RULES AND REGULATIONS

Act, as amended

the Code of Federal Regulations

publicly owned treatment works, which

tions for point sources, other than

later than July

the Act requires the achievement

of the Federal Water Pollution Control

mary zinc subcategory (Subpart E), the sec-

ondary copper subcategory (Subpart F), the primary lead subcategory (Subpart G) and the primary zinc subcategory (Subpart H) of the nonferrous metals manufacturing 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 reports or "Development Documents" referred to below provide, pursuant to section 304(c) of the Act, the information needed concerning processes, procedures or operating methods.

Section 306 of the Act requires the achievement by new sources of a Federal standard of performance for each pollutant and control measure, which reflects the greatest degree of effluent reduction which the Administrator determines to be achievable through application of the best available control technology currently available. The information, as outlined above, was then evaluated in order to determine what level of technology constitutes the "best practicable control technology currently available." In identifying such technologies, various factors were con-

sidered. 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 as-

pects of the application of various types of control technologies, 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.

(2) Summary of conclusions with re-

spect to the primary copper smelting subcategory (Subpart D), the primary copper refining subcategory (Subpart E), the secondary copper subcategory (Subpart F), the primary lead subcategory (Subpart G) and the primary zinc subcategory (Subpart H) of the nonferrous metals manufacturing point source category

(1) Categorization. (1) Subpart D Primary copper smelting subcategory: Primary copper smelting is a single subcategory for the purpose of establishing effluent limitations and standards of performance. The consideration of factors such as manufacturing process, raw materials, products produced, waste generated, plant also and age, plant location, and air pollution control...
supports this conclusion. This subcategory has been defined to include all primary copper refining operations. However, the primary copper refining subcategory does not discern among those smelters which are integrated with mining and/or milling operations or have on-site electrolytic refining operations. One of the primary copper refining subcategories of primary copper smelting, currently under construction, is not considered at this time to be a part of this subcategory, since data are presently insufficient. The facilities operation is primarily based on water usage and waste water treatment technology as practiced by the currently operating facilities.

(2) Subpart E. Primary copper refining subcategory: Primary copper refining is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as manufacturing process, raw materials, products produced, and plant size and age, plant location, and air pollution control techniques supports this conclusion. Thus, this subcategory is further divided into facilities geographically located in areas of net precipitation and those facilities geographically located in areas of net evaporation. One of the currently operating primary lead industry facilities, a primary lead refinery, and a primary lead smelter, is not considered as a part of the primary lead subcategory, since, due to process, no process waste water (as defined for this subcategory) is produced at this facility.

(5) Subpart H. Primary zinc subcategory: Primary zinc is a single subcategory for the purposes of establishing effluent limitations guidelines and standards of performance. The consideration of factors such as processes employed, age and size of plant, plant location, raw materials, waste characteristics, and by-products and ancillary operations supports this conclusion.

(i) Waste characteristics. (1) Subpart D. Primary copper smelting subcategory: The pollutants contained in the raw wastewater from the facilities of the primary copper smelting subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, copper, oil and grease, and acidity and alkalinity. Raw process wastewater from the primary refining of copper, when such an activity is conducted on-site at a primary copper smelter, contains significant quantities of suspended solids, arsenic, zinc, selenium, copper, and acidity and alkalinity. Raw waste load data have been collected on each process wastewater stream that has been assembled on the treatment procedures required for each waste water effluent.

(2) Subpart E. Primary copper refining subcategory: The pollutants contained in the raw wastewater from the facilities of the secondary copper subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, copper, oil and grease, and acidity and alkalinity.

(4) Subpart G. Primary lead subcategory: The pollutants contained in the raw wastewater from the facilities of the primary lead subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, cadmium, lead, zinc, and acidity and alkalinity.

(5) Subpart H. Primary zinc subcategory: The pollutants contained in the raw wastewater from the facilities of the primary zinc subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, selenium, lead, zinc, and acidity and alkalinity.

(3) Subpart F. Secondary copper subcategory: Secondary copper is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. However, five primary copper refining subcategories, which are not located on-site with a primary copper smelter, are considered as a part of the primary copper smelting subcategory. The primary copper refining subcategory is further divided into those facilities geographically located in areas of net evaporation and those facilities geographically located in areas of net precipitation. However, data are insufficient to warrant their control and treatment. The consideration of factors such as processes employed, age and size of plant, plant location, raw materials, waste characteristics, and by-products and ancillary operations supports this conclusion.

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(2) Subpart E. Primary copper refining subcategory: The pollutants contained in the raw wastewater from the facilities of the secondary copper subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, copper, oil and grease, and acidity and alkalinity.

(3) Subpart F. Secondary copper subcategory: Secondary copper is a single subcategory for the purpose of establishing effluent limitations guidelines and standards of performance. However, five primary copper refining subcategories, which are not located on-site with a primary copper smelter, are considered as a part of the primary copper smelting subcategory. The primary copper refining subcategory is further divided into those facilities geographically located in areas of net evaporation and those facilities geographically located in areas of net precipitation. However, data are insufficient to warrant their control and treatment. The consideration of factors such as processes employed, age and size of plant, plant location, raw materials, waste characteristics, and by-products and ancillary operations supports this conclusion.

(4) Subpart G. Primary lead subcategory: The pollutants contained in the raw wastewater from the facilities of the primary lead subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, cadmium, lead, zinc, and acidity and alkalinity.

(5) Subpart H. Primary zinc subcategory: The pollutants contained in the raw wastewater from the facilities of the primary zinc subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, selenium, lead, zinc, and acidity and alkalinity.

