

FACT SHEET

PROPOSED AIR TOXICS RULE FOR FERROALLOYS PRODUCTION

TODAY'S ACTION

- ! The Environmental Protection Agency (EPA) is issuing a proposed regulation to set standards for emissions of air toxics from ferronickel, ferromanganese, silicomanganese, and ferrochromium production. Air toxics are also known as hazardous air pollutants; these are pollutants which are known or suspected to cause cancer or other serious health effects such as birth defects or reproductive effects.
- ! A ferroalloy is an alloy of iron and one or more other elements, such as chromium, manganese, and/or silicon. Ferroalloys are consumed primarily in iron and steel making where they are used to produce steel and cast iron products with enhanced or special properties.
- ! Most ferroalloy production occurs in submerged electric arc furnaces which convert electrical energy to heat. Metallic hazardous air pollutants such as manganese are emitted in significant quantities in the production of ferromanganese and silicomanganese. Similarly, nickel is emitted in “major” amounts in the production of ferronickel.
- ! In this proposal, EPA is only targeting ferroalloy facilities that produce “major” amounts of metallic hazardous air pollutants. A “major” source is a source that has the potential to emit 10 tons/year or more of a listed hazardous air pollutant or 25 tons/year or more of a combination of pollutants.
- ! There are two known facilities that are major sources of hazardous air pollutant emissions: a ferronickel facility and a ferromanganese/silicomanganese facility. This proposal establishes either emission limits or monitoring requirements for the following phases of the manufacturing process: ore drying, crushing and screening, furnaces and tapping, product refining, and process vents.
- ! EPA developed this proposal through participation with industry representatives and representatives of the States of Oregon, South Carolina and Ohio.

WHAT ARE THE HEALTH AND ENVIRONMENTAL BENEFITS?

- ! EPA's proposed rule sets emission limits for particulate emissions from the two facilities that are major sources of metallic hazardous air pollutant emissions. Particulate matter is used as a surrogate for the two air toxics, manganese and nickel, that are being emitted from these facilities. Particulate control devices are known to remove metallic hazardous

air pollutants from an emissions stream with essentially the same efficiency that they remove particulates. Therefore, in controlling emissions of particulates, facilities can also control emissions of these air toxics. Both of these facilities already have the technology in place to control emissions of particulate matter.

- ! The compounds of nickel such as nickel carbonyl and nickel subsulfide are some of the most toxic compounds of nickel. They can affect the lungs and the kidneys. Symptoms such as headaches, vomiting, chest pains, dry coughing, and visual disturbances have been reported from short-term exposure in humans. Additionally, human and animal studies reveal an increased risk of lung and nasal cancers from exposure to nickel refinery dusts and nickel subsulfate. Chronic exposure to nickel in humans also results in respiratory effects such as asthma due to primary irritation or an allergic response, and an increased risk of chronic respiratory tract infections.
- ! Manganese can also adversely affect human health. Chronic exposure to high levels of manganese by inhalation in humans primarily affects the central nervous system. This health effect is known as “manganism” and typically begins with feelings of weakness and lethargy and progresses to other symptoms such as speech disturbances, a mask-like face, tremors, and psychological disturbances.
- ! The control equipment that is currently in place at these two facilities reduces emissions of particulate matter (and in turn nickel and manganese) by 99 percent from uncontrolled levels. Consequently, EPA does not expect any additional air toxics reductions as a result of the proposed standards. Instead, the proposed levels of control will ensure the continued use of existing control equipment and practices.

BACKGROUND

- ! Under the Clean Air Act Amendments of 1990, EPA is required to regulate sources of 188 listed toxic air pollutants. (Note that this list originally contained 189 pollutants, but EPA has subsequently removed the chemical caprolactum from the list.) On July 16, 1992, EPA published a list of industry groups (known as source categories) that emit one or more of these air toxics. For listed categories of "major" sources (those that emit 10 tons/year or more of a listed pollutant or 25 tons/year or more of a combination of pollutants), the Clean Air Act requires EPA to develop standards that require the application of stringent air pollution reduction measures known as maximum achievable control technology (MACT).
- ! EPA's published list of source categories to be regulated includes major sources that produce ferronickel and ferromanganese/silicomanganese. After allowing an opportunity for public comment, and time to analyze these comments, EPA intends to issue the final rule for ferroalloys production in April 1999.

- ! The majority of ferroalloy production occurs in submerged electric arc furnaces where electrodes are submerged into the raw material. All ferroalloy furnaces are sources of metallic hazardous air pollutant emissions. The specific pollutants that are emitted, and the quantity of these emissions, is related to the amount of hazardous air pollutant compounds present in the raw materials used. The metallic hazardous air pollutants emitted by individual furnaces include chromium, nickel, manganese, lead, phosphorus, antimony, cadmium, arsenic, and selenium. In most cases, the air toxics exist only in trace amounts in the raw materials (coal, scrap metal, etc.), and therefore emissions are relatively low.
- ! However, in the case of ferronickel, ferromanganese, and ferrochromium production, metallic hazardous air pollutants are a constituent of the final product and are present in large quantities in the raw materials. Therefore, air toxic emissions from these products are likely to be significant. Consequently, EPA is proposing to regulate these types of sources in this action.

WHO WOULD BE AFFECTED BY EPA'S PROPOSED RULE?

