

Environmental Management System (EMS): An EMS is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency. It is a continual cycle of planning, implementing, reviewing and improving the processes and actions that an organization undertakes to meet its business and environmental goals. For more information, see EPA's web site at <http://www.epa.gov/ems/>.

Impairment: Condition in which applicable water quality standards are not being met. The water body often is degraded and in need of restoration. Water quality impairment is often indicated by excursions of numeric water quality criteria, which are a component of water quality standards. Numeric water quality criteria provide quantitative targets for particular parameters such as total suspended solids. Water quality impairment may also be identified as an inability to meet a narrative water quality criterion or an inability to support a designated use.

National Pollutant Discharge Elimination System (NPDES): A permit program under Clean Water Act section 402 that controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

National Sediment Quality Survey (NSQS): A biennial report to Congress titled "The Incidence and Severity of Sediment Contamination in Surface Waters of the United States, National Sediment Quality Survey" presents the results of a national

survey to identify areas in the United States where available data indicate direct or indirect exposure to the sediment could be associated with adverse effects to aquatic life and/or to human health. The first *National Sediment Quality Survey* report was released in 1997, and the first update to the report is expected to be released in 2002.

Nonattainment: See “Impairment” above.

Permit Compliance System (PCS): The Permit Compliance System is a national computerized management information system that automates entry, updating, and retrieval of National Pollutant Discharge Elimination System (NPDES) data and tracks permit issuance, permit limits and monitoring data, and other data pertaining to facilities regulated under NPDES. PCS was developed in 1974 and resides on a mainframe computer at EPA's National Computer Center (NCC) at Research Triangle Park (RTP) in North Carolina. PCS records water-discharge permit data on more than 64,000 facilities nationwide.

POTW: Publicly owned treatment works. Accepts the wastewater of industrial facilities and commercial businesses, as well as conventional sewage. The POTW collects and treats this wastewater to remove pollutants before discharging it to surface water.

Risk: The possibility of suffering loss, such as loss of human health or loss of functioning in an ecosystem. Risk can be assessed by evaluating the potential exposure to a substance (through contact with or drinking water containing that substance) and the hazard posed by that substance (harmful health or ecological effects).

Sewage sludge: The solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works. See 40 C.F.R. section 503.9(w).

Standards: See “Water Quality Standards” below.

Standard Industrial Classification (SIC) code: A number code representing a category within the Standard Industrial Classification System, which is administered by the Statistical Policy Division of the U.S. Office of Management and Budget. The system was established to classify all industries in the U.S. economy. A two-digit code designates each major industry group, which is coupled with successive digits refining the degree of specialization of the industrial facilities down to the seven-digit level. SIC codes are gradually being replaced by the North American Industry Classification System (NAICS).

Toxic Release Inventory (TRI): A publicly available EPA database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990.

Water Quality Criteria: Constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. See 40 C.F.R. section 131.3(b).

Water Quality Standards: Provisions under State or Federal law that consist of a designated use or uses for the waters of the United States, and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act. See 40 C.F.R. section 131.3(i). Water quality standards also include antidegradation provisions. See 40 C.F.R. section 131.12.

Whole effluent toxicity (WET): The aggregate toxic effect of an effluent or receiving (ambient) water measured directly with standardized test organisms. The Agency-approved WET methods are specified at 40 CFR section 136.3, Table IA. These WET methods use test organisms that are representative of freshwater, marine, and estuarine vertebrates, invertebrates, and plants to directly measure the acute or short-term chronic adverse effects of an aqueous test sample on those test organisms.

Appendix 1

Industries Covered by National Clean Water Industrial Regulations

Industry Category	40 CFR part	First prom.	Reviewed	Limitations and Standards
Dairy products processing	405	1974	1986 1995	BPT, BCT, NSPS
Grain mills manufacturing	406	1974	1986 1995	BPT, BCT, NSPS, PSNS
Fruits and vegetable processing	407	1974	1986 1995	BPT, BCT, NSPS
Canned and preserved seafood	408	1974	1986 1995	BPT, BCT, NSPS
Sugar processing	409	1974	1986 1995	BPT, BCT, BAT, NSPS
Textile mills	410	1982	1983 1996 ¹	BPT, BAT, NSPS
Cement manufacturing	411	1974	1986 1995	BPT, BCT, BAT, NSPS
Feedlots	412	1974	1975 1995 1999 ² 2001 ³	BPT, BCT, BAT, NSPS, PSNS
Electroplating	413	1981	1986	PSES
Organic chemicals, plastics and synthetic fibers	414	1987	1993	BPT, BAT, NSPS, PSES, PSNS
Inorganic chemicals	415	1982	1984 1996 ⁴	BPT, BCT, BAT, NSPS, PSES, PSNS
Soaps and detergents manufacturing	417	1974	1975 1995	BPT, BAT, NSPS, PSNS
Fertilizer manufacturing	418	1974	1987 1995	BPT, BCT, BAT, NSPS, PSNS
Petroleum refining	419	1982	1985 1996 ⁵	BPT, BCT, BAT, NSPS, PSES, PSNS
Iron and steel manufacturing	420	1982	1984 1995 ⁶ 2002 ⁷	BPT, BCT, BAT, NSPS, PSES, PSNS