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(2) Subpart E. Primary copper refining subcategory: The pollutants contained in the raw wastewater from the facilities of the secondary copper subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, copper, oil and grease, and acidity and alkalinity.

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(5) Subpart H. Primary zinc subcategory: The pollutants contained in the raw wastewater from the facilities of the primary zinc subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, selenium, lead, zinc, and acidity and alkalinity.

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(2) Subpart E. Primary copper refining subcategory: The pollutants contained in the raw wastewater from the facilities of the secondary copper subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, copper, oil and grease, and acidity and alkalinity.

(4) Subpart G. Primary lead subcategory: The pollutants contained in the raw wastewater from the facilities of the primary lead subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, cadmium, lead, zinc, and acidity and alkalinity.

(5) Subpart H. Primary zinc subcategory: The pollutants contained in the raw wastewater from the facilities of the primary zinc subcategory, and occurring in sufficient quantities to warrant their control and treatment, include total suspended solids, arsenic, cadmium, selenium, lead, zinc, and acidity and alkalinity.
include effluents from metal cooling, from slag quenching and granulation, from slag milling and classification, from furnace exhaust scrubbing, and from electrolytic refining operations. The pollutants of total suspended solids, oil and grease, and small amounts of metal oxides are found in metal cooling water. Slag granulation and slag milling and classification generate waste waters with high pH values, high levels of total suspended solids, and the heavy metal components of the slags such as soluble amounts of antimony, cadmium, copper, chromium, vanadium, molybdenum, nickel, and zinc. Oil and grease is picked up during the wet milling of slag, but is not present in slag granulation water. The large volume of water used to operate wet air scrubbers contains large amounts of total suspended solids, most of which is zinc oxide, and dissolved solids of metals. Waste water from electrocrys operation contains high acid and copper values. Cementation of this effluent reduces the copper concentration, but increases that of iron.

Subpart G. Primary zinc subcategory: Process waste waters evolved from facilities within this subcategory include effluents from acid plant blowdown; slag, slags, and/or slag granulation; and waste from auxiliary scrubbing. The acidic waste effluent of total suspended solids and minor quantities of metal oxides. Spes granulation contains copper and arsenic. Metal oxides of cadmium, lead, and zinc are primarily found in furnace fume scrubber waste effluents.

Subpart H. Primary zinc subcategory: Process waste waters evolved from facilities within this subcategory include effluents from acid plant blowdown; reduction furnace gas cleaning operations; metal casting cooling; cadmium production; metal cooling and classification; electrolyte purification; wash water, and spills; and preheating of zinc concentrates. The major waste effluent, acid plant blowdown, contains high levels of sulphates, low pH, and high levels of arsenic, lead, cadmium, selenium, zinc, and, depending upon the zinc concentrates used for processing, mercury. Total suspended solids and zinc appear as constituents of metal cooling water. Cadmium, lead, zinc, and dissolved and suspended solids are collected in waste waters from gas scrubbing and reduction furnace gas cleaning operations.

Storm water runoff at all of the facilities of the above five subcategories is considered as a process waste water only when it comingles with process waste water, as discussed above, or when it is intentionally collected because of pollutant pickup on plant property.

(b) Treatment and control technology: Waste management and control technologies have been studied for each subcategory of the industry to determine what is the best practicable control technology currently available.

(1) Subpart D. Primary copper smelting subcategory: The best practicable control technology currently available for the process waste water effluents within this subcategory includes the reduction of suspended solids to levels acceptable for the primary copper smelting facilities. The pyrometallurgical processing operations produce hot off-gases, which can be used as a disposal source of waste gas cooling; as a cooling media, and as a reusage source of waste water through gas preconditioning prior to hot electrostatic precipitators. Many of the primary copper smelting facilities are physically integrated with mining and/or milling operations. Reusage of process waste water as a part of the influent water requirement to the mill flotation circuit is currently a common practice at many of the integrated primary facilities. The hydrometallurgical leaching operation, if such an operation exists at a primary smelting facility, provides an additional source of process waste water. Maximumization of the recycle of process waste water is achievable through the use of well-designed gas washing and/or cooling ponds, both with sufficient retention time for the settling of solids, as needed for recycle. The best practicable control technology currently available for this subcategory includes, but to a lesser extent, the disposal of process waste water through impoundment and solar evaporation. This technique could be employed as a disposal method for all process waste waters or for just a portion of these waters. A discussion of the best practicable control and treatment technologies applied to specific process waste water sources generated within this subcategory follows:

(a) The best practicable control technology currently available for process waste water generated during slag granulation includes the complete recycle and reuse of this water after treating, if necessary, to reduce suspended solids by settling and filtration, as well as by evaporation, conversion from slag granulation to air cooling of slag (i.e., waste dumping); and the impoundment of this source of water with disposal by solar evaporation.

(b) The best practicable control technology currently available for the process waste water source of acid plant blowdown includes the complete recycle and reuse of this water after treating, if necessary, to neutralize and settle and the impoundment of this source of water with disposal by solar evaporation. Minimization of acid plant blowdown can be achieved by the use of highly efficient primary particulate control devices, as well as by frequently operated cooling towers and/or ponds.

(c) The best practicable control technology currently available for process waste water generated during the contact cooling of blister copper, shot copper, anode copper, fire-refined copper, and cathode-oxide copper includes the complete recycle and reuse of this water after treating, if necessary, for solids removal and cooling; the use of air cooling for blister copper; and the impoundment of this source of water with disposal by re-release or discharge at such a rate that such an operation is conducted on-site with a primary copper smelting facility, includes, for spent electrolyte, the complete recycle and reuse after copper removal by means of liberation and cementation; recovery of nickel values through evaporation, if nickel concentration is sufficient, the sale of spent electrolyte for merchandising recovery of nickel sulphate, if nickel concentration warrants, copper sulphate, and black acid, and the impoundment of this source of water with disposal by solar evaporation; for electrolysis recovery waste water, the shipment of the slimes recovery and the sale of spent electrolyte to other facilities for nickel sulphate recovery, conversion to open evaporators without a need for barometric condensers, the use of cooling towers, and the impoundment of this source of waste water with disposal by solar evaporation.

