

RULES AND REGULATIONS

Title 40—Protection of the Environment**CHAPTER I—ENVIRONMENTAL PROTECTION AGENCY****SUBCHAPTER N—EFFLUENT GUIDELINES AND STANDARDS**

[450-2]

PART 440—ORE MINING AND DRESSING POINT SOURCE CATEGORY**Interim Final Rules**

Notice is hereby given that effluent limitations and guidelines for existing sources to be achieved by the application of best practicable control technology currently available as set forth in interim final form below are promulgated by the Environmental Protection Agency (EPA). The regulation set forth below establishes Part 440—ore mining and dressing point source category and will be applicable to existing sources for the iron ore subcategory (Subpart A), the base and precious metals subcategory (Subpart B), the bauxite subcategory (Subpart C), the ferro-alloy ores subcategory (Subpart D), the uranium, radium and vanadium ore subcategory (Subpart E), the mercury ore subcategory (Subpart F), and the titanium ore subcategory (Subpart G) of the ore mining and dressing point source category pursuant to sections 301, 304 (b) and (c), of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, 1311, 1314 (b), and (c), 86 Stat. 816 et seq.; Pub. L. 92-500) (the Act). Simultaneously, the Agency is publishing in proposed form effluent limitations and guidelines for existing sources to be achieved by the application of best available technology economically achievable, standards of performance for new point sources and pretreatment standards for existing sources and for new sources.

(a) Legal authority.

(1) Existing point sources.

Section 301(b) of the Act requires the achievement by not later than July 1, 1977, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of the best practicable control technology currently available as defined by the Administrator pursuant to section 304(b) of the Act. Section 301(b) also requires the achievement by not later than July 1, 1983, of effluent limitations for point sources, other than publicly owned treatment works, which require the application of best available technology economically achievable which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Administrator pursuant to section 304(b) of the Act.

Section 304(b) of the Act requires the Administrator to publish regulations providing guidelines for effluent limitations setting forth the degree of effluent reduction attainable through the application of the best practicable control technology currently available and the degree of effluent reduction attainable through the application of the best control meas-

ures and practices achievable including treatment techniques, process and procedural innovations, operating methods and other alternatives. The regulation herein sets forth effluent limitations and guidelines, pursuant to sections 301 and 304(b) of the Act, for the iron ore subcategory (Subpart A), the base and precious metals subcategory (Subpart B), the bauxite subcategory (Subpart C), the ferroalloy ores subcategory (Subpart D), the uranium, radium and vanadium ore subcategory (Subpart E), the mercury ore subcategory (Subpart F), and the titanium ore subcategory (Subpart G) of the ore mining and dressing point source category.

Section 304(c) of the Act requires the Administrator to issue to the States and appropriate water pollution control agencies information on the processes, procedures or operating methods which result in the elimination or reduction of the discharge of pollutants to implement standards of performance under section 306 of the Act. The report or "Development Document" referred to below provides, pursuant to section 304(c) of the Act, information on such processes, procedures or operating methods.

(2) New sources.

Section 306 of the Act requires the achievement by new sources of a Federal standard of performance providing for the control of the discharge of pollutants which reflects the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available demonstrated control technology, processes, operating methods, or other alternatives, including, where practicable, a standard permitting no discharge of pollutants.

Section 306 also requires the Administrator to propose regulations establishing Federal standards of performance for categories of new sources included in a list published pursuant to section 306 of the Act. The regulations proposed herein set forth the standards of performance applicable to new sources for the iron ore subcategory (Subpart A), the base and precious metals subcategory (Subpart B), the bauxite subcategory (Subpart C), the ferroalloy ores subcategory (Subpart D), the uranium, radium and vanadium ore subcategory (Subpart E), the mercury ore subcategory (Subpart F) and the titanium ore subcategory (Subpart G) of the ore mining and dressing point source category.

Section 307(b) of the Act requires the establishment of pretreatment standards for pollutants introduced into publicly owned treatment works and 40 CFR Part 128 establishes that the Agency will propose specific pretreatment standards at the time effluent limitations are established for point source discharges.

Section 307(c) of the Act requires the Administrator to promulgate pretreatment standards for new sources at the same time that standards of performance for new sources are promulgated pursuant to section 306. Proposed regulations in fulfillment of these requirements appear elsewhere in Part II of this issue.

(b) Summary and basis of interim final effluent limitations and guidelines for existing sources, proposed effluent limitations and guidelines for existing sources to be achieved by the application of the best available technology economically achievable, proposed standards of performance for new sources, and proposed pretreatment standards for both new and existing sources.

(1) General methodology.

The effluent limitations and guidelines set forth herein were developed in the following manner. The point source category was first studied for the purpose of determining whether separate limitations are appropriate for different segments within the category. This analysis included a determination of whether differences in raw material used, product produced, manufacturing process employed, age, size, waste water constituents and other factors require development of separate limitations for different segments of the point source category. The raw waste characteristics for each such segment were then identified. This included an analysis of the source, flow and volume of water used in the process employed, the sources of waste and waste waters in the operation and the constituents of all waste water. The constituents of the waste waters which should be subject to effluent limitations were identified.

The control and treatment technologies existing within each segment were identified. This included an identification of each distinct control and treatment technology, including both in-plant and end-of-process technologies, which is existent or capable of being designed for each segment. It also included an identification of, in terms of the amount of constituents and the chemical, physical, and biological characteristics of pollutants, the effluent level resulting from the application of each of the technologies. The problems, limitations and reliability of each treatment and control technology were also identified. In addition, the nonwater quality environmental impact, such as the effects of the application of such technologies upon other pollution problems, including air, solid waste, noise and radiation were identified. The energy requirements of each control and treatment technology were determined as well as the cost of the application of such technologies.

The information, as outlined above, was then evaluated in order to determine what levels of technology constitute the "best practicable control technology currently available." In identifying such technologies, various factors were considered. These included the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application, the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, nonwater quality environmental impact (including energy requirements) and other factors.

The data upon which the above analysis was performed included EPA permit applications, EPA sampling and inspections, consultant reports, and industry submissions.

The Development Document addressed the production of antimony, beryllium and the rare earth metals; the regulations set forth herein do not address the production of these metals. There is currently in the United States only one facility solely producing antimony; one facility solely producing beryllium; and one facility solely producing the rare earth metals. Each of these operations is located in water-short areas with high evaporation rates; consequently, the three facilities are achieving zero discharge from both mine and mill. Because all three facilities are now achieving zero discharge, no benefit to the environment can be shown by establishing effluent limitations. The techniques currently used for pollution control by these facilities may not be applicable to any future operations and information has not been obtained with which other effluent limitations can be established. Therefore limitations for these ore mining and dressing operations are not being set forth at this time.

(2) Summary of conclusions with respect to the iron ore subcategory (Subpart A), the base and precious metals subcategory (Subpart B), the bauxite subcategory (Subpart C), the ferroalloy ores subcategory (Subpart D), the uranium, radium and vanadium ore subcategory (Subpart E), the mercury ore subcategory (Subpart F), and the titanium ore subcategory (Subpart G) of the ore mining and dressing point source category.

(i) Categorization.

For the purpose of studying waste treatment and effluent limitations, the ore mining and dressing point source category was divided into seven subcategories based on the metal ore produced or processed. These seven subcategories were then further divided into a total of twenty two (22) subdivisions primarily based on considerations of type of process and waste water characteristics and treatability as outlined in the Development Document referred to below. Other factors have been recognized as causing differences in the waste discharged, however, it has been determined that these factors do not significantly affect the treatability of the wastes generated within a subcategory. In those situations where there is a difference in the treatability of the wastes generated within a subcategory, the effluent limitations have been set so that all facilities within that subcategory can achieve the limitations with the treatment identified, with a lesser treatment or without treatment. To require a higher level of treatment for those facilities that need little or no treatment to achieve the limitations is not believed to be justified.

The subcategories and subdivisions within the subcategories are as follows:

(1) Subpart A, Iron Ore Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines

operated to obtain iron ore regardless of the type of ore or its mode of occurrence (b) mills beneficiating iron ores by physical and chemical separation and mills beneficiating iron ores by only physical (not magnetic) methods; and (c) mills beneficiating iron ores by magnetic and physical separation.

