

## Economic and Regulatory Impacts

Today's withdrawal of three proposed rules is not a rulemaking; it does not impose or relieve any regulatory requirements or costs on the regulated community or the national economy.

## List of Subjects in 40 CFR Part 60

Environmental protection, Air pollution control, Intergovernmental Relations, Reporting and recordkeeping requirements, Starch production plants, Cold cleaning operations, Organic solvent cleaners.

Dated: October 11, 1996.

Carol M. Browner,

*Administrator.*

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## 40 CFR Part 372

[OPPTS-400105; FRL-5396-9]

**Copper Metal; Toxic Chemical Release Reporting; Community Right-to-Know**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Denial of petition.

**SUMMARY:** EPA is denying a petition to remove copper metal (Cu<sup>0</sup>, CAS No. 7440-50-8) from the list of chemicals subject to the reporting requirements under section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and section 6607 of the Pollution Prevention Act of 1990 (PPA). This action is based on EPA's conclusion that copper metal does not meet the deletion criterion of EPCRA section 313(d)(3). Specifically, EPA is denying this petition because EPA's review of the petition and available information resulted in the conclusion that copper ion (i.e., Cu<sup>+1</sup> and Cu<sup>+2</sup>) can become available from copper metal and that copper ion is highly toxic to several aquatic species.

**FOR FURTHER INFORMATION CONTACT:** Daniel R. Bushman, Acting Petitions Coordinator, 202-260-3882 or e-mail: bushman.daniel@epamail.epa.gov, for specific information regarding this document. For further information on EPCRA section 313, contact the Emergency Planning and Community Right-to-Know Information Hotline, Environmental Protection Agency, Mail Stop 5101, 401 M St., SW., Washington, DC 20460, Toll free: 1-800-535-0202, in Virginia and Alaska: 703-412-9877, or Toll free TDD: 1-800-553-7672.

**SUPPLEMENTARY INFORMATION:**

## I. Introduction

## A. Statutory Authority

This action is taken under sections 313(d) and (e)(1) of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), 42 U.S.C. 11023. EPCRA is also referred to as Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) (Pub. L. 99-499).

## B. Background

Section 313 of EPCRA requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report their environmental releases of such chemicals annually. Beginning with the 1991 reporting year, such facilities also must report pollution prevention and recycling data for such chemicals, pursuant to section 6607 of the Pollution Prevention Act of 1990 (PPA), 42 U.S.C. 13106. Section 313 established an initial list of toxic chemicals that was comprised of more than 300 chemicals and 20 chemical categories. Copper was included in the initial list of chemicals and chemical categories. Section 313(d) authorizes EPA to add or delete chemicals from the list, and sets forth criteria for these actions. EPA has added and deleted chemicals from the original statutory list. Under section 313(e)(1), any person may petition EPA to add chemicals to or delete chemicals from the list. Pursuant to EPCRA section 313(e)(1), EPA must respond to petitions within 180 days, either by initiating a rulemaking or by publishing an explanation of why the petition is denied.

EPCRA section 313(d)(2) states that a chemical may be listed if any of the listing criteria are met. Therefore, in order to add a chemical, EPA must demonstrate that at least one criterion is met, but does not need to examine whether all other criteria are also met. Conversely, in order to remove a chemical from the list, EPA must demonstrate that none of the criteria are met.

EPA issued a statement of petition policy and guidance in the Federal Register of February 4, 1987 (52 FR 3479), to provide guidance regarding the recommended content and format for submitting petitions. On May 23, 1991 (56 FR 23703), EPA issued guidance regarding the recommended content of petitions to delete individual members of the section 313 metal compound categories. EPA has also published a statement clarifying its interpretation of the section 313(d)(2) criteria for adding and deleting chemical substances from the section 313 list (59 FR 61439, November 30, 1994) (FRL-4922-2).

## II. Description of Petition and Relevant Regulations

On August 17, 1995, EPA received a petition from the National Electrical Manufacturers Association (NEMA) to remove copper metal (CAS No. 7440-50-8) from the list of toxic chemicals subject to the annual release reporting requirements of EPCRA section 313 and PPA section 6607. NEMA suggested that the current unqualified copper listing should be replaced with a qualified listing limited to fume and dust forms only. The petitioner contends that copper metal, in forms other than fume or dust, should be deleted from the EPCRA section 313 list of toxic chemicals because the available data show that copper in metallic form does not meet the criteria for inclusion on the list of EPCRA section 313 chemicals. The petitioner also asserts that copper ion is unavailable from copper metal under environmental conditions.