(d) The best practicable control technology currently available for process waste water generated during the electroplating of copper, if such an operation is conducted on-site, with a primary copper smelting facility, includes, for spent electrolyte, the complete recycle and reuse after copper removal by means of liberation and cementation; recovery of nickel values through evaporation, if nickel concentration is sufficient, the sale of spent electrolyte for merchandising recovery of nickel sulphate, if nickel concentration warrants, copper sulphate, and black acid, and the impoundment of this source of waste water with disposal by solar evaporation; for electrolysis recovery waste water, the shipment of the slimes recovery and the sale of spent electrolyte to other facilities for nickel sulphate recovery, conversion to open evaporators without a need for barometric condensers, the use of cooling towers, and the impoundment of this source of waste water with disposal by solar evaporation.
ess, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities included in the primary copper smelting subcategory.

(2) Subpart E. Primary copper refining subcategory: For facilities geographically located in areas of net evaporation, the best practicable control technology currently available for the process waste water generated is the removal of contained materials; the treatment of the recycling and reuse of this waste water after, as needed, neutralization and settling and disposal through impoundment and solar evaporation. The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

For the remainder of the primary copper refineries of this subcategory not located on-site with a primary copper smelter, but geographically located in an area of net precipitation, the best practicable control technology currently available includes the maximization of recycle and reuse of process waste water to achieve levels of water usage demonstrated by the average of the best of these same facilities. Subsequent limit to settling of the resultant effluent, with concentration values for significant pollutants and pollutant parameters (as considered to be best practicable), result in effluent losses based upon refined copper production.

A discussion of the best practicable control and treatment processes for specific process waste water sources generated at facilities geographically located in areas of net precipitation follows:

(a) The best practicable control technology currently available for process waste water generated during the contact cooling of anode, fire-refined, and cathode-shape copper includes the reuse or recycle of at least 90 percent of this contact cooling water. The amount of bleed is the difference between the cooling tower and/or pond and its settling and cooling ability. The discharge of the bleed after treatment for settling suspended solids is considered as best practicable.

(b) The best practicable control technology currently available for spent electrolyte is the removal of contained materials for byproduct recovery, as warrantable and return to the electrolyte cell or the reuse of the spent electrolyte. This is a current practice within this industry.

(c) The best practicable control technology currently available for those few waste water sources generated during slimes recovery is the discharge of the small flow volumes, but only after neutralization.

(d) The best practicable control technology currently available for electrolytic refining washing water is the reuse and recycle as either electrolytic make-up or make-up for copper sulfate production.

(e) The best practicable control technology currently available for process waste water generated from the usage of nickel sulfate vacuum evaporators is the elimination of entrainment by the application of mature vocators and proper operating and maintenance procedures. Conversion to open evaporators or the use of cooling towers also represents best practicable control technology for this large source of process waste water.

The resultant best practicable flow from the above sources of process waste water averages to about 2000 1/kkg (480 gal/ton) and represents control of this flow of water by limiting and settling, considered as the best practicable treatment approach, permits the achievement of the best practicable pollutant characteristic concentrations.

The best available technology economically achievable and the best available demonstrated control technology, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities of the primary copper refining subcategory which are geographically located in areas of net evaporation.

The best available technology economically achievable for those remaining facilities of this subcategory, which are geographically located in areas of net precipitation, includes a 90 percent reduction in the 2000 1/kg (480 gal/ton) best practicable value. This best available value is 200 1/kg (48 gal/ton).

The allocation of best available components to this composite flow includes 100 1/kg (24 gal/ton) as bleed from contact cooling; 40 1/kg (10 gal/ton) from spent electrolyte and electrolytic refinery washing; and 60 1/kg (14 gal/ton) from slimes recovery. The use of well-designed cooling towers or ponds, and, possibly, the application of side-stream filtration will reduce the bleed from contact cooling for the remaining 33 1/kg (8 gal/ton) concentration. Additional waste water can be disposed of by using the heat evolved in cooling either anode or cathode copper as evaporative energy. Conversion of spent electrolyte, recovery and re-use, the application of well-operated and maintained mist eliminators, or the use of cooling towers, would also be required. The treatment technology of lime and settle, as recommended for the best practicable technology, is also considered as the best available treatment technology.

The best available demonstrated control technology, processes, operating methods, or other alternatives for those primary copper refineries geographically located in areas of net precipitation are identical to the best available technology economically achievable as described above.

(3) Subpart F. Secondary copper subcategory: The best practicable control technology currently available for the process waste water efifluents generated by the sources of the secondary copper subcategory include the complete recycle and reuse after settling preceded by pH adjustment, if necessary. A discussion of the best practicable control and treatment technology currently available applies to the specific process waste water sources generated within this subcategory.

(a) The best practicable control technology currently available for process waste water generated during the contact cooling of copper ingots, anodes, billets, and the practice of liquid slagging is the complete elimination of this discharge by recycling and reuse of all water wastes. With the reuse and recycle of water, the need for solids removal would be eliminated. The partial recycle of plant operational procedures. Removal of solids such as the charcoal used to cover copper alloy ingots and the oxide scale and mold wash from anode casting requires settling and filtration before the water is reused. The pond used for settling will provide cooling. Alternatively, a cooling tower circuit can provide settling and recycling or the use of cooling towers also after treating this stream to reduce suspended solids by settling and filtration or by air cooling this molten slag after it has been cast into slag pots for subsequent metal recovery by dry processes.