(2) Subpart B, Base and Precious Metals Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores or silver bearing ores or any combination of these ores from open-pit or underground operations other than placer deposits; (b) mills which employ the froth-flotation process along or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores or silver ores or any combination of these metals; (c) mines and mills which employ dump, heap, in situ leach or vat-leach processes for the extraction of copper from ores or ore waste materials; (d) mills which extract gold or silver by the cyanidation process alone (e) mills which extract gold or silver by the amalgamation process alone; and (f) mines or mine and mill complexes beneficiating gold ores, silver ores, tin ores or platinum ores by gravity separation methods, (this includes placer or dredge mining or concentrating operations, as well as hydraulic mining operations).

(3) Subpart C, Bauxite Ore Subcategory.

The provisions of this subpart are applicable to discharges from mines producing bauxite and other aluminum ores.

(4) Subpart D, Ferroalloy Ores Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines producing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year; (b) mines or mills processing less than 5,000 metric tons (5,512 short tons) of ferroalloy ores per year by methods other than ore leaching; (c) mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by purely physical methods including ore crushing, washing, jigging, heavy-media and gravity separation, and magnetic and electrostatic separation; (d) mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by froth flotation methods, and (e) mills processing ferroalloy ores by leaching techniques (either acid or alkaline) and associated chemical beneficiation techniques. Ferroalloy metals include: chromium, cobalt, columbium, tantalum, manganese, molybdenum, nickel, tungsten and vanadium (recovered alone and not as a by-product of uranium mining and mills).

(5) Subpart E, Uranium, Radium and Vanadium Ores Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines, either open-pit or underground, from which uranium, radium and vanadium ore are produced; and (b) mills using the acid leach, alkaline leach, or com-

bined acid and alkaline leach process for the extraction of uranium, radium and vanadium. Only vanadium by-product production from uranium ores are covered under this subpart.

(6) Subpart F, Mercury Ore Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines, either open-pit or underground, operated for the production of mercury ores; and (b) mills beneficiating mercury ores by gravity separation methods or by froth-flotation methods.

(7) Subpart G, Titanium Ore Subcategory.

The provisions of this subpart are applicable to discharges from (a) mines obtaining titanium ores from lode deposits; (b) mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods; and (c) mines engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, zircon, and other heavy metals, and the milling techniques employed in conjunction with the dredge mining activity (milling techniques employed include the use of wet gravity methods in conjunction with electrostatic or magnetic methods).

(II) Waste characteristics.

The raw waste characteristics of ore mine drainage and mill process waste water are highly dependent upon the mineralogy of the ore processed and the extraction, beneficiation or concentration technique utilized in the mill, and the reagents used. The major pollutant parameters present in all or some of the waste waters from the ore mining and dressing point source category are suspended solids, solubilized metals, radionuclides, organic and inorganic matter, and reagents used in the milling process. The primary metals present that have been identified as causing significant pollution problems include iron, cadmium, copper, zinc, mercury, lead, molybdenum, arsenic, nickel, aluminum, antimony, chromium and vanadium. The radionuclides include radium 226 and uranium. The primary reagents of interest are cyanide and ammonia; other reagents and organic and inorganic materials present in the waste water may exert an oxygen demand on the receiving water and can be measured by determining the chemical oxygen demand (COD) of the waste water.

Interim final effluent limitations guidelines based upon what is achievable through the application of the best practicable control technology currently available are established to control each of the above pollutants. The determination of which pollutants to limit in each subcategory was based on (1) which pollutants are frequently present in the discharge in concentrations deleterious to aquatic organisms; and (2) which pollutants will be removed or reduced by the technology identified as the best practicable control technology currently available. In those situations where the available data indicates one or more of the pollutants to be limited are normally reduced incidentally with the removal or

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reduction of another parameter, limitations for only one parameter are specified.

No limitations have been established for several other waste water constituents including total dissolved solids, sulfates, fluoride, manganese and oil and grease. Total dissolved solids concentrations in some discharges are at levels capable of disrupting an aquatic ecosystem, but economically feasible technology for achieving substantial reductions in dissolved solids levels does not exist at this time. Levels of sulfates, fluoride and manganese observed in discharges from the ore mining and dressing point source category do not appear to warrant concern at this time. Oil and grease resulting from spills and leakage in the mining and mills have been observed in several of the discharges. The identified technologies are not designed specifically for oil and grease removal. Spills of this pollutant are controlled under 40 CFR 112, therefore, limitations for oil and grease have not been established herein.

(iii) Origin of waste water pollutants. The waste water situation evident in the mining segment of the ore mining and dressing is unlike that encountered in most other industries. Water enters mines via precipitation, ground water infiltration, and runoff where it may become polluted by contact with materials in the ore, overburden material, mine bottom, or exposed in the areas disturbed by the mining operation. Except for dust control and fire protection, water is not used in the actual mining of ore in the United States (with the exception of the hydraulic mining of some placer deposits). Waste water handling and management is a problem that plagues much of the mining industry. Waste water handling and management is required, and is a part of most ore mining methods or systems. This waste water is discharged from the mine as mine drainage. Mine drainage may be polluted and require treatment before it can be discharged to navigable waters. In addition to handling and treating often massive volumes of waste water during active mining operations, ore mine operators are faced with the same burden during idle periods. Mine drainage may continue indefinitely after all mining operations have ceased if proper control technology is not employed to prevent waste water pollution after mine shutdown or closure. It was determined that the quantity of mine water discharged was dependent upon many factors beyond the control of the mine-operator and unrelated or only indirectly related to mine production; therefore, raw waste loadings are expressed in terms of concentration (with the exception of pH units) rather than units of production.

Process water use in the milling segment of the ore mining and dressing industry includes ore transport, ore and product wash, dust suppression, grinding and classification, heavy media separation, flotation, and equipment and floor wash. The quantity of mill process water used (and mill process waste water dis-

charged) within a subcategory is based primarily upon the mineralogy of the ore being processed which affects the fineness of grind required to liberate the metal values and the processes required to concentrate the metal values. Because of the variables within a subcategory affecting the quantity of mill process waste water discharged, a relationship between production and discharge could not be developed; therefore raw waste loadings are expressed in terms of concentration (with the exception of pH units) rather than units of production.

In addition to the above, boiler blow-down and non-contact cooling water, such as bearing cooling water, may be discharged.

(iv) Treatment and control technology.

Waste water treatment and control technologies have been studied for each subcategory of the industry to determine what is the best practicable control technology currently available.

Waste water treatment technology discussed in the Development Document identified below provides the basis for the effluent limitations guidelines. This discussion does not preclude the selection of other waste treatment alternatives which provide equivalent or better levels of treatment.

As previously discussed, raw waste loadings from both the mining and milling segments of the ore mining and dressing industry are unrelated, or only indirectly related, to production quantities. Consequently, effluent limitations are expressed in terms of concentration rather than units of production.

The following is an identification of the best practicable control technology currently available for:

SUBPART A—IRON ORE SUBCATEGORY

(1) Mines operated to obtain iron ore.

Best practicable control technology currently available (BPCTCA) for the control of waste water in this subdivision is settling ponds with coagulation-flocculation systems. At selected locations, it may be possible to employ settling ponds alone to meet the effluent limitations specified herein. For acid mine discharge, lime-neutralization will be required.

(2) Mills beneficiating iron ores by physical and chemical separation and mills beneficiating iron ore by only physical (not magnetic) methods.

BPCTCA for the treatment of waste water in this subdivision is the use of tailing ponds with coagulation-flocculation systems.

(3) Mills beneficiating iron ores by magnetic and physical separation.

BPCTCA for the control of waste water from this subdivision is no discharge of waste water.

SUBPART B—BASE AND PRECIOUS METALS SUBCATEGORY

(1) Mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores, or silver bearing ores or any combination of these ores.

BPCTCA for the control of waste water pollutants from this subdivision is the use of lime precipitation and settling, with pH adjustment prior to discharge if necessary.

(2) Milling operations which employ the froth-flotation process alone or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores, or silver ores or any combination of these ores.

BPCTCA for this subdivision is the use of lime-precipitation methods, tailings impoundments for removal of suspended solids and precipitates, and partial reuse of mill water. If cyanide is present in waste water, alkaline chlorination for cyanide destruction may be required. Adjustment for the pH of the waste water may be required prior to discharge.

(3) Mines and mills which employ dump, heap, insitu leach or vat-leach processes for the extraction of copper from copper ores.

BPCTCA for this subdivision is no discharge of waste water.

(4) Mills which extract gold or silver by the cyanidation process alone.