In addition to being listed under EPCRA section 313, copper metal is regulated by EPA under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under CERCLA, copper metal is considered a hazardous substance if its particle size is less than 100 micrometers (0.004 inch). Copper ion (i.e., Cu<sup>+1</sup> and Cu<sup>+2</sup>) is regulated under the Safe Drinking Water Act (SDWA). In the Federal Register of June 7, 1991 (56 FR 26460), EPA promulgated a maximum contaminant level goal (MCLG) and a national primary drinking water regulation (NPDWR) for copper ion in drinking water. The MCLG was set at 1.3 milligrams/liter (mg/l) of copper ion, and the NPDWR consists of a treatment technique that includes corrosion control treatment, source water treatment and public education.

## III. EPA's Technical Review of Copper Metal

The technical review of the petition to delete copper metal included an analysis of the chemistry, health, ecological and environmental fate data known for this substance.

## A. Chemistry

Copper metal (Cu<sup>0</sup>; CAS No. 7440-50-8) is a naturally-occurring reddish, lustrous, ductile, malleable, water insoluble substance, having a melting point of 1083 °C and a boiling point of 2595 °C (Refs. 1 and 2). Copper metal has many commercial uses. Some of the major uses of copper metal include production of copper tubing, copper wire, copper compounds, brass and bronze, to name just a few. Copper metal gradually loses its lustrous

appearance when exposed to air. Surfaces of copper metal exposed to moist air gradually form copper (II) carbonate. Copper metal reacts with mineral acids to form copper salts. Copper metal can also react with organic acids (Refs. 1 and 2).

Although copper metal is insoluble in water, all waters are corrosive to copper metal to some degree (Ref. 3). The corrosivity of water to copper is influenced by a variety of factors. These factors include the duration of contact between the water and copper metal, and water quality parameters such as acidity, alkalinity, dissolved inorganic carbonate and calcium, water temperature, and dissolved oxygen content. Acidity is the most significant of these parameters. Waters with high acidity (i.e., low pH) are associated with the highest levels of copper corrosion (Ref. 3). Corrosion of copper metal by water results in the conversion of the metal ( $\text{Cu}^0$ ) to its ionic forms (i.e.,  $\text{Cu}^{+1}$  and  $\text{Cu}^{+2}$ ). Ionic forms of copper are typically quite soluble in water. Although waters with high acidity are associated with the highest levels of copper corrosion, even drinking water, which is not highly acidic, causes corrosion of copper metal. For example, the primary source of copper in drinking water is corrosion of copper pipes used to supply the water (Ref. 3). Copper levels above 1.3 mg/l (the MCLG) are rarely found in drinking water, although levels above 1.0 mg/l and as high as 2.37 mg/l have been reported (Ref. 3). Thus, although copper metal is insoluble in water, copper metal can be corroded by water (including drinking water) to yield water-soluble copper ions.

#### B. Toxicological Evaluation

Several comprehensive reviews on the health and environmental effects of copper are available, and were used during the review of the petition to assess the effects of copper metal on human health and the environment. Because copper metal is known to corrode in water to yield copper ion (Ref. 3), the toxicological evaluation of copper metal also included an assessment of the health and environmental effects of copper ion. These reviews include: a 1995 EPA document entitled "Copper Profile for DfE Printed Wiring Board Project" (Ref. 2); a 1991 Agency for Toxic Substances and Disease Registry document entitled "Toxicological Profile for Copper" (Ref. 4); a 1987 EPA document entitled "Summary Review of the Health Effects Associated with Copper" (Ref. 5); and a 1987 EPA document entitled "Drinking Water Criteria Document for Copper"

(Ref. 6). In addition to these reviews, health and environmental data on copper are also reviewed and discussed in EPA's Integrated Risk Information System (IRIS) (Ref. 7), and in a previous Federal Register Notice (58 FR 34738, June 29, 1993; Ref. 8). The health and environmental portions of these publications (Refs. 2-8) are briefly summarized below. Detailed summaries and discussions can be found in the publications and in the technical reports (Refs. 9-11) prepared by the EPA scientists who reviewed the publications.

1. *Human health.* Copper is an essential nutrient for humans and animals, with an adult recommended daily allowance of 2.0 to 3.0 milligrams per day (mg/day). In ionic form (i.e.,  $\text{Cu}^{+2}$ ), copper is absorbed from the gastrointestinal tract and lungs, and to a lesser degree, through the skin. Following absorption, copper is distributed to all parts of the body, especially the liver. Except in the forms of either fume or dust or other small particulate forms, copper metal ( $\text{Cu}^0$ ) is not expected to be absorbed from any route.

In humans and laboratory animals, gastrointestinal effects such as nausea, vomiting and diarrhea have occurred following acute exposure to  $\text{Cu}^{+2}$  (in the form of cupric sulfate) in 1-day oral doses ranging from 0.06 to 6 milligrams per kilogram (mg/kg) of Cu. Doses of approximately 2 grams (g) of  $\text{Cu}^{+2}$  can cause more serious effects such as vascular injury and hemolytic anemia, resulting in severe kidney and liver damage. Based on the levels of copper typically found in drinking water (see section A of this unit), EPA does not believe that it is reasonable to anticipate that human exposures to oral doses of  $\text{Cu}^{+2}$  of this magnitude will occur beyond facility site boundaries as a result of continuous, or frequently recurring, releases of copper metal. In adult mammals (including humans), it is unclear if chronic oral exposure to copper metal or copper ion results in toxicity. The lack of any clear relationship between chronic exposure to copper and copper toxicity in adult mammals may be due to homeostatic mechanisms that serve to maintain a baseline copper level in the body and protect mammals from the adverse effects of copper excess or deficiency.

Human and animal carcinogenic data on copper are insufficient to determine the carcinogenic potential of copper in humans.

2. *Environmental effects.* Copper ion exhibits high acute and high chronic toxicity to aquatic organisms that results in the death of the organism. Under

section 303 of the CWA, EPA has issued Water Quality Criteria for copper ion to protect aquatic life. These criteria describe what level of copper ion ambient water can contain without potentially causing harm to aquatic species. The acute criterion in fresh water is 9.2 parts per billion (ppb) (0.0092 mg/l). The chronic criterion in fresh water is 6.5 ppb (0.0065 mg/l). In salt water, the acute criterion is 2.9 ppb (0.0029 mg/l). There is currently no chronic salt water criterion.

The aquatic toxicity of copper ion is dependent on water quality factors that include acidity, presence of organic substances, calcium, and carbonate. Toxicity decreases as water hardness (concentration of calcium carbonate), alkalinity or total organic carbon content increases. At a water hardness of 250 mg/l, the 48-hour acute toxicity median lethal concentration ( $\text{LC}_{50}$ ) of copper ion to daphnids is 6.5 ppb. At a water hardness of 50 mg/l, the 96-hour acute toxicity values in fish ranged from 16.7 ppb (northern squawfish) to 114 ppb (for fathead minnows). Copper ion is highly acutely toxic to many other aquatic species such as blue mussels (96-hour  $\text{LC}_{50}$  = 5.8 ppb) and marine fishes (96-hour  $\text{LC}_{50}$  = 13.9 ppb). Chronic aquatic toxicity values for copper ion include 6.1 ppb (for invertebrates) and 3.9 ppb (for brook trout). Copper ion is known to bioconcentrate in certain aquatic species. The bioconcentration factors (BCF) of copper in algae (*Chlorella* sp.); marine polychaete worms (*Neanthes arenaceodentata*); and the eastern oyster are 2,000, 2,550, and 28,200 respectively.

#### IV. Technical Summary

EPA's technical review concluded that copper metal can be corroded by waters under several conditions, resulting in the liberation of copper ion. EPA's review also concluded that copper ion is highly toxic to many aquatic species.

#### V. Rationale for Denial

Copper metal is a listed toxic chemical subject to EPCRA section 313 and PPA section 6607 reporting requirements. The petition to delist copper metal is based on the petitioner's contention that copper metal is not toxic and does not meet any of the statutory criteria under section 313(d)(2). Because EPA has determined that all forms of copper metal meet the criteria of EPCRA section 313(d)(2)(C), EPA concludes that copper metal should not be deleted from the section 313 list of toxic chemicals, and the petition should be denied.

EPA's review of information pertaining to copper metal resulted in the conclusion that, (1) copper metal can be readily converted to copper ion in waters under environmental conditions; and (2) copper ion is highly toxic to aquatic organisms resulting in the death of these organisms. Thus, copper metal can reasonably be anticipated to cause toxicity in aquatic organisms because of its ability to liberate copper ion. Because copper can be reasonably anticipated to be highly ecotoxic and induces well-established serious adverse effects, EPA does not believe that an exposure assessment is necessary to make the determination required by EPCRA section 313(d)(2)(C). For a discussion of the use of exposure in EPCRA section 313 listing/delisting decisions, see, e.g., 59 FR 61440, November 30, 1994.

EPA's denial of this petition is consistent with the Agency's published policy and guidance on metal compound categories under section 313 of EPCRA (56 FR 23703, May 23, 1991). This policy and guidance articulated EPA's determination that the toxicity of a metal-containing compound that dissociates or reacts to generate the metal ion can be expressed as a function of the toxicity induced by the intact species and the availability of the metal ion. Thus, EPA stated that for petitions to exempt individual metal-containing compounds from the EPCRA section 313 list of toxic chemicals, EPA bases its decisions on the evaluation of all chemical and biological processes that may lead to metal ion availability, as well as on the toxicity exhibited by the intact species. EPA stated that the Agency will deny petitions for chemicals that dissociate or react to generate the metal ion at levels which can reasonably be anticipated to cause adverse effects to human health or the environment and for which the metal ion availability cannot be properly characterized.

In summary, EPA has determined that copper metal can reasonably be anticipated to cause a significant adverse effect on the environment of a sufficient seriousness to warrant continued reporting of copper under EPCRA section 313 because copper ion is available from copper metal and copper ion is highly toxic to aquatic organisms. Therefore, copper metal in all forms satisfies the criterion in EPCRA section 313(d)(2)(C). Accordingly, EPA is denying the petition.

#### VI. References

(1) The Merck Index, An Encyclopedia of Chemicals, Drugs and

Biologicals. Eleventh Edition (1989). Merck Co., Inc.: Rahway, N.J.; page 2516.

(2) USEPA, OPPTS. 1995. Copper and Compounds. Chemical Summary for Copper and Selected Copper Compounds. In: Copper Profile for DfE Printed Wiring Board Project (Draft).

(3) USEPA. 1991. Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper; Final Rule. Federal Register, Vol. 56, No. 110, June 7, 1991; pages 26460-26564.

(4) Toxicological Profile for Copper. Agency for Toxic Substances and Disease Registry (ATSDR) Report No. ATSDR/TP-9008.

(5) USEPA, OHEA. 1987. Summary Review of the Health Effects Associated with Copper. Health Issue Assessment. Office of Health and Environmental Assessment, Washington, DC; Report No. EPA/600/8-87/001.

(6) USEPA, ECAO. 1987. Drinking Water Criteria Document for Copper. Environmental Criteria and Assessment Office, Cincinnati, OH; Report No. EPA ECAO-CIN-417.

(7) U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS) file pertaining to Copper (CAS No. 7440-50-8).

(8) USEPA. 1993. Chromium, Nickel, and Copper in Stainless Steel, Brass, and Bronze: Toxic Chemical Release Reporting; Community Right-to-Know. Federal Register, Vol. 58, No. 123, June 29, 1993; pages 34738-34741.

(9) USEPA, OPPTS. 1995. Memorandum from Dr. Nicole Paquette, Toxicologist, Health and Environmental Review Division. Re: Petition to Delist Copper Metal from the Toxics Release Inventory. (September 20, 1995).

(10) USEPA, OPPTS. 1995. Hazard Assessment of Copper, Memorandum from Lorraine Randecker, Hazard Integrator, Chemical Screening and Risk Assessment Division, re: Petition to Delist Copper Metal from the Toxics Release Inventory. (April, 4, 1996).

(11) USEPA, OPPTS. 1995. Memorandum from Dr. Jerry Smrcek, Biologist, Health and Environmental Review Division, re: Petition to Delist Copper Metal from the Toxics Release Inventory. (October 11, 1995).

#### VII. Administrative Record

The record supporting this decision is contained in docket control number OPPTS-400105. All documents, including the references listed in Unit VI. above and an index of the docket, are available to the public in the TSCA Non-Confidential Information Center (NCIC), also known as the Public Docket Office, from noon to 4 p.m., Monday

through Friday, excluding legal holidays. The TSCA NCIC is located at EPA Headquarters, Rm. NE-B607, 401 M St., SW., Washington, DC 20460.

#### List of Subjects in 40 CFR Part 372

Environmental protection, Community right-to-know, Reporting and recordkeeping requirements, and Toxic chemicals.

Dated: October 8, 1996.

Lynn R. Goldman,

Assistant Administrator for Prevention, Pesticides and Toxic Substances.

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#### 40 CFR Part 799

[OPPTS-42187C; FRL-5571-3]

RIN 2070-AC76

#### Proposed Test Rule for Hazardous Air Pollutants; Extension of Comment Period on Proposed Rule and Extension of Period for Receipt of Proposals for Enforceable Consent Agreements for Pharmacokinetics Studies

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Extension of comment period on proposed test rule and extension of period for receipt of proposals for enforceable consent agreements for pharmacokinetics studies.

**SUMMARY:** EPA is extending the public comment period from December 23, 1996 to January 31, 1997 on the proposed rule to require manufacturers and processors of 21 hazardous air pollutants (HAPs) to test these substances for certain health effects. This proposed rule was published in the Federal Register on June 26, 1996 (61 FR 33178) (FRL-4869-1). In addition, the deadline for receipt of proposals for enforceable consent agreements (ECAs) regarding the performance of pharmacokinetics (PK) studies which would permit extrapolation from oral data to predict risk from inhalation exposure for the HAPs is being extended from October 24, 1996 to November 25, 1996.

**DATES:** Written comments on the proposed rule must be received by EPA on or before January 31, 1997. Written proposals for ECAs for PK studies must be received by EPA on or before November 25, 1996.

**ADDRESSES:** Submit three copies of written comments on the proposed HAPs test rule, identified by document control number (OPPTS-42187A; FRL-