(b) The best practicable control technology currently available for process waste water generated from the granulation and quenching of copper-rich slags is the elimination of water discharge by recycling, 22 percent recycle with periodic discharge of waste water after treating this stream to reduce suspended solids by settling and filtration or by air cooling this molten slag after it has been cast into slag pots for subsequent metal recovery by dry processes. When quenching and granulating depleted (waste) slags, the best practicable control technology currently available is the recycle and reuse of this waste water after treatment to reduce suspended solids by settling and filtration. Eleven percent of the 37 copper-plant producers use water to quench copper-rich depleted slags after treatment to reduce discharge of waste water after settling. The remaining 33 percent of these plants recycle this water after settling.

(c) The best practicable control technology currently available for the process waste water generated during copper- rich slag milling and classifying is the elimination of this discharge by either recycling and reusing all of this water after treatment to reduce solids content by pH adjustment, if necessary, and settling, followed by filtration or by melt-agglomerating the slag in a blast, cupola, or rotary furnaces. In the former technology, slagges or settling tanks followed by filtration are used to remove solids. The pH is maintained near a value of eight with acid to control the extent of hydrolysis of the copper metal complex for the slag.

Twenty-one secondary copper plants process copper-rich slags, six by wet milling and classifying and the remaining 21 by melt-agglomerating in a
The best practicable control technology currently available for process waste water generated during wet offgas scrubbing is the elimination of this discharge by treating the bleed or breakdown stream from electrolytic cell operations, so that it is suitable for reuse in plant processes. The treatment consists of removal of copper by cementation with iron metal, lime neutralization to a pH of between eight and nine, and sand filtering this stream to remove solids before discharge into a combined process water reservoir serving other plant water needs. Of the four producers of secondary anode metal, one employs this technology, one has a market for the spent electrolyte, one treats the electrolyte by cementation and the resulting iron sulfate solution is discharged into a joint treatment plant, and the last one evaporates this solution during metal (i.e., nickel) sulfate recovery. Only one plant is known to recover precious metals on-site, and the small production of process waste water can easily be reused for hot offgas cooling prior to baghouse entrance, or for other plant uses, after, as needed, neutralization and precipitation.

The best practicable control technology currently available for storm water runoff which commingles with process waste water (as defined by the regulation) is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities included in the secondary copper subcategory.

Subpart G Primary lead subcategory: For those primary lead facilities geographically located in areas of net evaporation, the best practicable control technology currently available includes the recycle and reuse of this waste water after, as needed, neutralization and settling and disposal through impoundment and solar evaporation. The best practicable control technology currently available includes neutralization of the bleed or breakdown stream from electrolytic cell operations, so that it is suitable for reuse in plant processes, lime neutralization to a pH of between eight and nine, and removal of solids by settling and filtration or centrifugation. The use of cooling towers may be necessary, depending upon the waste water storage capacity available, the size of the emission control system, and the period of time that it is operated per day. Another alternative to the elimination of this waste water effluent is by conversion to dry air pollution control equipment. Thirteen of the 44 plants use wet air pollution control; of these 13 users, eight recycle all of their water. All of the remaining plants employ dry air pollution controls on furnace offgases.

The best practicable control technology currently available for waste water generation in existing plants, as defined by the regulation, is to discharge that volume of water, after the treatment, if necessary, of neutralization and settling, accountable to the net precipitation during each one month period.

The best available technology economically achievable and the best available demonstrated control technology, processes, operating methods, or other alternatives are identical to the best practicable control technology currently available for those facilities included in the primary lead subcategory.

Subpart H Primary zinc subcategory: The best practicable control technology currently available for the process waste water generated by the facilities of the primary zinc subcategory is considered to include measures to achieve the reuse and recycle of these waters to minimize discharge, and the treatment of the remaining waste water by liming and settling before discharge. A review of water scavengers in various plants has shown that in specific cases, some process waste waters are currently being used on a once-through basis; whereas, in other existing plants, the discharge from the same process operation is considerably lower on a unit-product basis by virtue of recycle. Further, various examples of reuse of process waste water (e.g., acid plant blowdown used for cadmium leaching) were also identified. Potential reductions in process waste water volume are given in various proposed plans for decreased discharge of process waste waters.

Internal streams in primary zinc plants vary considerably with differences in plant operations, and no specific list of control measures may be presented for all plants. Those measures that have been identified include:

(a) The minimization of acid plant blowdown by appropriate proper operation of the scrubber systems to minimize particulate loadings into the scrubber liquid recycle circuit, and, possibly, the reuse of the scrubber bleed stream in other plant operations.

(b) The minimization of metal casting cooling water discharge by recycling, possibly including provisions in the circuit for removal of suspended solids, oil and grease, and thermal load.

(c) The exploitation of the evaporative capacity of hot gases or hot metal from the offgas scrubber systems to further minimize particulate loadings into the scrubber liquid recycle circuit, and, possibly, the reuse of the scrubber bleed stream in other plant operations.

The flow rates of process waste water discharges at the domestic primary zinc plants were inspected to determine the best practicable water usage rate. This value was determined to be 8,350 1/kg (2,000 gal/ton) and was calculated as the average value of six primary plants.

The end-of-pipe treatment identified as part of the disposal of waste water technology currently available is the lime and settle treatment. Currently, some form of this treatment is being applied to some portion of process waste water...
at five of the six plants in this industry. Current lime and settle treatment facilities are considered to be hazardous, disposal will require special pretreatment. In order to ensure long-term protection of public health and the environment, special preparation and pretreatment may be required prior to disposal. If landfill disposal is to be practiced, these effluents must 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. Hazardous pollutants, as recommended, would require an approximate total capital cost and annual operating cost of $1,120,000 and $284,000, respectively.

(2) Subpart E. Primary copper refining subcategory: For the primary copper refining subcategory to achieve the levels of control of process waste water pollutants recommended for July 1977, the capital cost required will approximate $334,000 and the annual operating cost required will be about $118,000. Incremental control and/or treatment costs of approximately $1,581,000 capital and $855,000 annual operating will be required of three plants to achieve the levels of control of process waste water pollutants recommended for the best available technology economically achievable. Therefore, the total estimated capital and annual operating costs for the primary copper refining subcategory are $1,915,000 and $823,000, respectively.

(3) Subpart F. Secondary copper subcategory: It has been estimated that for the existing plants within this subcategory to achieve the recommended limitation of no discharge of process waste water pollutants, as recommended, would require a capital cost and annual operating cost of $338,000 and $70,000, respectively. The vast majority of these estimated costs have been allocated to the contractor for disposal waste water pollutants at one plant.

(4) Subpart G. Primary lead subcategory: For the existing facilities within the primary lead subcategory to achieve the levels of control of process waste water pollutants, as recommended, would require an estimated capital cost and annual operating costs of $1,275,000 and $570,000, respectively, most of which is attributable to the additional control and treatment technology required at one plant.

(5) Subpart H. Primary zinc subcategory: It has been estimated that for the existing primary zinc facilities in this subcategory to achieve the levels of control of process waste water pollutants recommended for July 1, 1977, the capital costs required will approximate $1,515,000 and annual operating costs will be $2,569,000. Incremental control and/or treatment costs of approximately $1,654,000 capital and $450,000 annual operating will be required of two plants to achieve the further reductions in discharge of process waste water pollutants recommended for the best available technology effluent limitations of 1973. Therefore, the total estimated capital and annual operating costs to this industry are $2,559,000 and $903,000, respectively.

ENERGY REQUIREMENTS AND WATER QUALITY ENVIRONMENTAL IMPACTS.

Specific data on energy requirements were not available for the vast majority of the plants surveyed. Electrical energy is consumed in the treatment of waste water pollutants, as recommended, would require the amount of fuel or electricity consumption for treatment of process waste water would be negligible when compared to the total energy consumption in the industries of this category. For the secondary copper subcategory, energy requirements would amount to only 14.9 kwhr/annual ton (13.5 kwhr/annual ton) (for 7,200 hr/yr and 18,000 tons (16,800 tons) annual secondary copper production) or $0.15/ton ($0.14/ton) (at $0.01/kwhr). Similar estimates from one primary zinc producer indicated a power consumption of about 4.3 kwhr/ton (3.9 kwhr/ton) of zinc production, or $0.04/ton ($0.04/ton) at $0.01/kwhr.

SOLID WASTES.

Solid wastes are generated from the neutralization and settling of the process water streams of the primary, secondary, and zinc and the secondary copper industries. The volume of the sludge is principally determined by the desired pH adjustment. One domestic primary zinc plant is currently investigating treatment techniques for its process waste waters. One of the design parameters is solid waste generation. The direct treatment approach of lime and settle is anticipated to produce about 222 kkg (245 tons)/day (41 kkg (45 tons)/day dry weight) of solid waste. This waste will consist mostly of calcium sulfate and plant is currently investigating treatment techniques for this solid waste. One currently operating lime and settle treatment facility at a primary zinc plant ships its sludge, after solar drying, to one of its lead smelters for zinc recovery. A domestic primary copper facility is currently starting up a lime and settle...
ity, which will treat much of the com- 
mixed plant effluent. Sludge generation 
ners will be disposed of by stor- 
king in the plant's tailings pond.

(vii) Economic impact analysis. The 
general conclusion of this study is that 
the guidelines will have a significant 
impact on the nonferrous metals indus-
try. In primary copper, fourteen 
industry's twenty-two plants already' 
impact on the nonferrous metals indus-
tries. Generated solid waste from a lime 
mingled plant effluent. Sludge generation 
ility, which will treat much of the com-

In both BPCTCA and BAT, analysis in-

The increment to operating costs 
amounts to an increase over base operat-
ing costs of less than 0.4 percent or 
percent of total re-

Incremental capital costs for the remain-

costs involved are trivial. Hence these 
achieved BPCTCA compliance. These 
plants, incremental capital costs are 
$1.6 million and incremental 
operating costs at $0.3 million annually. 
In both BPCTCA and BAT, analysis 
dicates that cost increments are too 
moest to imply significant internal or 

Of the forty-four plants in the sec-

BATEA and BATEA are identical 
that the plants are treated here as though they 
were already in compliance. These 
incremental capital costs for the remain-

BPCTCA and BATEA are approximately $0.8 million 
while incremental operating costs will be 
about $0.3 million annually. No signif-
icant internal or external economic 

In primary lead, five of the 
percent of the indus-

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The development document for the primary copper smelter industry has been rewritten and now places most of its emphasis upon the reuse and recycle of water and effluents from the primary copper smelting and refining operations. The primary copper smelter, when integrated with an ore milling or leaching operation, can reuse much of its smelter waste water (and refinery waste water, if applicable) and reclaim the material from the ore milling or leaching processes. The high processing temperatures employed in each pyrometallurgical operation at the primary copper smelter will produce high temperature offgases which provide a disposal route for some waste water. Each source of waste water was investigated, and the development document tabulates current and anticipated control and treatment practices for each of these sources. From these tabulations and their discussion in the text of the document, the conclusion regarding no discharge of process waste water pollutants to navigable waters was reached. Thus, impoundment, with solar evaporation is only part of the rationale. In specific reference to the copper smelting--refining subcategory, the ability for integrated sources to reuse process water in milling operations is factored upon. Furthermore, no discharge of a recovery value of some ores, such as chalcopyrite, will be effected if milling is practiced with "reused" smelter process water waste water, even after treatment, must be disposed of. Such a recovery less does not exist, its economic value must be weighed against environmental gains.

(4) One commenter stated that the contractor's primary copper development document did not encourage treatment, transport, and recycling of process waste water from category X (i.e., contractor's nomenclature for copper facilities located in areas of new evaporation). The rewritten edition of the contractor's development document shows that the emphasis on control and treatment practices used within this industry. Methods of recycle and reuse have been tabulated, so that the rationale for the best practicable control technology currently available is not compromised. Impoundment, with solar evaporation, is considered as a disposal means for process waste water pollutants where such factors as land availability, local and state law, and climate permit such an application as practicable.

(5) Another common criticism was that the contractor's report on primary copper smelting and refining did not provide any recommendations for the problem of storm water runoff.

Special provisions for storm water runoff have been provided in the proposed regulations for all sources in the primary copper smelting subcategory and certain sources in the primary copper refining subcategory.
aware of land usage and sludge generation, it has found and recommended methods of recovery and sludge volume minimization.

(6) One commenter stated that arsenic should be deleted from the list of selected pollutants parameter as anticipated from the proposed treatment facility of Plant D. They stated there was no arsenic present in the lead concentrates proceeds with the contained copper to form specks.

(9) Two parties submitted a comment stating that the contractor's draft documents for the primary lead industry and the primary zinc industry listed incorrect effluent concentration data for specific pollutant parameters as anticipated from the proposed treatment facility of Plant D. They stated the incorrect values were used as a prime consideration in the development of the 1983, and to some extent the 1977, effluent limitations, and should, therefore, not be considered as the best available technology.

1983--

The Agency has determined that no standards for mercury will be promulgated at this time and will continue to evaluate all available information on this pollutant. We therefore solicit any information regarding the importance of mercury as a pollutant from these plants, the feasibility of removal by lime and settle or by other technology, the economics of such treatment, and other pertinent information which would assist the Agency in making a final decision regarding this matter.

(12) Some commenters felt that the minimum flow requirements for zinc plants, as used by the contractor, should be reevaluated, since the contractor used the lower part of several ranges of water usage, as supplied by the industry. They also stated that by requiring the application of the lowest water usage value, the purity of byproduct sulfuric acid would be impaired.

1977--

In calculating the best practicable effluent limitations for the primary zinc subcategory, the average of the indicated range of water usage was used. The water usage value used in the computation of the best available limits was based upon the lower part of the range. By 1983, the lower values should readily be achievable by the usage of efficient electrostatic precipitators and cooling towers for acid plant blowdown as well as the maximization of recycle and reuse of other effluents.

(13) Several commenters submitted cost data and stated that the contractor's document on the primary zinc subcategory had serious omission of substantial cost data. These cost data have been included in the new draft document for the proposed effluent limitations for the primary zinc subcategory.

(14) Two responders felt that large clarification areas would be necessary for both primary plants to comply with the effluent limitations on total suspended solids and that the mountainous terrain of the Coeur d'Alene Mining District would prohibit the construction of such necessary facilities. The commenters stated that special provisions should be given to one plant (Plant D) in this terrain.

Plant D very recently began operation of new treatment facility, which uses clarifiers to reduce the suspended solids level. It is well known that clarifiers require minimal land area and much less than the existing ponds. The facility was designed for an effluent suspended solids level over twice that used as the basis for the suspended solids limitation; however, actual plant experience has shown recirculation of $5 \text{ mg}L^{-1}$. Should any difficulties be encountered in complying with the regulation, because of high flow values counterbalancing the low concentration, the flow might be reduced by recirculation of water to the on-site fertilizer plant or to the ore mining and dressing operation.

The Agency is subject to an order of the United States District Court for the District of Columbia entered in Natural Resources Defense Council v. Train et al. (CV. No. 1609-73) which requires the promulgation of regulations for this industry category no later than January 30, 1975. This order also requires that regulations become effective immediately upon publication. In addition, it is necessary to promulgate regulations establishing limitations only on the discharge of pollutants from point sources in this category so that the process of issuing permits to individual dischargers under section 405 of the Act is not delayed.

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 whether such data would be of considerable assistance to the Agency in promoting the amendment or modification of the regulation. 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 whether such data would be of considerable assistance to the Agency in promoting the amendment or modification of the regulation. 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 whether such data would be of considerable assistance to the Agency in promoting the amendment or modification of the regulation.

A copy of all public comments will be available for inspection and copying at the EPA Freedom of Information Center, Room 204, West Tower, Watergate Mall, 401 M Street SW., Washington, D.C. A copy of preliminary draft contractor reports, the Development Documents and economic study referred to above, and certain supplemental materials supporting the study of the industry concerns will also be maintained at this location for public review and copying.

The EPA information regulation, 40 CFR Part 5, provides that a reasonable fee may be charged for copying.

All comments received within thirty days of publication of this interim final regulation in the Federal Register 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 of proposed rulemaking. In this section, 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 the interim final regulation.

In consideration of the foregoing, 40 CFR Part 421 is hereby amended as set forth below.


RUSSELL E. TRAIN, Administrator.

PART 421—NONFEROUS METALS POINT SOURCE CATEGORY

Subpart D—Primary Copper Smelting Subcategory

§ 421.40 Applicability; description of the primary copper smelting subcategory.