Industry Category	40 CFR part	First prom.	Reviewed	Limitations and Standards
Nonferrous metals manufacturing	421	1984	1990	BPT, BAT, NSPS, PSES, PSNS
Phosphate manufacturing	422	1974	1979	BPT, BCT, BAT, NSPS
Steam electric power generation	423	1982	1983 1996 ⁸	BPT, BAT, NSPS, PSES, PSNS
Ferroalloy manufacturing	424	1974	1986 1995	BPT, BCT, BAT, NSPS
Leather tanning and finishing	425	1982	1996	BPT, BCT, BAT, NSPS, PSES, PSNS
Glass manufacturing	426	1974	1986 1995	BPT, BCT, BAT, NSPS, PSNS
Asbestos manufacturing	427	1974	1979 1995	BPT, BCT, BAT, NSPS
Rubber manufacturing	428	1974	1975 1995	BPT, BAT, NSPS, PSNS
Timber products processing	429	1981	1981 1991 ⁹	BPT, BAT, NSPS
Pulp, paper and paperboard	430	1998	1999	BPT, BCT, BAT, NSPS, PSES, PSNS, BMP
Builder's paper and board mills ¹⁰	431			
Meat products	432	1974	1986 1995 2002 ³	BPT, BCT, BAT, NSPS,
Metal finishing	433	1983	1986 1994 ¹¹ 2001 ³	BPT, BAT, NSPS, PSES, PSNS
Coal mining	434	1985	1985 2002 ⁷	BPT, BAT, NSPS
Oil and gas extraction	435	1979	1989 ¹² 1997 2001 ⁷	BPT, BCT, BAT, NSPS, PSES, PSNS
Mineral mining and processing	436	1975	1979 1995	BPT, NSPS
Centralized waste treatment	437	2000	2000	BPT, BCT, BAT, NSPS, PSES, PSNS

Industry Category	40 CFR part	First prom.	Reviewed	Limitations and Standards
Pharmaceutical manufacturing	439	1983	1989 ¹³ 1999	BPT, BCT, BAT, NSPS, PSES, PSNS
Ore mining and dressing	440	1982	1988	BPT, BAT, NSPS, BMP
Transportation equipment cleaning	442	2000	1989 ¹⁴ 2000	BPT, BCT, BAT, NSPS, PSES, PSNS
Paving and roofing materials	443	1975	1975 1995	BPT, BAT, NSPS, PSNS
Waste combustors	444	2000	2000	BPT, BCT, BAT, NSPS, PSES, PSNS
Landfills	445	2000	2000	BPT, BCT, BAT, NSPS
Paint formulating	446	1975	1975 1989 ¹⁵ 1995	BPT, BAT, NSPS, PSNS
Ink formulating	447	1975	1975 1995	BPT, BAT, NSPS, PSNS
Gum and wood chemicals	454	1976	1976 1995	BPT
Pesticide chemicals manufacturing, formulating and packaging	455	1978	1989 ¹⁶ 1998	BPT, BCT, BAT, NSPS, PSES, PSNS
Explosives	457	1976	1976 1995	BPT
Carbon black manufacturing	458	1978	1978 1995	BPT, BAT, NSPS, PSNS
Photographic	459	1976	1976 1997 ¹⁷	BPT
Hospitals	460	1976	1989 ¹⁸ 1995	BPT
Battery manufacturing	461	1984	1986	BPT, BAT, NSPS, PSES, PSNS
Plastic molding and forming	463	1984	1985	BPT, BCT, NSPS
Metal molding and casting	464	1985	1986	BPT, BAT, NSPS, PSES, PSNS