- ! There are two ferroalloys manufacturing facilities in the nation that would be affected by the proposed rule. One major source emits nickel, while another emits manganese. Only major sources will be subject to the regulation. Both facilities have already installed air pollution controls that will help them meet the proposed requirements in today's action.
- ! One source, the Glenbrook Nickel Company facility located in Riddle, Oregon, is the only domestic producer of ferronickel alloys. The other source, owned and operated by Elkem Metals Company and located in Marietta, Ohio, is the only domestic producer of ferromanganese and silicomanganese. Elkem Marietta is also permitted to produce ferrochromium alloys which are not manufactured currently.
- ! Neither of these facilities are small businesses.

WHAT DO THE PROPOSED STANDARDS REQUIRE AND HOW DO THEY PROVIDE FLEXIBILITY FOR INDUSTRY?

- ! EPA's proposed regulation establishes emission limits for particulate emissions from the two regulated facilities. EPA is proposing standards for both existing and new ferroalloy facilities.
- ! The proposed levels of control will ensure the continued use of existing control equipment and practices. No additional emission controls would be required to comply with the proposed standards.
- ! The proposed regulation offers the ferronickel facility flexibility by allowing the plant to average its concentration limits from its ferronickel ore processing emission sources.

Similarly, EPA is proposing a combined particulate emissions standard for the two open furnaces at the ferromanganese facility. Plants will have the flexibility of offsetting increases in emissions at some regulated point sources by decreasing emissions at others.

HOW MUCH WOULD EPA'S PROPOSED REGULATION COST?

- ! EPA expects the cost and economic impacts to be minimal. The only costs associated with the proposed standards are those required to perform compliance assurance activities such as performance testing, monitoring, reporting, and recordkeeping.
- ! EPA does not expect the price of ferroalloys for consumers to change as a result of this rule.

FOR FURTHER INFORMATION

- ! Interested parties can download the rule from EPA's web site on the Internet under recent actions at the following address: (<http://www.epa.gov/ttn/oarpg>). For further information about the proposal, contact Mr. Conrad Chin of EPA's Office of Air Quality Planning and Standards at (919) 541-1512.
- ! EPA's Office of Air and Radiation's homepage on the Internet contains a wide range of information on the air toxics program, as well as many other air pollution programs and issues. The Office of Air and Radiation's home page address is: (<http://www.epa.gov/oar/>).

ADDENDUM TO FACT SHEET FOR PROPOSED REGULATIONS FOR FERROALLOYS PRODUCTION

DETAILED DESCRIPTION OF THE PROPOSED REGULATION

! Ferronickel Facilities

This action proposes to regulate the operation of air pollution control devices serving the following emissions sources: ferronickel ore processing, calciners and electric arc melt furnaces, and ferronickel electric arc refining furnaces. The standards, which are applicable to both existing and new sources, are proposed to take two forms:

1) One requirement is that a separate emission limit for particulate matter would be established for each affected emission source:

Baghouses: particulate emissions from the two baghouses serving the calciners and the melt furnaces which account for 90 percent of the total particulate emissions of the affected sources, would be limited to a concentration limit of 0.015 grains per dry standard cubic foot (gr/dscf).

Ferronickel ore processing: Controlled particulate emissions from the ferronickel ore processing emission sources would be limited to a concentration limit of 0.030 gr/dscf.

Ferronickel product refining furnaces: Controlled particulate emissions from the ferronickel product refining furnaces would be limited to a concentration limit of 0.001 gr/dscf.

2) The second requirement is that emissions from the control device serving the calciners and ferronickel melt furnaces must not exceed 20 percent opacity. The proposed standard would also establish a 20 percent opacity limit on the smelter building, which houses one or more of the ferronickel furnaces.

! Ferromanganese and Silicomanganese Facilities

The proposed rule would apply to new and existing ferroalloy production facilities that manufacture ferromanganese, silicomanganese, and ferrochromium and are major sources or are co-located at major sources. The affected source is composed of the following operations: ferroalloy submerged arc furnaces (EAF), a manganese oxygen refining vessel, crushing and screening operations, and fugitive dust sources. The proposed standard for new and reconstructed EAF is that the total combined emissions of particulate matter collected from the control device serving all furnaces (including tapping) may not exceed 0.51 lb/hr-megawatt (MW). As for existing EAF, the proposed standard for open design EAF must not exceed a total emissions of 1.15 lb/hr-MW exiting from the control device. The particulate limit for the semi-closed furnace which is unique in the industry is 1.60 lb/hr-MW. Particulate emissions from all other affected sources would be limited to a concentration limit of 0.030 gr/dscf. In addition, the proposed standard would also establish a 20 percent opacity limit on the two shop buildings which each houses one of the open design EAF. The building that houses the semi-closed EAF would have an opacity limit that may exceed 20 percent for not more than one distinct six-minute period in any sixty-minutes, but should not exceed 60 percent opacity, as a distinct six-minute

block average, at any time.

! Fugitive Dust Emissions

For fugitive emissions from material handling and ore storage, roadways and plant areas, techniques such as sweeping to remove materials, and dust suppression methods such as regular wetting with water can greatly reduce emissions. Enclosing these operations in buildings or installing capture hoods with particulate matter control devices at transfer points are very effective techniques. The proposed rule requires each facility to develop a fugitive dust control plan that specifies which techniques will be used to effectively suppress dust emissions.

! Inspection and Monitoring Requirements

Each capture and control system would be required to be inspected once per month. For each control device covered by this rule, the owner or operator would be required to prepare and operate according to a written control device operating procedures manual. The performance of baghouses would be assured by regular opacity or visible emission observations as specified in the rule. The performance of venturi scrubbers would be assured by monitoring pressure drop.