Subpart E—Primary Copper Refining Subcategory

§ 421.50 Applicability; description of the primary copper refining subcategory.

§ 421.60 Applicability; description of the primary copper refining subcategory.

§ 421.70 Applicability; description of the primary lead subcategory.

Subpart G—Primary Copper Refining Subcategory

§ 421.80 Applicability; description of the primary copper refining subcategory.

Subpart H—Primary Zinc Subcategory

§ 421.81 Specialized definitions.

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

§ 421.83 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Subpart J—Primary Lead Subcategory

§ 421.90 Applicability; description of the primary lead subcategory.

§ 421.91 Specialized definitions.

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

§ 421.93 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The provisions of this subpart are applicable to discharges resulting from the primary smelting and refining, when refining is performed on-site with a primary copper smelter, of copper. The primary refining of copper, not performed on-site with a primary copper smelter, is a part of the primary copper refining subcategory. Facilities recovering copper from hydrometallurgical methods are not a part of this subcategory.

§ 421.41 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 apply to this subpart.

(b) For all impoundments constructed prior to the effective date of this regulation, the term "within the impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam which fails and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 50 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term "within the impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment.

The normal operating level shall be the average level of the pond during the preceding calendar month.

§ 421.42 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 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 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 factors for that 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 the proposed limitations. The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by each source subject to the provisions of this subpart after application of the best practicable control technology currently available:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water Impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such Impoundment is located may discharge that volume of process waste water pollutants equivalent to the volume of precipitation that falls within

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§ 421.52 Effluent limitations 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, produced, treatment technology available, energy requirements and costs) which can effect the industry subcategorization and effluent levels of copper refining subcategory. 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)

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that factors relating to the equipment or facilities located, the process applied, or other such factors related to such discharge 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 discharged 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 indicate that a new document is required to revise these regulations. The following limitations establish the quantity or quality of effluent to be discharged into navigable waters:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event and establish the quantities of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an area which in which such impoundment is located may discharge that volume of process waste water pollutants into navigable waters.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation of water from the pond water surface area for that month, or a volume of process water equal to the difference between the mean precipitation for that month and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

<table>
<thead>
<tr>
<th>Effluent characteristics</th>
<th>Maximum for any one day</th>
<th>Average of daily values for thirty consecutive days shall not exceed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric units (mg/l)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSS</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Ca</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Mg</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Sr</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0</td>
<td></td>
</tr>
</tbody>
</table>

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an area which in which such impoundment is located.

(e) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(f) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation of water from the pond water surface area for that month, or a volume of process water equal to the difference between the mean precipitation for that month and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(g) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

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<td>0.25</td>
</tr>
<tr>
<td>Sr</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Oil and grease</td>
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<td>0.10</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0</td>
<td></td>
</tr>
</tbody>
</table>

§ 421.53 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an area which in which such impoundment is located.

(h) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(i) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation of water from the pond water surface area for that month, or a volume of process water equal to the difference between the mean precipitation for that month and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.

(j) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

<table>
<thead>
<tr>
<th>Effluent characteristics</th>
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<th>Average of daily values for thirty consecutive days shall not exceed</th>
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</thead>
<tbody>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>Ca</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Mg</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Sr</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0</td>
<td></td>
</tr>
</tbody>
</table>

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this sec-
tion, which may be discharged by a point source subject to the provisions of this subpart, which is specifically located in an historical area of net precipitation, after application of the best available technology economically achievable;

Effluent limitations

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Maximum for any one day</th>
<th>Average of daily values for thirty days</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TSS)</td>
<td>0.01</td>
<td>0.005</td>
</tr>
<tr>
<td>(As)</td>
<td>0.05</td>
<td>0.002</td>
</tr>
<tr>
<td>(Zn)</td>
<td>0.02</td>
<td>0.002</td>
</tr>
<tr>
<td>(Cu)</td>
<td>0.001</td>
<td>0.0006</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>0.05</td>
<td>0.002</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0</td>
<td></td>
</tr>
</tbody>
</table>

English units (lb/100 lb of product)

<table>
<thead>
<tr>
<th>Characteristic</th>
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</tr>
</thead>
</table>

Subpart F—Secondary Copper Subcategory

§ 421.60 Applicability; description of the secondary copper subcategory.

The provisions of this subpart are applicable to discharges resulting from the recovery, processing, and remelting of new and used copper scrap and residues to produce copper metal and copper alloys.

§ 421.61 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) For all impoundments constructed prior to the effective date of this regulation, the term "impoundment" when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment dam at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.
(c) For all impoundments constructed on or after the effective date of this regulation, the term "impoundment" for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term "pond water surface area" when used for the purpose of calculating the volume of waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

§ 421.62 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, the 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, the requirements (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 such 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 data, the Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to the factors 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 on the limitations to revise these regulations. The following limitations establish the quantity or quality of pollutants 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:
(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 10 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 10 year, 24 hour rainfall event, when such event occurs.
(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area for that month, or a volume of process waste water equal to the difference between the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located (or as otherwise determined if no monthly data have been established by the National Climatic Center), whichever is greater.
(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Maximum for any one day</th>
<th>Average of daily values for thirty consecutive days</th>
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<tbody>
<tr>
<td>(TSS)</td>
<td>0.01</td>
<td>0.005</td>
</tr>
<tr>
<td>(As)</td>
<td>0.05</td>
<td>0.002</td>
</tr>
<tr>
<td>(Zn)</td>
<td>0.02</td>
<td>0.002</td>
</tr>
<tr>
<td>(Cu)</td>
<td>0.0016</td>
<td>0.0006</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>0.05</td>
<td>0.002</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0</td>
<td></td>
</tr>
</tbody>
</table>

English units (ppm)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Maximum for any one day</th>
<th>Average of daily values for thirty consecutive days</th>
</tr>
</thead>
</table>

§ 421.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants 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 available technology economically achievable:
(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.
waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located may discharge that volume of process waste water which may be discharged shall mean the mean evaporation rate during a one year period.