Industry Category	40 CFR part	First prom.	Reviewed	Limitations and Standards
Coil coating	465	1983	1985	BPT, BAT, NSPS, PSES, PSNS
Porcelain enameling	466	1982	1985	BPT, BAT, NSPS, PSES, PSNS
Aluminum forming	467	1983	1988	BPT, BAT, NSPS, PSES, PSNS
Copper forming	468	1983	1986	BPT, BAT, NSPS, PSES, PSNS
Electrical and electronic components	469	1983	1985	BPT, BCT, BAT, NSPS, PSES, PSNS
Nonferrous metals forming and metal powders	471	1985	1989	BPT, BAT, NSPS, PSES, PSNS

1. Preliminary study (EPA-821-R-96-014)
2. Preliminary study (EPA-821/R-99-002)
3. Proposed revisions for some subcategories.
4. Preliminary study (EPA-821/R-96-016)
5. Preliminary study (EPA-821/R-96-015)
6. Preliminary study (EPA-821/R-95-037)
7. Promulgated revisions for some subcategories.
8. Preliminary study (EPA-821-Z-96-010)
9. Preliminary study (EPA-440/1-91-023)
10. 40 CFR 431 has been deleted.
11. Preliminary study (EPA-821/R-94-006)
12. Preliminary study (EPA-440/1-89-105)
13. Preliminary study (EPA-440/1-89-084)
14. Preliminary study (EPA-440/1-89-104)
15. Preliminary study (EPA-440/1-89-050)
16. Preliminary study (EPA-440/1-89-060e)
17. Preliminary study (EPA-821/R-97-003)
18. Preliminary study (EPA-440/1-89-060n)

Appendix 2

Section 304(m) Requirements

Clean Water Act - Section 304(m) [33 USC 1314(m)]:

(m) Schedule for review of guidelines.

(1) Publication. ---

Within 12 months after the date of the enactment of the Water Quality Act of 1987, and biennially thereafter, the Administrator shall publish in the Federal Register a plan which shall -

(A) establish a schedule for the annual review and revision of promulgated effluent guidelines, in accordance with subsection (b) of this section;

(B) identify categories of sources discharging toxic or nonconventional pollutants for which guidelines under subsection (b)(2) of this section and section 306 have not previously been published; and

(C) establish a schedule for promulgation of effluent guidelines for categories identified in subparagraph (B), under which promulgation of such guidelines shall be no later than 4 years after such date of enactment for categories identified in the first published plan or 3 years after the publication of the plan for categories identified in later published plans.

(2) Public review. ---

The Administrator shall provide for public review and comment on the plan prior to final publication.

Clean Water Act - Section 304(b) [33 USC 1314(b)]:

(b) Effluent limitation guidelines.

For the purpose of adopting or revising effluent limitations under this act the Administrator shall, after consultation with appropriate Federal and State agencies and other interested persons, publish within one year of enactment of this title, regulations, providing guidelines for effluent limitations, and, at least annually thereafter, revise, if appropriate, such regulations. Such regulations shall -

(1)(A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best practicable control technology currently available for classes and categories of point sources (other than publicly owned treatment works); and

(B) specify factors to be taken into account in determining the control measures and practices to be applicable to point sources (other than publicly owned treatment works) within such categories or classes. Factors relating to the assessment of best practicable control technology currently available to comply with subsection (b)(1) of section 301 of this Act shall include consideration of the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, and shall

also take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate;

(2)(A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best control measures and practices achievable including treatment techniques, process and procedure innovations, operating methods, and other alternatives for classes and categories of point sources (other than publicly owned treatment works); and

(B) specify factors to be taken into account in determining the best measures and practices available to comply with subsection (b)(2) of section 301 of this Act to be applicable to any point source (other than publicly owned treatment works) within such categories or classes. Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate;

(3) identify control measures and practices available to eliminate the discharge of pollutants from categories and classes of point sources, taking into account the cost of achieving such elimination of the discharge of pollutants; and

(4)(A) identify, in terms of amounts of constituents and chemical, physical, and biological characteristics of pollutants, the degree of effluent reduction attainable through the application of the best conventional pollutant control technology (including measures and practices) for classes and categories of point sources (other than publicly owned treatment works); and

(B) specify factors to be taken into account in determining the best conventional pollutant control technology measures and practices to comply with sub-section (b)(2) of section 301 of this Act to be applicable to any point source (other than publicly owned treatment works) within such categories or classes. Factors relating to the assessment of best conventional pollutant control technology (including measures and practices) shall include consideration of the reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived and the comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources, and shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate.