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EFFLUENT LIMITATIONS

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Effluent limitations are the basis of authority for the control of point source discharges under the Act. These controls may take either or both of two forms: effluent standards or water quality standards. Effluent, or technology-based standards, reflect those levels of pollution reduction which are technologically and economically achievable for different industrial classes and categories on a national basis. These direct "end-of-the-pipe" controls represent base-level measures to be applied regardless of local receiving water quality. Water quality standards are "in-stream" maximum allowable concentrations of pollutants set in order to protect the beneficial uses of the water such as drinking water supply or recreation. These values for pollutants are then used to make wasteload allocations to various dischargers on a water body segment. Wasteload allocations prescribe maximum daily loads for individual dischargers taking into account stream flow and assimilative capacity so that ambient water quality standards can be met outside of designated mixing zones.

Discharge permits incorporate effluent limitations in order to achieve pollutant reduction. This is performed on a constituent-by-constituent basis so that an individual discharger might have a total suspended solids (TSS) limitation determined by effluent guidelines and a biochemical oxygen demand (BOD) limitation determined by wasteload allocation to meet a water quality standard. Normally the technology-based effluent guidelines will be used to provide a base level for limitations. These will be revised where necessary to meet applicable water quality standards and toxic standards.

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The following discussion is limited to technology-based effluent guidelines and includes the strategy for the development of additional guidelines, adjustment of guidelines to be equitable to individual dischargers as well as to meet the water quality objectives of the Act, the inclusion and coverage of point sources of pollution under the effluent guidelines, and pretreatment policy.

Effluent Guidelines.

Sections 301, 304, 306, and 307 of the Act require EPA to develop technology-based effluent standards to meet the following regulatory deadlines:

<u>Point Source</u>	<u>Level of Control</u>
By 1977:	
publicly owned treatment works (POTW's)	- secondary treatment
sources other than POTW's	- best practicable control technology currently available (BPT)
By 1983:	
publicly owned treatment works (POTW's)	- best practicable waste treatment technology (BPWTT)
sources other than POTW's	- best available control technology economically achievable (BAT)
Following publication of proposed standards:	
new sources other than POTW's	- new source performance standards (NSPS)
Within three years of promulgation:	
sources discharging into POTW's	- pretreatment standards

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EPA has, in selected instances, subcategorized its effluent guidelines to reconcile two somewhat competing goals of the Act. The Agency is required to promulgate uniform guidelines that may be applied to individual permits and enforced in court without the necessity of treating each discharger as a unique situation. The Agency is also required to give effect in these guidelines to factors which may result in different limitations to different plants: their age and size, raw materials, manufacturing processes, products produced, available treatment technology, energy requirements, and costs. In the process of accommodating the needs for both specificity and uniformity, EPA has identified, among the initial 27 industrial categories specified in section 306, approximately 200 industrial subcategories with additional subcategories being developed for a number of those same industries, and over 45 additional variances as subject for different standards. A variance in effluent guidelines is another form of classification to deal with specificities of individual dischargers. For example an industrial subcategory might a variance for land availability. In this instance, those dischargers under that subcategory who were located in areas for which not enough land was available to build treatment facilities necessary for that category would be exempt from otherwise applicable effluent guidelines.

For each of the 200 subcategories, guidelines must be developed for BPT, BAT, New Source Performance Standards, and pretreatment for both new and existing sources. Because there are fundamental distinctions among these guidelines, EPA's Effluent Guidelines Division is responsible for the equivalent of over 1,000 regulations.

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Development of additional guidelines. The initial 27 industrial categories, or Group I categories, have been divided into Phase I and Phase II categories. Phase I industries comprise the most significant dischargers, the guidelines for which were proposed for BPT and BAT by October 18, 1973, and promulgated for New Source Standards by May 18, 1974. Guidelines for this group of industries have all been promulgated. Phase II industries include the remainder of those subcategories listed in section 306 and not covered in Phase I. An additional group of 18 industries not mentioned in section 306 have been designated as Group II categories for which effluent guidelines are being developed. These industries cover a substantial number of permit applications not covered by industries listed under section 306.

Activity for 1975 will focus on the development of industrial waste water limitations guidelines and standards, and revisions to them as necessary for meeting the 1977 and 1983 goals and new source requirements, as well as pretreatment standards for existing and new sources, pursuant to section 307.

Final regulations for effluent guidelines are scheduled to be promulgated for the following 19 Group I Phase II industrial categories by April 1975: (1) inorganic chemicals; (2) timber products processing; (3) ferroalloy manufacturing; (4) rubber processing; (5) electroplating; (6) nonferrous metals; (7) manufacturing organic chemicals; (8) meat products (includes rendering); (9) seafood processing; (10) plastics and synthetics; (11) glass manufacturing; (12) grain milling; (13) fertilizer manufacturing; (14) phosphate manufacturing; (15) steel foundries (carbon and alloy); (16) cane sugar refining; (17) pulp and paper; (18) fruits and vegetables processing; and (19) asbestos.

The eighteen industries comprising Group II should be promulgated during the latter part of calendar 1975 and perhaps the early part of 1976. These are paint and ink, converted paper, fish hatcheries transportation, asphalt paving, auto and other laundries, water supply, steam supply, coal mining, mineral mining, furniture, petroleum and gas extraction, machinery and mechanical products manufacturing, ore mining and dressing, miscellaneous chemicals, miscellaneous foods and beverages, concrete products, and clay and gypsum products.

Industrial reaction to the promulgation of effluent guidelines has been to sue the Agency. As a result, about 150 suits have been filed against EPA covering almost all categories for which guidelines have been promulgated. The Agency will require a major in-house technical assistance effort to support the defense of these suits in order to assure an effective effluent guidelines program.

Coverage of effluent guidelines. The goal of the Agency's effluent guidelines program for direct industrial dischargers is to cover 95% of the country's point source dischargers. The rationale for such a strategy is as follows. By publishing regulations for 95% the major industrial dischargers, all categories which have numerous plants are covered. Those which remain uncovered are industrial categories for which there are very few operations. Thus it would not be effective to promulgate a national effluent standard which could only be applied to two or three dischargers, for example. These individual dischargers can consult with EPA Regional offices to establish specific effluent limitations.

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In developing a data base to support effluent guidelines for Group II industrial categories EPA is also planning to obtain information during FY75 and FY76 on the discharge of hazardous substances including refractory organics and heavy metals in addition to the principal pollution parameters such as BOD and total suspended solids (TSS) normally considered in effluent guidelines. During the next five-year period the Agency will also gather such a data base of hazardous substances discharged by Group I industrial categories. It should be noted, however, that although such information is being gathered there are no immediate plans to expand the scope of Group I and II effluent guidelines to include specific limitations on these hazardous substances.

Adjustments in guidelines. Effluent guidelines are reviewed (and revised if necessary) every year as required by section 304(b) and revised within five years of the date of enactment of the Act, pursuant to section 301(d). In addition to changes in effluent guidelines for thermal discharges and certain toxic substances both of which are discussed elsewhere in the Water Strategy there are two additional statutory adjustments which can be made in effluent guidelines: revisions in technology-based guidelines to meet water quality standards as mentioned previously and modifications for individual dischargers under certain economic circumstances.

The use of higher limitations than technology base levels to meet water quality standards will operate automatically up to the 1983 level of technology. Above BAT for industries, limitations imposed to achieve water quality standards will be subject to special review procedures

pursuant to section 302 of the Act. Section 302 hearings will consider social and economic costs and benefits of the proposed limitations, availability of technology to meet them, and alternative control strategies. If the discharger can show there is no reasonable relationship between the costs and benefits to be obtained, the proposed limitation will be adjusted.

EPA has concentrated its efforts (to date) in getting the effluent guidelines program under way. The Agency must now determine the nature and structure of 302 hearings. A major goal in writing regulations to cover section 302 will be the definition and evaluation of social benefits and methodology for relating costs to benefits. It is often difficult to apply cost-benefit analysis to problems of water pollution control. Direct economic benefits such as commercial fisheries and recreation generally present no large problems, but the benefits of preserving and restoring natural aquatic ecosystems and human health aspects are much more difficult to place dollar values on. In theory it would be possible, for example, to relate natural stream assimilative capacity to the comparable treatment costs which wastewater would require if that capacity were reduced by pollution but how can aesthetics, natural species diversity, ecosystem stability, or preservation of an endangered species be quantified? These are all ecological benefits which should not be ignored in relating costs of pollution control to benefits to be obtained.

Another important concept in the development of procedures for 302 hearings is the definition of what constitutes technology over and above BAT. The Agency is taking the position that if comparable technology exists for one class or category of industry it may be applied to another

to meet water quality standards without being considered going above BAT. For example, requiring a steam electric power plant in service prior to 1970, for which BAT is no limitation on heat, to build a cooling tower to meet thermal water quality standards will not be considered going above BAT because newer categories of steam electric power plants have no discharge of heat as BAT. Thus the best available technology for removing heat allows for no discharge and a 302 hearing should not be required in this example.

The other modification in effluent guidelines discussed in subsection 301(c) of the Act involves adjustments in BAT for individual dischargers filing permit applications after July 1, 1977. Point source dischargers may receive adjustments in BAT controls upon showing that modified requirements (1) will represent the maximum use of technology within the economic capability of the owner or operator; and (2) will result in reasonable further progress toward the elimination of the discharge of pollutants. As this subsection becomes applicable in 1977, EPA must develop guidelines on review of applications for such adjustments.

The Act makes it clear that this subsection is not an economic waiver from BAT requirements because only those modifications which also result in helping to meet the objectives of the Act will be allowed. In addition, 301(c) modifications should not be required for a large majority of dischargers because the effluent guidelines have already been divided into classes and subcategories to consider cost applications of technology for plants of different age, size, raw materials, processes, products produced, energy requirements and available treatment technology.

It is conceivable that a discharger in a water quality limited segment could be granted both "exemptions" from controls more stringent

than BAT via section 302 and from BAT controls via subsection 301(c) to remain essentially at BPT; however, this should be a rare exception rather than the rule. When these types of modifications do occur, there will be a further problem of the disposition of wasteload allocations.

Pretreatment.

An industry can either discharge directly to a stream in which case applicable effluent guidelines would be required or it can discharge to a publicly owned treatment works (POTW) in accordance with pretreatment standards as outlined in section 307 of the Act. Pretreatment standards are designed to prevent the discharge into the POTW of any substances which could cause fire, explosion, damage to equipment, or process upsets and which could pass through the plant inadequately treated without damaging the plant. Pretreatment standards for new sources and existing sources of Group I and II industrial categories will all be published in final form during FY75. Two important issues in the pretreatment program area are interpretation of standards and enforcement.

Although pretreatment standards are published for industrial categories as are effluent guidelines, there is some need to interpret standards for each specific case, taking the specifics of the industrial discharge and design and loading of the POTW into account. If possible municipalities should be assigned top priority to accomplish this interpretation. States should receive second priority and EPA lowest priority, although

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the Agency will remain available for consulting in any case. To implement this strategy the Agency is preparing a pretreatment training course aimed to assist municipalities. Such a course will include the production of instructional manuals and videotapes for distribution.

Pretreatment standards promulgated by EPA are directly enforceable by the Federal Government. The Agency's ability to do this is confined to the municipal plant and outfall. The basic strategy is to accomplish enforcement functionally at the municipal level by encouraging the passage of local pretreatment ordinances. In some cases limitations will be written into municipal discharge permits requiring these ordinances to be passed. This practice although somewhat limited now is expected to increase in the future. Even when not required by permit, EPA will encourage local enforcement. If the municipality cannot or will not for one reason or another enforce a Federal pretreatment standard, EPA will enforce it.

For some industrial categories which discharge incompatible pollutants that are essentially not removed by the POTW, sufficient data bases do not exist upon which to write pretreatment standards. For these cases the pretreatment standard is published as no limitation. Where a pretreatment need exists and there is no applicable pretreatment standard (i.e., the standard requires no limitation), municipalities should pass local ordinances more stringent than Federal pretreatment standards. This practice is completely permissible and should be pursued wherever necessary.

Toxic Pollutants

Although point source discharges of pollutants are primarily regulated through the application of effluent guidelines and water quality standards, there are some substances which are so toxic that it is desirable to regulate them as toxic pollutants pursuant to section 307(a) of the FWPCA. Effluent guidelines and water quality standards apply to the individual discharger through his NPDES permit. They are issued once every five years and in the interim can be revised only after a hearing. Thus, any revision of the permit to include additional standards would be a slow, administratively complex procedure; while there must be compliance with 307(a) toxic effluent standards regardless of permit conditions and the compliance deadline is shortened to one year.

Virtually all substances are toxic to humans or other organisms when present in sufficient concentrations in the water over an extended period of time. Although the list of substances which qualify as toxic pollutants under the Act may be long, it is clear from its language and legislative history that Congress intended that only a small number of toxic substances be regulated by 307(a). In consideration of these facts, the agency will utilize 307(a) only for those toxic pollutants which when discharged in small quantities at very low concentrations are likely to cause death or severe injury or illness to humans and other important organisms.

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The implementation of section 307(a) has posed serious problems for the Agency. From the Act and its legislative history, it is not clear what was the intended function of 307(a). Congress foresaw that a small number of substances would be regulated under 307(a). However, some environmentalists are of the opinion that many substances should be regulated under the section and a suit has been brought on those grounds. As a result EPA has been faced with the difficult task of developing a 307 policy which capitalizes on the unique characteristics of its regulatory framework and complements other regulatory programs under the Act without being redundant.

All standards promulgated must be national effluent standards, for which there must be compliance within a year. This has presented serious problems for industries which generally cannot be in compliance within the time limit because plant modifications require much more time to complete and shutdowns of major industries are a serious possibility. The Agency's task is further complicated because it is unclear to what extent EPA can consider economics in setting standards and The required provision for an ample margin of safety under 307(a) hinders the Agency's ability to establish a reasonable as well as defensible toxic effluent standard.

The initial list of toxic pollutants to be regulated pursuant to 307(a) has been promulgated and includes the following substances:

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Aldrin-Dieldrin
Benzidine
Cadmium
Cyanide
DDT, (DDD, DDE)

Endrin
Mercury
Polychlorinated Biphenyls
Toxaphene

As standards for these substances are promulgated, it is the Agency plan to add more toxic pollutants to the list pursuant to the selection criteria enumerated in the notice of promulgation:

1. Data from laboratory or field studies indicate that a pollutant could constitute a serious environmental threat if discharged into water (these would include data on bioaccumulation, teratogenicity, mutagenicity, carcinogenicity, and highly acute toxicity);
2. The pollutant is discharged, or has the potential of being discharged from point sources and constitutes a serious environmental threat.
3. Data are available to establish effluent standards meeting the requirements of the Act, and
4. Standards--setting under section 307(a) is appropriate because the timing and effectiveness of abatement actions under other provisions of the Act are not commensurate with the seriousness of the problems identified by the above criteria.

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The appearance of a substance on the list triggers the development of water quality criteria for that substance which are then incorporated into the next revision of water quality standards. Such criteria have been developed for each substance and are utilized in setting the toxic effluent standards which must consider the chemical characteristics of the substance, its fate and effects in the environment, and the importance of the affected organism and its presence in the waters. All effluent standards must provide an ample margin of safety. After the water quality standards revision, the Agency plans to do allocations for those dischargers who are not included within the 307(a) regulation if it is necessary to achieve the revised standards. A major example of this category would be municipals.

The Agency has proposed chronic and acute effluent standards for the nine substances based on these considerations and a public hearing has been held which resulted in a determination that the proposed standards and the evidence which other parties introduced into the record did not contain sufficient information to promulgate a technically sound, defensible standard. Therefore, the Agency has determined that it is advisable to republish the proposed standards utilizing the additional information necessary.

EPA expects that the chronic standards promulgated will be net standards which take into account background levels of the toxic

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pollutants in the waters. Categories of sources will be designated for the listed pollutants and phased compliance will be acceptable under certain conditions. In special cases, where for technological or other important reasons, a discharger cannot achieve compliance with the time period specified, it is expected that the new regulations will permit the Regional Administrator on a case by case basis to consider economic and technological feasibility and revise the compliance agreement where it is reasonable to do so. He may also have authority to revise the chronic standards downward where toxicity levels in the receiving waters are already hazardous to aquatic life or other organisms, including man.

Final standards for the nine substances are expected to be promulgated by the latter part of 1975. Before that time, EPA will conduct technical symposia in the Regions to obtain additional information and exchange ideas with industry and the general public. If it is necessary to obtain additional data which is not available to EPA to set a reasonable standard, the Agency intends to solicit additional information from industries pursuant to section 308 of the FWPCA.

In light of the difficulties EPA has had in implementing the section, the Agency has proposed several legislative amendments to alleviate the situation. The first would address the problem of industrial compliance within the year and establish a legally sound basis to permit phased compliance. Where compliance within that time is technologically infeasible for a source category, the effective date may be extended

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by the Administrator to the earliest date that compliance is feasible, which in no case may exceed three years from promulgation. The second would delete the requirement that the hearing be held within 30 days of the proposal which retaining the requirement that promulgation be within 100 days.

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