The term “net evaporation” shall mean the mean evaporation rate during a one year period.

§ 421.72 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 subpart, the Administrator has considered that the precipitation from the 25 year, 24 hour rainfall event is located (or is otherwise determined if no monthly data have been established by the National Climatic Center), which ever is greater.

(d) Any process waste water discharge pursuant to paragraph (e) of this section shall comply with each of the following requirements:

<table>
<thead>
<tr>
<th>Effluent characteristic</th>
<th>Maximum for any one day</th>
<th>Average of daily values for thirty consecutive days shall not exceed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal units (mg/l)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Cu</td>
<td>3.0</td>
<td>0.25</td>
</tr>
<tr>
<td>Zn</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>Within the range 20—100</td>
<td>10</td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td>6.0 to 9.0</td>
</tr>
<tr>
<td>English units (ppm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TS</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Cu</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>Zn</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Oil and grease</td>
<td>Within the range 20—100</td>
<td>10</td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td>6.0 to 9.0</td>
</tr>
</tbody>
</table>

§ 421.71 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) For all impoundments constructed prior to the effective date of this regulation, the term “within the impoundment” when used for purposes of calculating the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity plus the surface area of the inside and outside slopes of the impoundment dam as well as the surface area between the outside edge of the impoundment dam and any seepage ditch immediately adjacent to the dam upon which rain falls and is returned to the impoundment. For the purpose of such calculations, the surface area allowances set forth above shall not be more than 30 percent of the water surface area within the impoundment dam at maximum capacity.

(c) For all impoundments constructed on or after the effective date of this regulation, the term “within the impoundment” when used for purposes of determining the volume of process waste water which may be discharged shall mean the water surface area within the impoundment at maximum capacity.

(d) The term “pond water surface area” when used for the purpose of calculating the volume of process waste water which may be discharged shall mean the water surface area of the pond created by the impoundment for storage of process waste water at normal operating level. This surface shall in no case be less than one-third of the surface area of the maximum amount of water which could be contained by the impoundment. The normal operating level shall be the average level of the pond during the preceding calendar month.

(e) The term “product” shall mean lead bullion.

(f) The term “net evaporation” shall mean the evaporation rate exceeds the precipitation rate during a one year period.

(g) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(h) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(i) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(j) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(k) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(l) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(m) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.

(n) The term “net precipitation” shall mean that the precipitation rate exceeds the evaporation rate during the preceding calendar month.
RULES AND REGULATIONS

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart, which is geographically located in an historical area of net precipitation, after application of the best available technology economically achievable:

(a) Subject to the provisions of paragraphs (b), (c), and (d) of this section, there shall be no discharge of process waste water pollutants into navigable waters.

(b) A process waste water impoundment which is designed, constructed and operated so as to contain the precipitation from the 25 year, 24 hour rainfall event as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located, may discharge that volume of process waste water which is equivalent to the volume of precipitation that falls within the impoundment in excess of that attributable to the 25 year, 24 hour rainfall event, when such event occurs.

(c) During any calendar month there may be discharged from a process waste water impoundment either a volume of process waste water equal to the difference between the precipitation for that month that falls within the impoundment and either the evaporation from the pond water surface area for that month or, if a volume of process waste water which is equivalent to the mean precipitation for that month that falls within the impoundment and the mean evaporation from the pond water surface area as established by the National Climatic Center, National Oceanic and Atmospheric Administration, for the area in which such impoundment is located, whichever is greater.

(d) Any process waste water discharged pursuant to paragraph (c) of this section shall comply with each of the following requirements:

* * *

§ 421.80 Applicability; description of the primary zinc subcategory.

The provisions of this subpart are applicable to discharges resulting from the production of primary zinc by either electrolytic or pyrolytic means.

§ 421.81 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 "product" shall mean zinc metal.

§ 421.82 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 affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect the 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 dis-
charger 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 Ad-
imistrator of the Environmental Pro-
tection Agency. The Administrator may
approve or disapprove such limitations,
specify other limitations, or initiate pro-
ceedings to revise these regulations. The
following limitations establish the quan-
tity or quality of pollutants 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 prac-
ticable control technology currently
available:

§ 421.83 Effluent limitations

<table>
<thead>
<tr>
<th>Effluent</th>
<th>Maximum for any one day</th>
<th>Average daily values for thirty consecutive days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric units (kg/kg of product)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSS</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
<td>As</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Cd</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>Zn</td>
<td>0.09</td>
<td>0.09</td>
</tr>
<tr>
<td>pH</td>
<td>Within the range 6.0 to 9.0.</td>
<td></td>
</tr>
</tbody>
</table>

| English units (lb/1000 lb of product) |
| TSS | 0.21 | 0.21 |
| As | 0.09 | 0.09 |
| Cd | 0.09 | 0.09 |
| Zn | 0.09 | 0.09 |
| pH | Within the range 6.0 to 9.0. |

(Sections 301, 304 (b) and (c), 306 (b) and (c)
and 307(c) of the Federal Water Pollution
Control Act as amended, (the Act); (83
U.S.C. 1251, 1311, 1314 (b) and (c), 1316 (b)
and (c) and 1317(c)); 88 Stat. 808 et seq.
Pub. L. 92-500)

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