

exposure by the oral route. The EPA has classified lead as a Group B2, probable human carcinogen.

#### 7. Manganese

Health effects in humans have been associated with both deficiencies and excess intakes of manganese. Chronic (long-term) exposure to low levels of manganese in the diet is considered to be nutritionally essential in humans, with a recommended daily allowance of 2 to 5 milligrams per day. Chronic exposure to high levels of manganese by inhalation in humans results primarily in CNS effects. Visual reaction time, hand steadiness, and eye-hand coordination were affected in chronically-exposed workers. Manganism, characterized by feelings of weakness and lethargy, tremors, a mask-like face, and psychological disturbances, may result from chronic exposure to higher levels. Impotence and loss of libido have been noted in male workers afflicted with manganism attributed to inhalation exposures. The EPA has classified manganese in Group D, not classifiable as to carcinogenicity in humans.

#### 8. Mercury

Mercury exists in three forms: elemental mercury, inorganic mercury compounds (primarily mercuric chloride), and organic mercury compounds (primarily methyl mercury). Each form exhibits different health effects. Various major sources may release elemental or inorganic mercury; environmental methyl mercury is typically formed by biological processes after mercury has precipitated from the air.

Acute (short-term) exposure to high levels of elemental mercury in humans results in CNS effects such as tremors, mood changes, and slowed sensory and motor nerve function. High inhalation exposures can also cause kidney damage and effects on the gastrointestinal tract and respiratory system. Chronic (long-term) exposure to elemental mercury in humans also affects the CNS, with effects such as increased excitability, irritability, excessive shyness, and tremors. The EPA has not classified elemental mercury with respect to cancer.

Acute exposure to inorganic mercury by the oral route may result in effects such as nausea, vomiting, and severe abdominal pain. The major effect from chronic exposure to inorganic mercury is kidney damage. Reproductive and developmental animal studies have reported effects such as alterations in testicular tissue, increased embryo resorption rates, and abnormalities of

development. Mercuric chloride (an inorganic mercury compound) exposure has been shown to result in forestomach, thyroid, and renal tumors in experimental animals. The EPA has classified mercuric chloride as a Group C, possible human carcinogen.

#### 9. Nickel

Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition. Nickel dermatitis, consisting of itching of the fingers, hand and forearms, is the most common effect in humans from chronic (long-term) skin contact with nickel.

Respiratory effects have also been reported in humans from inhalation exposure to nickel. No information is available regarding the reproductive or developmental effects of nickel in humans, but animal studies have reported such effects. Human and animal studies have reported an increased risk of lung and nasal cancers from exposure to nickel refinery dusts and nickel subsulfide. Animal studies of soluble nickel compounds (*i.e.*, nickel carbonyl) have reported lung tumors. The EPA has classified nickel refinery subsulfide as Group A, human carcinogens and nickel carbonyl as a Group B2, probable human carcinogen.

## II. Summary of the Proposed Rule

### A. What Source Categories and Subcategories Are Affected by the Proposed Rule?

The proposed rule affects industrial boilers, institutional and commercial boilers, and process heaters. In the proposed rule process heaters are defined as units in which the combustion gases do not directly come into contact with process gases in the combustion chamber (*e.g.*, indirect fired). Boiler means an enclosed device using controlled flame combustion and having the primary purpose of recovering thermal energy in the form of steam or hot water. Combustion units are not subject to the proposed rule simply by virtue of having a waste heat boiler. A waste heat boiler (or heat recovery steam generator) is a device that recovers normally unused energy and converts it to usable heat. Emissions from a combustion unit with a waste heat boiler are regulated by the applicable standards for the particular type of combustion unit. For example, emissions from a commercial or industrial solid waste incineration unit, or other incineration unit with a waste heat boiler are regulated by standards established under section 129 of the CAA.

Hot water heaters also are not regulated under today's proposed rule. A hot water heater is a closed vessel in which water is heated by combustion of gaseous fuel and is withdrawn for use external to the vessel at pressures not exceeding 160 pounds per square inch gauge and water temperatures not exceeding 210 degree Fahrenheit.

### B. What Pollutants Are Emitted?

Boilers and process heaters emit PM, volatile organic compounds, and hazardous air pollutants, depending on the material burned. Solid and liquid fuel-fired units emit metals, halogenated compounds and organic compounds. Gas fuel-fired units emit mostly organic compounds.

### C. What Is the Affected Source?

The affected source is each individual industrial, commercial, or institutional boiler or process heater located at a major facility. The affected source does not include units that are municipal waste combustors (40 CFR part 60, subparts AAAA, BBBB, Eb or Cb), medical waste incinerators (40 CFR part 60, subpart Ce and Ec), fossil fuel-fired electric utility steam generating units, commercial and industrial solid waste incineration units (40 CFR part 60, subparts CCCC or DDDD), recovery boilers or furnaces (40 CFR part 63, subpart MM), ethylene cracking furnaces (40 CFR part 63, subpart YY), or hazardous waste combustion units required to have a permit under section 3005 of the Solid Waste Disposal Act or are subject to 40 CFR part 63, subpart EEE.

### D. Does the Proposed Rule Apply to Me?

The proposed rule applies to you if you own or operate a boiler or process heater at a major source meeting the requirements discussed previously in this preamble. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more a year.

### E. What Emission Limitations and Work Practice Standards Must I Meet?

You must meet the emission limits and work practice standards for the subcategories in Table 1 of this preamble for each of the pollutants listed. Emission limits and work practice standards were developed for new and existing sources; and for large, small, and limited use solid, liquid, and gas fuel-fired units. Large units are those