BPCTCA for this subdivision is no discharge of process waste water.

(5) Mills which extract gold or silver by the amalgamation process alone.

BPCTCA for this subdivision is lime precipitation in conjunction with sedimentation or tailing impoundment, with in-process recycle of the mercury reagent in the amalgamation process. Adjustment of the pH of waste waters prior to discharge may be necessary.

(6) Mines or mine and mill complexes beneficiating gold ores, silver ores, tin ores or platinum ores by gravity separation.

BPCTCA for this subdivision is the use of settling or tailing impoundments for settling of suspended solids. An alternative technology is the pumping of waste water from dredging operations back to a tailing-disposal area for filtration through sands and gravels. At some operations, it may be necessary to add flocculating agents to enhance the settling of suspended solids. pH adjustment prior to discharge may be required.

SUBPART C—BAUXITE SUBCATEGORY

BPCTCA for this subcategory is use of lime precipitation and settling. Adjustment of waste water pH prior to discharge may be required.

SUBPART D—FERROALLOY ORES SUBCATEGORY

(1) Mines producing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year.

BPCTCA for this subdivision is the use of lime precipitation in conjunction with a settling pond or a mechanical clarifier for suspended solids removal. pH adjustment prior to discharge may be necessary.

(2) Mines or mills processing less than 5,000 metric tons (5,512 short tons) of ferroalloy ores per year by methods other than ore leaching.

BPCTCA for this subdivision is the use of settling or tailing ponds in conjunction with pH control.

(3) Mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by purely physical methods including ore crushing, washing, jigging, heavy-media and gravity separation, and magnetic and electrostatic separation.

BPCTCA for this subdivision is the use of process-water recycle in conjunction with tailing impoundment, lime precipitation, flocculation, and secondary settling. pH adjustment prior to discharge may be necessary.

(4) Mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by froth flotation methods.

BPCTCA for this subdivision include the use of primary settling or tailing ponds in conjunction with lime precipitation and secondary settling. Flocculation may be necessary at selected locations to meet suspended-solid limitations. pH adjustment prior to discharge may be necessary.

(5) Mills processing ferroalloy ores by leaching techniques (either acid or alkaline) and associated chemical beneficiation techniques.

BPCTCA for this subdivision includes tailing-pond impoundments for primary settling, in conjunction with lime precipitation, flocculation, and secondary settling. Segregation of waste water streams and ammonia stripping may be required. The segregation of highly contaminated leaching, solvent extraction, precipitation, and scrubber waste streams from noncontact cooling water and uncontaminated waste streams is essential to effective removal of metals from the waste water. pH adjustment prior to discharge may be necessary.

SUBPART E—URANIUM, RADIUM, AND VANADIUM ORES SUBCATEGORY

(1) Mines, either open pit or underground, from which uranium, radium and vanadium ores are produced.

BPCTCA for this subdivision is the use of settling ponds in conjunction with lime precipitation, ion exchange (for uranium removal), barium chloride coprecipitation (for radium removal), and secondary settling.

(2) Mills using the acid leach, alkaline leach or combined acid and alkaline leach process for the extraction of uranium, radium and vanadium.

BPCTCA for this subdivision is no discharge of waste water pollutants.

SUBPART F—MERCURY ORE SUBCATEGORY

(1) Mines, either open pit or underground, operated for the production of mercury ores.

BPCTCA is lime precipitation in conjunction with settling impoundments. Adjustment of the pH prior to discharge may be required.

(2) Mills beneficiating mercury ores by gravity-separation methods, or by froth-flotation methods.

BPCTCA is zero discharge by recycle of process water or total impoundment.

SUBPART G—TITANIUM ORE SUBCATEGORY

(1) Mines obtaining titanium ores from ilode deposits.

BPCTCA for this subdivision is neutralization in conjunction with the use of

a settling pond for suspended solids removal.

(2) Mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods.

BPCTCA for this subdivision is the use of tailing ponds with lime precipitation and partial recycle of process water. pH adjustment may be required prior to discharge.

(3) Mills engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, zircon, and other heavy metals and the milling techniques employed in conjunction with the dredge mining activity.

BPCTCA is settling impoundment with maintenance of a pH of 3.5, secondary settling, and neutralization by lime addition prior to discharge.

The determination that for a number of milling subcategories, BPCTCA was no discharge of waste water pollutants was not intended to prohibit a facility from discharging waste water to an available treatment system which might be present in a combined mine and mill complex. Limitations set forth in the applicable parts of the regulation shall be imposed on the combined discharge.

To preclude a facility from treating only a portion of the mine water in a combined system so that the requirement for recycle of mill process water can be circumvented, or by using a good quality mine water for dilution to avoid both recycle and treatment of mill process water, the following criteria should be applied to a combined treatment system, if the mill is allowed no discharge of pollutants:

(1) A reduction in pollutants attributable to mine water should be shown; (2) all of the mine water should be treated in the combined system; and, (3) the discharge flow should not exceed the flow from the mine less any make-up water used in the mill.

To preclude any possibility that a discharger will obtain excess water for the sole purpose of dilution to circumvent any requirement for treatment, the permit writer should specify in the NPDES permit that dilution in lieu of treatment is not allowed. It is further suggested that the permit writer establish a mass loading discharge limitation in the NPDES permit for each individual facility. For a mine, this mass loading should be calculated using mine waste water volume and allowable concentration of pollutants in the discharge; for a mill, this mass loading should be calculated using mill process water less any recycled water and the allowable concentration of pollutants in the discharge.

The proper management of solid wastes resulting from pollution control systems must be practiced. Pollution control technologies generate many different amounts and types of solid wastes and liquid concentrates through the removal of pollutants. These substances vary greatly in their chemical and physical composition and may be either hazardous or non-hazardous. A variety of techniques may be employed to dispose of these substances depending on the degree of hazard.

If thermal processing (incineration) is the choice for disposal, provisions must be made to insure against entry of hazardous pollutants into the atmosphere. Consideration should also be given to recovery of materials of value in the wastes.

For those waste materials considered to be nonhazardous where land disposal is the choice for disposal, practices similar to proper sanitary landfill technology may be followed. The principles set forth in the EPA's Land Disposal of Solid Wastes Guidelines 40 CFR Part 241 may be used as guidance for acceptable land disposal techniques.

For those waste materials considered to be hazardous, disposal will require special precautions. In order to ensure long-term protection of public health and the environment, special preparation and pretreatment may be required prior to disposal. If land disposal is to be practiced, these sites must not allow movement of pollutants to either ground or surface waters. Sites should be selected that have natural soil and geological conditions to prevent such contamination or, if such conditions do not exist, artificial means (e.g. liners) must be provided to ensure long-term protection of the environment from hazardous materials. Where appropriate, the location of solid hazardous materials disposal sites should be permanently recorded in the appropriate office of the legal jurisdiction in which the site is located.

(v) Cost estimates for control of waste water pollutants.

The costs of compliance with the interim final effluent limitations are not expected to significantly affect prices, production, employment or growth, largely because much of the industry is already in full or near compliance with the limitations. Available information indicates that only two establishments will be endangered by the BPCTCA limitations: a small copper mine already closed for economic reasons and a small tungsten mine.

(vi) Energy requirements and non-water quality environmental impacts.

Energy requirements for compliance with the interim final and proposed effluent limitations and standards are low. The main use of energy is for pumps, mixers and control instruments. Wherever feasible, gravity flow is used in treatment facilities for mine drainage and mill process waste water. Mine dewatering and control of storm water runoff is considered an inherent part of the mining operation.

Inherent in the dressing segment of the ore mining and dressing industry, are major problems with solid waste disposal in the form of tailings. Large areas of tailings are a source of air pollution; where radioactive ores are milled, radioactive substances are found in the tailings disposal area. The amount of additional waste and resultant air pollution and radioactive hazards produced as a result of compliance with the regulations is insignificant relative to that already present, consequently, a minimal impact is expected.

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(vii) Economic impact analysis.

The economic impact analysis of the interim final regulations indicates that the economic impact of compliance with the regulation will be minimal. As previously mentioned in paragraph (v) above, only two establishments will be endangered by the BPCTCA limitations.

Executive Order 11821 (November 27, 1974) requires that major proposals for legislation and promulgation of regulations and rules by Agencies of the executive branch be accompanied by a statement certifying that the inflationary impact of the proposal has been evaluated.

OMB Circular A-107 (January 28, 1975) prescribes guidelines for the identification and evaluation of major proposals requiring preparation of inflationary impact certifications. The circular provides that during the interim period prior to final approval by OMB of criteria developed by each Agency, the Administrator is responsible for identifying those regulations which require evaluation and certification. The Administrator has directed that all regulatory actions which are likely to result in capital investment exceeding \$100 million or annualized costs in excess of \$50 million will require certification.

As the Agency's analysis of the potential economic impacts of these regulations indicates, the capital investment and annualized costs associated with compliance are not estimated to exceed these amounts. However, the Agency has reviewed and analyzed the projected effect on the prices and economics of the industry as summarized above.

The report entitled "Development Document for Proposed Effluent Limitations Guidelines and New Source Performance Standards for the Ore Mining and Dressing Point Source Category" details the analysis undertaken in support of the interim final regulation set forth herein and is available for inspection and copying at the EPA Public Information Reference Unit, Room 2404, Waterside Mall, 401 M St., S.W., Washington, D.C. 20460, at all EPA regional offices, and at State water pollution control offices. A supplementary analysis prepared for EPA of the possible economic effects of the regulations is also available for inspection at these locations. Copies of both of these documents are being sent to persons or institutions affected by the proposed regulation or who have placed themselves on a mailing list for this purpose (see EPA's Advance Notice of Public Review Procedures, 38 F.R. 21202, August 6, 1973). An additional limited number of copies of both reports are available. Persons wishing to obtain a copy may write the EPA, Effluent Guidelines Division, Washington, D.C. 20460, Attention: Distribution Officer, WH552.

When this regulation is promulgated in final rather than interim form, revised copies of the Development Document will be available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Copies of the economic analysis document will be available through the National Technical Information Service, Springfield, VA 22151.

(c) Summary of public participation:

Prior to this publication, the agencies and groups listed below were consulted and given an opportunity to participate in the development of effluent limitations, guidelines and standards proposed for the ore mining and dressing point source category. All participating agencies have been informed of project developments. An initial draft of the Development Document was sent to all participants and comments were solicited on that report. The following are the principal agencies and groups consulted: (1) Effluent Standards and Water Quality Information Advisory Committee (established under section 515 of the Act); (2) all State and U.S. Territory Pollution Control Agencies; (3) the Ohio River Valley Sanitation Commission; (4) the Delaware River Basin Commission; (5) the New England Interstate Water Pollution Control Commission; (6) U.S. Department of Commerce; (7) U.S. Department of the Interior; (8) U.S. Department of Defense; (9) U.S. Department of Agriculture; (10) U.S. Department of Transportation; (11) U.S. Department of Health, Education, and Welfare; (12) U.S. Department of Housing and Urban Development; (13) U.S. Department of Treasury; (14) Tennessee Valley Authority; (15) Council on Environmental Quality; (16) National Commission on Water Quality; (17) Federal Power Commission; (18) Federal Energy Administration; (19) Office of Management and Budget; (20) Internal Revenue Service; (21) Nuclear Regulatory Commission; (22) The American Society of Mechanical Engineers; (23) The Conservation Foundation; (24) Businessmen for the Public Interest; (25) Environmental Defense Fund, Inc.; (26) National Resources Defense Council; (27) The American Society of Civil Engineers; (28) Water Pollution Control Federation; (29) National Wildlife Federation; (30) The American Mining Congress; (31) The American Iron Ore Association; (32) Environment Canada; and (33) Isaac Walton League. In addition all the individual companies that participated in the contractor's study were consulted.

The following responded with comments: (1) Effluent Standards and Water Quality Information Advisory Committee (established under section 515 of the Act); (2) Utah International, Inc.; (3) Aluminum Company of America; (4) Amax Inc.; (5) Amax Lead Company of Missouri; (6) American Mining Congress; (7) American Smelting and Refining Company; (8) Anaconda; (9) Bethlehem Steel Corporation; (10) Bunker Hill Company; (11) Colorado Department of Health; (12) Cominco American Inc.; (13) Copper Range Company; (14) Eagle-Picher Industries Inc.; (15) E. I. DuPont de Nemours & Company; (16) Hanna Mining Company; (17) Hecla Mining Company; (18) Iron Ore Association; (19) Jones and Laughlin Steel Corporation; (20) Kennecott Copper Corporation; (21) Kerr American Inc.; (22) Kerr-McGee Nuclear Corporation; (23) Knob Hill Mine; (24) Minnesota Pollution Control; (25) Mo-

lybdenum Project, University of Colorado; (26) New Jersey Zinc; (27) New York State Department of Environmental Conservation; (28) N. L. Industries; (29) North Carolina Department of Natural and Economic Resources; (30) Oat Hill Mining Company; (31) Ozark Lead; (32) Reynolds Metals Company; (33) St. Joe Minerals Corporation; (34) State of Delaware; (35) State of Idaho; (36) State of Florida; (37) State of Michigan; (38) Sunshine Mining Corporation; (39) Tennessee Valley Authority; (40) Texas Water Quality Board; (41) Titanium Enterprises; (42) Union Carbide Corporation; (43) Union Copper Corporation; (44) U.S. Antimony Corporation; (45) U.S. Department of the Interior; (46) U.S. Department of Health, Education and Welfare; (47) U.S. Department of Transportation; (48) U.S. Environmental Protection Agency; (49) U.S. Nuclear Regulatory Commission; (50) U.S. Office of Environmental Affairs; (51) U.S. Water Resources Council.

The primary issues raised in the development of the interim final effluent limitations and guidelines and the treatment of these issues herein are as follows:

(1) Two commenters questioned the reason for different effluent limitations for mines and mills processing the same ore.

It was determined that when mine and mill waste water are treated separately, the mill waste water alone can often be treated to a better quality than can the mine waste water alone. When mine waste water and mill waste water are mixed, coprecipitation often occurs and the resultant effluent can readily meet the effluent limitations recommended for discharges from the mill.

(2) Several commenters suggested that a higher level of treatment could be obtained with a resultant benefit to the environment by allowing a mixing of mine waste water and mill process waste water in a combined treatment system or by using mine waste water as mill process water prior to treatment in a combined system. It was noted that when the mine waste water is in excess of that which can be consumptively used as mill process water, a discharge must occur.

Because a benefit to the environment can be shown by using mine waste water as mill process water or treating the mine waste water in a combined treatment system, the development document and the regulation have been revised to allow a discharge, subject to stringent limitations, if a combined treatment system is used.

(3) Several commenters expressed concern that the attainment of "zero" discharge through the use of recycle was impossible for facilities beneficiating ore by the flotation process. It was stated that the flotation process is a very complex process which can be easily upset by the addition of recycle water containing even minute amounts of degraded chemicals initially used in the process. It was also stated that a build-up of salts and other pollutants in the system (with-

out a bleed) will prevent recycle. One commenter stated that the beneficiating process includes a built-in bleed in the form of water trapped in the interstitial voids of the tailings. This commenter further stated that this "bleed" will remove a part of the dissolved salts from a recycle mill's process water, with the result that the circuit can operate on a zero discharge.

Experience at a number of facilities have shown that zero discharge can be achieved on a full scale basis through the use of recycle. Several of these facilities expressed concern over loss of recovery of metal values because of recycle. However, no adverse effect has been demonstrated. Those facilities that have run bench scale tests to determine the effect of recycle on production have noticed a loss in production; however, the bench scale tests were run using the effluent from the existing treatment system with no process modification or reagent change. Based on the experience of those now recycling, it is believed that when all process waste water is recycled, some consideration of process modification or reagent use will be necessary.

(4) Two commenters recommended that limitations not be set for those parameters that are present in the discharge in lower concentrations than are specified in the effluent limitations. Several commenters requested that parameters not present in the process waste water or added in the process not be limited. Several commenters requested that no limitations be set for parameters not removed by the identified treatment systems. Several commenters recommended that only indicator parameters, i.e. the limitation of one parameter will result in the limitation of other parameters, be limited rather than a great number of parameters. One commenter stated that limitations were less stringent than the state water quality standards. Another commenter stated that the limitations were more stringent than the state stream standards.

The effluent limitations have been based on what can be obtained by the application of BPCTCA and BATEA. If a particular facility does not have one of the limited parameters present in the waste water or it is present in quantities below the limitations, then that facility naturally will not have to treat to remove that parameter.

A reanalysis of the parameters to be limited indicated that a number of parameters would be controlled if indicator parameters were controlled. The reanalysis also indicated that some of the limited parameters were not removed by the recommended treatment systems. Therefore, in the regulations only those indicator parameters that are removed by the treatment systems identified are limited.

(5) It was stated that the definition of a mine is too general. One commenter stated that the definition of a mine did not cover drainage tunnels.

The definition of a mine was intended to be sufficiently broad to cover all point source pollution resulting from all of the activities related to operation of the mine

including drainage tunnels, haul roads, storage piles, etc.

(6) A number of commenters stated that a variation in raw waste loads impacted on the ability of the discharger to meet the effluent limitations. Several commenters also recommended that effluent limitations be net rather than gross to consider the variation in raw waste loads caused by variation in influent water quality.

It was determined that the treatment systems recommended can achieve the specified effluent limitations regardless of the raw waste quality (within the limits experienced in the ore mining and dressing industry). Of course, as with any treatment system, the treatment systems for the ore mining and dressing industry must be routinely monitored to compensate for changes in the raw waste load. The Environmental Protection Agency has promulgated a regulation (40 CFR Part 125) that provides the Regional Administrator the authority to adjust the effluent limitations to consider specified pollutants in the water supply if the source of the water supply is the same body of water into which the discharge is made and if the waste water treatment system (equal to BPCTCA or BATEA) is not designed to reduce the specified parameters to the level required by the applicable limitations or standards. This latter provision is not expected to be applicable in the ore mining and dressing industry.

(7) It was stated that control of mine closures, revegetation and mine safety should not be considered as part of the effluent limitations setting process.

The contractor's draft report was intended to give an overview of the mining industry in addition to identifying available treatment technologies. The regulation will only consider those items directly impacting on effluent limitations.

(8) One commenter preferred a waste loading limitation rather than a concentration limitation because process water conservation efforts result in higher concentrations in the discharge although waste loadings remain the same.

The technology identified will achieve the effluent levels recommended.

(9) One commenter disagreed with the discussion in Section VI of the draft development document regarding toxicity levels of pollutants.

The discussion in Section VI is only a compilation of some of the toxicity data available.

(10) Several commenters stated that effluent limitations should be based on water quality considerations rather than just technology. One commenter stated that there is no valid reason for total recycle if the discharges do not result in an adverse impact to the environment.

Effluent guidelines and standards are national standards. Sections 301, 304 and 306 of PL 92-500 require that EPA identify the effluent limitations that can be obtained through the application of available treatment technologies. Receiving water quality and water quality standards will be taken into consideration by the permitting authority when

a NPDES permit is issued and may result in individual effluent limitations more stringent than the national standards.

(11) One commenter suggested that both ion exchange and coprecipitation for the removal or reduction of molybdenum are treatment techniques in the early stages of development and should not be considered for BATEA or BADT (to establish NSPS).

It has been determined that the technology development is sufficient to allow consideration of ion exchange and coprecipitation techniques as BATEA. It has been recognized that ion exchange and coprecipitation techniques for the removal or reduction of molybdenum, however, are not sufficiently developed to consider as BADT and the development document has been revised accordingly.

(12) Several commenters stated that proposed maximum limitations are not consistently obtainable for all parameters. Other commenters objected to limitations being based on grab samples rather than statistically significant samples.

Maximum and average limitations were based on data supplied by the industry, data presented in the literature and on data obtained during the contractors sampling program. Generally the contractors grab samples, supplemented by 24-hour composite samples, were used to verify the efficiency of the treatment systems recommended.

(13) Several commenters suggested that determination of solubilization potential should be based on pH rather than metal concentration. One commenter suggested the copper industry be subcategorized into solubilization no-solubilization subcategories.

The solubilization no-solubilization potential subcategories for the lead and zinc mines has been found to be an unworkable concept and consequently has been dropped. The effluent limitations are based on what quality can be obtained by treating mine water with solubilization potential (the most difficult mine water to treat). Mine waters with no-solubilization potential can probably meet the limitations either with relatively little treatment or with settling alone.

(14) Several commenters stated that the technology identified as BPCTCA is correct, however, the effluent limitations cannot be met.

Not all of the facilities with the technology identified as BPCTCA in place are operated as exemplary facilities, therefore, discharges from those facilities cannot be considered as representative of what can be obtained with proper operation of the treatment system. Data is available that shows the limitations can be achieved.

(15) A number of commenters took exception to the cost data provided in the draft development document. One commenter pointed out that the cost data provided in the draft development document did not agree with data in other EPA publications. Another commenter suggested that the costs were not

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based on actual costs incurred by the industry. Several of the commenters objected to the lack of cost data for lining of tailing ponds. Several commenters also commented that the "economic impact study" in the draft development document was inadequate. One commenter recommended that costs include the costs to abate pollution from sources other than point source discharges.

The cost data presented in the development document was obtained from the industry and from sources supplying equipment to the industry. The costs presented are the estimated costs that a typical facility within an industrial subcategory would incur in the installation of BPCTCA and BATEA. A typical facility may not be an actual facility but rather a hypothetical facility that is representative of the industrial subcategory. Disagreement with other EPA documents was noted; however, it was determined that typographical errors in other documents explained the discrepancies. Only those costs which directly result from the implementation of the requirements set forth in the development document are considered. Items currently in general use throughout the industry are not costed; Items currently in general use through are not required for the achievement of the recommended effluent limitations are not costed. The cost data in the development document is not the economic impact study but rather has been utilized as input to the economic impact study which was prepared by another EPA contractor (EPA contract #68-01-1541).

(16) One commenter stated that the costs of diversion ditching to control the runoff resulting from rainfall have not been considered.

Diversion ditching to control excess water passing through the mine and mill facilities is generally considered a part of the industrial process rather than for water pollution control. In those cases where the industry or the contractor identified a need for additional diversion ditches for pollution control, the costs have been included.

(17) Four commenters questioned whether the metals limitations are total or dissolved.

Test methods specified in the October 16, 1973 FEDERAL REGISTER (40 CFR Part 136) Procedures for Analysis of Pollutants are the methods that the contractor used in determining obtainable levels (unless specifically noted otherwise) and are the methods which should be used by a discharger in determining whether he is in compliance with the applicable limitations. With the exception of the procedure for analysis of hexavalent chromium and filtrable iron, all analysis for metals provide a total metals concentration.

(18) Several commenters either recommended using drinking water standards for effluent limitations or objected that the recommended effluent limitations are different than the drinking water standards.

The recommended effluent limitations are based on the technology available as required by Pub. L. 92-500. Drinking water standards have been used as a guide in determining which parameters to limit; however, the standards for drinking water are not applicable to effluent limitations.

(19) Several commenters recommended only concentration limits for mill discharges rather than mass loading limitations.

It has been determined that variability in ore mineralogy results in differing water requirements to concentrate products within the same subcategory. For example, water use within the grinding circuit is directly dependent upon the fineness of grind required to liberate the metal ore. Furthermore, it has been determined that in general, water use in a mill is minimized to minimize pumping and treatment costs. Therefore, the effluent limitations have been revised to concentration limitations only.

(20) One commenter stated that the pH limitations of 6 to 9 are inconsistent with the treatment technologies identified as BPCTCA and BATEA.

The technologies identified generally call for raising the pH (in some cases above pH 9) to reduce the metals concentrations, however, neutralization prior to discharge is also required. The revised development document now clearly specifies neutralization prior to discharge.

(21) One commenter questioned the advisability of different effluent limitations for different subcategories.

It has been determined that the treatability of raw waste loads varies between some subcategories. Effluent limitations that can be achieved for one subcategory may not be achievable for another. Where possible, however, effluent limitations are consistent between subcategories.

(22) One commenter stated that the draft development document did not explain why the issue of net evaporation was used only for the subcategory of copper mills using flotation and not for other subcategories. Several commenters stated that in the development of the recommended effluent limitations, consideration was not given to those areas having an unfavorable water balance (i.e. net precipitation areas).

It was determined that use of net precipitation net evaporation was not a good method for subcategorization and this system was dropped. For BPCTCA, those facilities already at zero discharge will not be allowed by the permitting authority to discharge. Those facilities in net precipitation areas and those facilities currently having a discharge will have until 1983 to eliminate discharges where zero discharge is required. The regulation resulting from the information presented in the draft development document will allow a discharge in those areas where the annual precipitation exceeds the annual evaporation; the allowable discharge is equal to the difference between precipitation and evaporation.

(23) One commenter stated that the recommended limitations did not consider the toxic standards.

The recommended limitations have been based on what can be achieved with the available technology. No toxic standards have been promulgated at this time.

(24) One commenter objected to having limitations placed on waste water within the tailing pond.

Limitations apply only to point source discharges to the waters of the United States. Limitations do not apply within a tailing pond or other treatment system.

(25) Several commenters objected to the requirement to contain the runoff from a 1 in 25 year precipitation event. One commenter requested that the requirement for containing a 1 in 25 year precipitation event be clarified.

The requirement to contain or treat all discharges from a specified storm or precipitation event was intended to provide the discharger with a reasonable design criteria and to allow a variance whenever catastrophic conditions occur. The requirements for control or treatment of a catastrophic occurrence have been clarified.

(26) One commenter stated that ammonia levels should be applied to preclude discharges of toxic concentrations of ammonia.

The technology identified for BPCTCA, BATEA and NSPS for the industries referred to does not remove ammonia, consequently ammonia was not limited.

(27) Two commenters stated that sulfide precipitation was not well enough proven to be used for BPCTCA technology.

It has been determined that the level of reliability of sulfide precipitation was not high enough to justify recommending sulfide precipitation as BPCTCA. It is believed, however, that sulfide precipitation is valid for BATEA.

(28) Two commenters suggested that consideration should be given to combined treatment systems for mines, for mills, smelters and refineries.

The revised draft development document has addressed the issue of discharges from combined mine, mill, smelter and refinery treatment systems.

(29) Several commenters objected to the factors used as primary categorization factors. The commenters wanted more factors used to categorize the facilities.

A great number of factors which influence subcategorization of the industry were examined. It was determined that while all of the factors influenced the quality and quantity of wastes from the various facilities, they did not influence the treatability of the waste sufficiently to warrant separate subcategorization.

(30) Two commenters objected to defining process-water as any water including runoff in contact with the ore. These commenters suggested that runoff be considered on an individual basis. One commenter expressed approval as to the definition of process water.

Any water in contact with the ore may become contaminated; therefore, it is important that limitations be set. If the runoff water is not contaminated then the limitations can normally be met without treatment. The technology is available and in use within the industry to control pollution from runoff.

(31) One commenter recommended that limitations be set for mills doing custom work or for mills producing a variety of ores.

The guidelines have been revised to include instructions for determining effluent limitations for mills doing custom work or for mills producing a variety of ores.

(32) One commenter stated that recycle was prohibitive because of long pumping distances.

While it is realized that long pumping distances increase the recycle costs, other facilities have accepted the increased cost with no apparent economic disadvantage. The economic impact study did not determine pumping costs to be excessive.

(33) One commenter objected to using the same technology for controlling Ra 226 for both mines and mills. The commenter further stated that the limitations specified could not be reliably obtained.

The survey of the industry indicated that the technology for removal of Ra 226 is the same for both mines and mills. The limitations have been revised upward to insure that they can be reliably achieved by the recommended treatment system.

(34) One commenter stated that uranium mills in areas of net precipitation or using an acid leach process may not be able to obtain zero discharge of pollutants.

A provision has been made in the regulation to allow a discharge in areas of net precipitation. The technology currently exists and is in use to recycle process water from facilities using an acid leach process.

(35) One commenter stated that no facilities using a fatty acid flotation process have achieved any degree of recycle.

At least one facility (located in California) has had success recycling process water from a fatty acid flotation process.

(36) One commenter objected to the use of 1972 dollars in the cost analysis section of the draft development document. The commenter recommended using 1975 dollars.

A uniform base year, 1972, has been used in all effluent guidelines documents to permit a compilation of all program costs to evaluate the impact of all Effluent Guidelines Division programs on a systematic basis. Appropriate indices are available and were used to convert the dollar costs for pollution control, the industry output and the annual industry capital expenditures to a base year so that all costs could be fairly compared.

(37) Several commenters expressed concern that no recommendations for disposal of solid wastes removed by the

recommended treatment systems were provided.

The principles set forth in "Land Disposal of Solid Wastes Guidelines" (40 CFR Part 241) may be used as guidance for acceptable land disposal techniques. Potentially hazardous wastes may require special considerations to ensure their proper disposal. Additionally, state and local guidelines and regulations should be considered wherever applicable.

(38) Two commenters objected to the use of transfer technology from mills to mines within the same subcategory in determining that a barium chloride coprecipitation treatment system for wastes from uranium mines is BPCTCA. One commenter did not agree that the system could be used on large mine flows.

The barium chloride coprecipitation system is currently in use treating mill waste water (300,000 gpd). The mill waste water in question has compositional characteristics similar to those of the mine waste water. The system in use has been successfully scaled up from pilot size and there appears to be no technical reason that the system cannot be enlarged further to treat any size flow.

(39) One commenter stated that there are contradictions between the draft development document for the ore mining and dressing point source category and other development documents.

The recommended effluent limitations are believed to be obtainable with the technologies identified. Limitations recommended in other documents are not directly applicable to industries in the ore mining and dressing point source category.

(40) One commenter stated that the effluent limitations are below detectable levels.

All limitations have been checked to insure that the levels are above the detection levels for the analytical methods specified in 40 CFR Part 136.

(41) One commenter stated that the time recommended for retention of wastes in a tailing pond was not practical.

Recommended waste water retention time within a treatment system have been eliminated. Each treatment system and the retention time within the treatment systems must be designed and operated for optimum efficiency for each situation.

(42) One commenter suggested that the development document should consider waste water from an air scrubber (used for air pollution control in a pelletizing facility) in determining treatment requirements and cost.

Most pelletizing facilities were found to be reusing their air scrubber waste water as make-up water for adjusting the water content of the concentrate prior to the "balling" process (ball mill feed) to obtain a more uniformly sized pellet. This air scrubber waste water contains iron values obtained from the pelletizing kilns so that this practice results in conservation of iron in addition to reduction of air emissions. Because the practice of air scrubber waste water reuse is wide spread

and the costs of reuse are minimal, it has been determined that the impact of scrubber waste water on treatment requirements and treatment costs is negligible.

The Agency is subject to an order of the United States District Court for the District of Columbia entered in Natural Resources Defense Council vs. Train et al. (Cv. No. 1609-73) which requires the promulgation of regulations for this industry category no later than November 15, 1975. This order also requires that such regulations become effective immediately upon publication. In addition, it is necessary to promulgate regulations establishing limitations on the discharge of pollutants from point sources in this category so that the process of issuing permits to individual dischargers under section 402 of the Act is not delayed.

It has not been practicable to develop and publish regulations for this category in proposed form, to provide a 30 day comment period, and to make any necessary revisions in light of the comments received within the time constraints imposed by the court order referred to above. Accordingly, the Agency has determined pursuant to 5 USC 553(b) that notice and comment on the interim final regulations would be impracticable and contrary to the public interest. Good cause is also found for these regulations to become effective immediately upon publication.

Interested persons are encouraged to submit written comments. Comments should be submitted in triplicate to the Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460, Attention: Distribution Officer, WH-552. Comments on all aspects of the regulation are solicited. In the event comments are in the nature of criticisms as to the adequacy of data which are available, or which may be relied upon by the Agency, comments should identify and, if possible, provide any additional data which may be available and should indicate why such data are essential to the amendment or modification of the regulation. In the event comments address the approach taken by the Agency in establishing an effluent limitation or guideline EPA solicits suggestions as to what alternative approach should be taken and why and how this alternative better satisfies the detailed requirements of sections 301 and 304(b) of the Act.

In addition to encouraging written comments on the interim final regulation, the Agency would like to encourage written comments on the problem of defining which activities and which land areas should be covered by this regulation. Such comments should be submitted following the procedure for comments addressed to the interim final regulation.

A copy of all public comments will be available for inspection and copying at the EPA Public Information Reference Unit, Room 2404, Waterside Mall, 401 M Street, SW, Washington, D.C. A copy of preliminary draft contractor reports, the Development Document and economic study referred to above, and certain supplementary materials support-

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ing the study of the industry concerned will also be maintained at this location for public review and copying. The EPA information regulation, 40 CFR Part 2, provides that a reasonable fee may be charged for copying.

All comments received on or before December 8, 1975, will be considered. Steps previously taken by the Environmental Protection Agency to facilitate public response within this time period are outlined in the advance notice concerning public review procedures published on August 6, 1973 (38 FR 21202). In the event that the final regulation differs substantially from the interim final regulation set forth herein the Agency will consider petitions for reconsideration of any permits issued in accordance with these interim final regulations.

In consideration of the foregoing, 40 CFR Part 440 is hereby established as set forth below.

Dated: October 17, 1975.

JOHN QUARLES,
Acting Administrator.

Subpart A—Iron Ore Subcategory

- Sec.**
- 440.10 Applicability; description of the iron ore subcategory.
 - 440.11 Specialized definitions.
 - 440.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart B—Base and Precious Metals Subcategory

- 440.20 Applicability; description of the base and precious metals subcategory.
- 440.21 Specialized definitions.
- 440.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart C—Bauxite Subcategory

- 440.30 Applicability; description of the bauxite subcategory.
- 440.31 Specialized definitions.
- 440.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart D—Ferroalloy Ores Subcategory

- 440.40 Applicability; description of the ferroalloy ores subcategory.
- 440.41 Specialized definitions.
- 440.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart E—Uranium, Radium and Vanadium Ores Subcategory

- 440.50 Applicability; description of the uranium, radium and vanadium ores subcategory.
- 440.51 Specialized definitions.
- 440.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart F—Mercury Ores Subcategory

- 440.60 Applicability; description of the mercury ores subcategory.

Sec.

440.61 Specialized definitions.

440.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart G—Titanium Ore Subcategory

- 440.70 Applicability; description of the titanium ore subcategory.

440.71 Specialized definitions.

440.72 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

AUTHORITY: Secs. 301, 304 (b) and (c), 306 (b) and (c), 307(c), Federal Water Pollution Control Act, as amended (the Act); 33 U.S.C. 1251, 1311, 1314 (b) and (c), 1316 (b) and (c), 1317(c); 86 Stat. 816 et seq.; Pub L. 92-500.

Subpart A—Iron Ore Subcategory

- § 440.10 Applicability; description of the iron ore subcategory.**

The provisions of this subpart are applicable to discharges from (a) mines operated to obtain iron ore, regardless of the type of ore or its mode of occurrence (b) mills beneficiating iron ores by physical and chemical separation and mills beneficiating iron ores by only physical (not magnetic) methods; and (c) mills beneficiating iron ores by magnetic and physical separation.

§ 440.11 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable recurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.", May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

(g) The effluent characteristic "Fe (filtrable)" shall be measured by the atomic absorption or colorimetric method in accordance with the procedure discussed in "Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971, pg. 191, or an equivalent method.

§ 440.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines operated to obtain iron ore shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Fe (filtrable)	2.0	1.0
pH	Within the range 6.0 to 9.0.	

(2) The quantity of pollutants or pollutant properties discharged from mills that employ chemical and physical methods to beneficiate iron ore and mills that employ only physical (not magnetic) methods to beneficiate iron ore shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Fe (filtrable)	2.0	1.0
pH	Within the range 6.0 to 9.0.	

(3) There shall be no discharge of pollutants from mills that employ magnetic and physical methods to beneficiate iron ore.

In the event that the annual precipitation falling on the treatment system and its associated drainage area exceeds the annual evaporation, a volume of water equivalent to the difference between annual precipitation falling on the treatment system and its associated drainage area and annual evaporation may be discharged subject to the limitations set forth in paragraph (a)(2) of this section.

(4) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a)(1) through (a)(3) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treat-

ment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart B—Base and Precious Metals Subcategory

§ 440.20 Applicability; description of the base and precious metals subcategory.

The provisions of this subpart are applicable to discharges from (a) mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores, or silver bearing ores or any combination of these ores from open-pit or underground operations other than placer deposits; (b) mills which employ the froth-flotation process alone or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores or silver ores or any combination of these ores; (c) mines and mills which employ dump, heap, in-situ leach or vat-leach processes for the extraction of copper from ores or ore waste materials; (d) mills which extract gold or silver by the cyanidation process alone; (e) mills which extract gold or silver by the amalgamation process alone; and (f) mines or mine and mill complexes beneficiating gold ores, silver ores, tin ores or platinum ores by gravity separation methods, (this includes placer or dredge mining or concentrating operations, and hydraulic mining operations).

§ 440.21 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S." May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of

the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, *Climatic Atlas of the United States*, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

§ 440.22 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores, or silver bearing ores or any combination

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of these ores from open-pit or underground operations other than placer deposits shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Cu	0.10	0.05
Zn	1.0	0.5
Pb	0.4	0.2
Hg	0.002	0.001
pH	Within the range 6.0 to 9.0.	

(2) The quantity of pollutants or pollutant properties discharged from mills which employ the froth-flotation process alone or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores, or silver ores or any combination of these ores shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Milligrams per liter		
TSS	30	20
Cu	0.1	0.05
Zn	0.4	0.2
Pb	0.4	0.2
Hg	0.002	0.001
Cd	0.10	0.05
Cr	0.02	0.01
pH	Within the range 6.0 to 9.0.	

(3) There shall be no discharge of pollutants from mines and mills which employ dump, heap, *in situ* leach or vat-leach processes for the extraction of copper from ores or ore waste materials.

In the event that the annual precipitation falling on the treatment system and its associated drainage area exceeds the annual evaporation, a volume of water equivalent to the difference between annual precipitation falling on the treatment system and its associated drainage area and annual evaporation may be discharged subject to the limitations set forth in paragraph (a)(2) of this section.

(4) There shall be no discharge of pollutants from mills which extract gold or silver by use of the cyanidation process alone.

In the event that the annual precipitation falling on the treatment system exceeds the annual evaporation, a volume of water equivalent to the difference between annual precipitation falling on the treatment system and annual evaporation may be discharged subject to the provisions set forth in paragraph (a)(2) of this section.

(5) The quantity of pollutants or pollutant properties from mills which ex-

tract gold or silver by use of the amalgamation process alone shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Cu	0.10	0.05
Zn	1.0	0.5
Pb	0.4	0.2
Hg	0.002	0.001
pH	Within the range 6.0 to 9.0.	

(6) The quantity of pollutants or pollutant properties discharged in mine drainage from mines or discharged from mine and mill complexes beneficiating gold ores, silver ores, tin ores or platinum ores by gravity separation methods (including mining of placer deposits, dredge mining and hydraulic mining operations) shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	50	30
pH	Within the range 6.0 to 9.0.	

(7) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a)(1) through (a)(6) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart C—Bauxite Subcategory

§ 440.30 Applicability; description of the bauxite subcategory.

The provisions of this subpart are applicable to discharges from facilities engaged in the mining of bauxite and other aluminum ores.

§ 440.31 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S." May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

§ 440.32 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue

NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

The quantity of pollutants or pollutant properties discharged in mine drainage from mines producing bauxite and other aluminum ores shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS.....	30.....	20.....
Fe.....	1.0.....	0.5.....
Zn.....	0.2.....	0.1.....
Al.....	1.2.....	0.6.....
pH.....	Within the range 6.0 to 9.0.....

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart D—Ferroalloy Ores Subcategory

§ 440.40 Applicability; description of the ferroalloy ores subcategory.

The provisions of this subpart are applicable to discharges from (a) mines producing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year; (b) mines and mills processing less than 5,000 metric tons (5,512 short tons) of ferroalloy ores per year by methods other than ore leaching; (c) mills processing

5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by purely physical methods including ore crushing, washing, jigging, heavy media and gravity separation, and magnetic and electrostatic separation; (d) mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by froth flotation methods, and (e) mills processing ferroalloy ores by leaching techniques (either acid or alkaline) and associated chemical beneficiation techniques. Ferroalloy metals include: chromium, cobalt, columbium, tantalum, manganese, molybdenum, nickel, tungsten and vanadium (recovered alone and not as a by-product of uranium mining and mills).

§ 440.41 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.", May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

§ 440.42 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into ac-

count all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines producing 5,000 metric tons (5,512 short tons) or more of ferroalloy bearing ores per year shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS.....	30.....	20.....
Cd.....	0.10.....	0.05.....
Cu.....	0.10.....	0.05.....
Zn.....	1.0.....	0.5.....
Pb.....	0.4.....	0.2.....
As.....	1.0.....	0.5.....
pH.....	Within the range 6.0 to 9.0.....

(2) The quantity of pollutants or pollutant properties discharged in mine drainage from mines or discharged from

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mills processing less than 5,000 metric tons (5,512 short tons) of ferroalloy ores per year by methods other than ore leaching shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	30	20
pH	Within the range 6.0 to 9.0.	30

(3) The quantity of pollutants or pollutant properties discharged from mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by purely physical methods including ore crushing, washing, jigging, heavy media separation, and magnetic and electrostatic separation shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	30	20
Cd	0.10	0.05
Cu	0.10	0.05
Zn	0.4	0.2
As	1.0	0.5
pH	Within the range 6.0 to 9.0.	20

(4) The quantity of pollutants or pollutant properties discharged from mills processing 5,000 metric tons (5,512 short tons) or more of ferroalloy ores per year by froth flotation methods shall not exceed the following limitations:

Effluent Limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	30	20
Cd	0.10	0.05
Cu	0.10	0.05
Zn	0.4	0.2
CN	0.10	0.05
As	1.0	0.5
COD	100	50
pH	Within the range 6.0 to 9.0.	50

(5) The quantity of pollutants or pollutant properties discharged from mills processing ferroalloy ores by leaching techniques (either acid or alkaline) and associated chemical beneficiation techniques shall not exceed the following limitations:

Effluent characteristic	Effluent Limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Cd	0.10	0.05
Cu	0.10	0.05
Zn	0.4	0.2
As	1.0	0.5
Ammonia	60	20
pH	Within the range 6.0 to 9.0.	Within the range 6.0 to 9.0.

(6) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a)(1) through (a)(5) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart E—Uranium, Radium and Vanadium Ores Subcategory

§ 440.50 Applicability; description of the uranium, radium and vanadium ores subcategory.

The provisions of this subpart are applicable to discharges from (a) mines, either open-pit or underground, from which uranium, radium and vanadium ore are produced; and (b) mills using the acid leach, alkaline leach, or combined acid and alkaline leach process for the extraction of uranium, radium and vanadium. Only vanadium by-product production from uranium ores is covered under this subpart.

§ 440.51 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.", May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or

rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

(g) The effluent characteristic "U" shall be measured by the procedure discussed in the "HASL Procedural Manual," edited by John H. Harley, HASL 300 Health and Safety Laboratory, U.S. Atomic Energy Commission, 1973, pg. EU-03, or an equivalent method.

(h) The effluent characteristic "Ra226" shall be measured by Method 305 "Radium 226 in Water" in accordance with the procedure discussed for total Radium 226 in "Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971, pg. 617, or an equivalent method.

§ 440.52 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the

State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines, either open-pit or underground, from which uranium, radium and vanadium ores are produced shall not exceed the following limitations:

Effluent limitations		
Effluent characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Cd	0.10	0.05
Zn	1.0	0.5
As	1.0	0.5
Ra-226	10	3
U	4	2
COD	200	100
pH	Within the range 6.0 to 9.0	

¹ Values in picocuries per liter.

(2) There shall be no discharge of pollutants from mills using the acid leach, alkaline leach or combined acid and alkaline leach process for the extraction of uranium, radium and vanadium.

In the event that the annual precipitation falling on the treatment system and its associated drainage area exceeds the annual evaporation, a volume of water equivalent to the difference between annual precipitation falling on the treatment system and its associated drainage

area and annual evaporation may be discharged subject to the limitations set forth in paragraph (a) (1) of this section.

(3) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a) (1) and (a) (2) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart F—Mercury Ore Subcategory

§ 440.60 Applicability; description of the mercury ore subcategory.

The provisions of this subpart are applicable to discharges from (a) mines, either open-pit or underground, operated for the production of mercury ores; and (b) mills beneficiating mercury ores by gravity separation methods or by froth-flotation methods.

§ 440.61 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S." May 1961, and NOAA Atlas #2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or method or the secondary recovery of metal ores from storage piles derived from the mining; cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the

cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

§ 440.62 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines, either open-pit or

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underground, operated for the production of mercury ores shall not exceed the following limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS.....	30.....	20.....
Fe.....	0.002.....	0.001.....
Ni.....	0.2.....	0.1.....
pH.....	Within the range 6.0 to 9.0.....	

(2) There shall be no discharge of pollutants from mills beneficiating mercury ores by gravity separation methods or by froth-flotation methods.

In the event that the annual precipitation falling on the treatment system and its associated drainage area exceeds the annual evaporation, a volume of water equivalent to the difference between annual precipitation falling on the treatment system and its associated drainage area and annual evaporation may be discharged subject to the limitations set forth in paragraph (a)(1) of this section.

(3) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a)(1) and (a)(2) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

Subpart G—Titanium Ore Subcategory

§ 440.70 Applicability; description of the titanium ore subcategory.

The provisions of this subpart are applicable to discharges from (a) mines obtaining titanium ores from lode deposits; (b) mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods; and (c) mines engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, zircon, and other heavy metals, and the milling techniques employed in conjunction with the dredge mining activity (milling techniques employed include the use of wet gravity methods in conjunction with electrostatic or magnetic methods).

§ 440.71 Specialized definitions.

For the purpose of this subpart:

(a) Except as provided below, the general definitions, abbreviations and methods of analysis set forth in 40 CFR 401 shall apply to this subpart.

(b) The term "ten year 24-hour precipitation event" means the maximum 24-hour precipitation event with a probable reoccurrence of once in 10 years as defined by the National Weather Service in Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, and NOAA Atlas No. 2, "Precipitation-Frequency Atlas of the Western United States," 1973, or equivalent regional or rainfall probability information developed therefrom.

(c) The term "mine" shall mean an active mining area of land with all property placed upon, under or above the surface of such land, used in or resulting from the extraction of metal ores from natural deposits by any means or methods or the secondary recovery of metal ores from storage piles derived from the mining, cleaning or concentration of metal ores.

(d) The term "mine drainage" shall mean any water drained, pumped or siphoned from an ore mine.

(e) The term "mill" shall mean a preparation facility within which the metal ore is cleaned, concentrated or otherwise processed prior to shipping to the consumer, refiner, smelter or manufacturer. A mill includes all ancillary operations and structures necessary for the cleaning, concentrating or other processing of the metal ore such as ore and gangue storage areas, and loading facilities.

(f) The terms "annual precipitation" and "annual evaporation" mean the mean annual precipitation and mean annual lake evaporation respectively, as defined in the publication, Climatic Atlas of the United States, U.S. Department of Commerce, Environmental Science Services Administration, Environmental Data Services, June 1968 or equivalent regional rainfall and evaporation data.

§ 440.72 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, raw materials, manufacturing processes, products produced, treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State

has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations.

(a) Subject to the provisions of paragraph (b) of this section, the following limitations establish the quantity or quality of pollutant or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(1) The quantity of pollutants or pollutant properties discharged in mine drainage from mines obtaining titanium ores from lode deposits shall not exceed the following limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS.....	30.....	20.....
Fe.....	2.0.....	1.0.....
pH.....	Within the range 6.0 to 9.0.....	

(2) The quantity of pollutants or pollutant properties discharged from mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods shall not exceed the following limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS.....	30.....	20.....
Fe.....	0.2.....	0.1.....
Zn.....	0.4.....	0.2.....
Ni.....	0.2.....	0.1.....
pH.....	Within the range 6.0 to 9.0.....	

(3) The quantity of pollutants or pollutant properties discharged in mine drainage from mines engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, zircon, or other heavy metals, and the milling techniques employed in conjunction with the dredge mining activity (milling techniques employed include the use of wet gravity methods in conjunction with electrostatic or magnetic methods) shall not exceed the following limitations:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Milligrams per liter		
TSS	30	20
Fe	2	1
COD	30	15
pH	Within the range 6.0 to 9.0.	

(4) In the event that waste streams from various sources are combined for treatment and discharge, the quantity or quality of each pollutant or pollutant property in the combined discharge that is subject to the limitations set forth in paragraphs (a)(1) and (a)(3) of this section shall not exceed the quantity or quality of each pollutant or pollutant property that would have been discharged had each waste stream been treated separately. The discharge flow from a combined discharge shall not exceed the volume that would have been discharged had each waste stream been treated separately.

(b) Any untreated overflow which is discharged from facilities designed, constructed and operated to contain or treat as applicable all process generated waste water and the surface runoff to the treatment facility, resulting from a 10 year 24-hour precipitation event shall not be subject to the limitations set forth in this section.

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