

5/13/99

FACT SHEET

FINAL AIR TOXICS RULE FOR FERROALLOYS PRODUCTION: FERROMANGANESE AND SILICOMANGANESE

TODAY'S ACTION

- ! The Environmental Protection Agency (EPA) is issuing a final rule for controlling emissions of air toxics from ferromanganese and silicomanganese 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.
- ! In this rule, 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 were two known major sources of hazardous air pollutant emissions when EPA proposed this rule in August 1998: a ferronickel facility and a ferromanganese/silicomanganese facility. Since that time, the ferronickel facility (Glenbrook Nickel Company) has suspended operations and said that they will permanently close the facility. In the absence of any existing sources producing ferronickel and because there is no indication that a new facility will be built that will produce ferronickel using the same technology as Glenbrook Nickel had, a decision was made to withdraw the proposed rule on ferronickel. As a result, the ferromanganese and silicomanganese production facility (Elkem Metals Company in Marietta, Ohio) is the only known facility left in the source category as a major source of hazardous air pollutant emissions.
- ! This rule establishes either emission limits or monitoring requirements for the following phases of the manufacturing process: crushing and screening operations, furnaces and tapping, and metal oxygen refining (MOR). The affected facility is also required to

develop and operate a Standard Operating Procedure (SOP) Manual for the control of fugitive dust sources.

- ! EPA developed this rule 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 final rule sets emission limits for particulate emissions from the ferromanganese and silicomanganese production facility. Particulate matter is used as a surrogate for the air toxic manganese that is being emitted from the facility. 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. Elkem Metals Company (Elkem) already has the technology in place to control emissions of particulate matter.
- ! Manganese can 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 Elkem reduces emissions of particulate matter (and in turn manganese) by 99 percent from uncontrolled levels. Consequently, EPA does not expect any additional air toxics reductions as a result of this rule. Instead, the 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 caprolactam 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).
- ! The proposed standards of this rule were published in the Federal Register on August 4, 1998 (63 FR 41508). During the comment period, the EPA received four comment letters

on the proposed standards. All of the comments have been carefully considered, and, where determined to be appropriate by the EPA, changes have been made in the final rule based on comments received.

- ! EPA published a supplemental proposal on February 12, 1999, to include an enforceable operating limit for the bag leak detection system for new and reconstructed sources. EPA received three comment letters for the supplemental proposal. All comments were responded in this final rule.
- ! 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, are 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 ferromanganese and silicomanganese production, manganese is a constituent of the final product and is present in large quantities in the raw materials. Therefore, air toxic emissions from these products are likely to be significant. Consequently, EPA is regulating these types of sources in this action.

WHO WILL BE AFFECTED BY THIS RULE?

- ! There is only one ferromanganese and silicomanganese manufacturing facility (Elkem) in the nation that will be affected by the final rule. Glenbrook Nickel, which emitted nickel in major amounts and included in the proposed rule, has since been closed. Elkem has already installed air pollution controls that will meet the requirements in today's action.
- ! Elkem is not a small business entity.

WHAT DOES THIS RULE REQUIRE AND HOW DOES IT PROVIDE FLEXIBILITY FOR INDUSTRY?

- ! EPA's final rule establishes emission limits for particulate emissions from the regulated facility. The rule contains emission standards for both existing and new ferromanganese and silicomanganese production facilities.
- ! The levels of control will ensure the continued use of existing control equipment and practices. No additional emission controls will be required to comply with the standards.
- ! A combined particulate emission standard (primary and tapping) for the two open furnaces

provides flexibility by allowing increases in emissions at a regulated point source to be offset by decreasing emissions at the other. Similarly, there are two emission standards for new or reconstructed furnaces (the New Sources Performance Standards for ferroalloys and the other in a generic grain loading format), thus providing flexibility to the regulated source.

HOW MUCH WILL EPA'S REGULATION COST?

- ! EPA expects the cost and economic impacts for this rule to be minimal. The only costs associated with the standards are those resulting from compliance assurance activities such as performance testing, monitoring, reporting, and record keeping.
- ! EPA does not expect the price of ferromanganese and ferromanganese 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 this rule, 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 FINAL AIR TOXICS RULE FOR FERROALLOYS PRODUCTION: FERROMANGANESE AND SILICOMANGANESE

DETAILED DESCRIPTION OF THE FINAL RULE

Emission standards

The affected units include two open EAF's, a semi-closed EAF, a manganese oxygen refining (MOR) vessel, and raw material crushing and screening operations. The following table summarizes the particulate matter emission standards, by process.

New or reconstructed or existing source	Affected source	Applicable particulate matter emission standards	
New or reconstructed	Submerged arc furnace (primary and tapping)	1.	0.23 kg/hr/MW (0.51 lb/hr/MW), or
		2.	35 mg/dscm (0.015 gr/dscf)
Existing	Open submerged arc furnace (primary and tapping)	1.	16.3 kg/hr (35.9 lb/hr) when producing silicomanganese
		2.	6.4 kg/hr (14.0 lb/hr) when producing ferromanganese
Existing	Semi-sealed submerged arc furnace (primary, tapping, and vent stacks)	11.2 kg/hr (24.7 lb/hr)	
New, reconstructed, or existing	MOR process	69 mg/dscm (0.03 gr/dscf)	
New or reconstructed	Individual equipment associated with the crushing and screening operation	50 mg/dscm (0.022 gr/dscf)	
Existing	Individual equipment associated with the crushing and screening operation	69 mg/dscm (0.03 gr/dscf)	

Opacity standards

The rule establishes 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 will have an opacity limit that may exceed 20 percent once for not more one distinct six-minute period in any 60-minute period, but should not exceed 60 percent opacity, as a distinct six-minute period at any time. Blowing taps, poling and oxygen lancing of the tap hole, burndowns associated with electrode measurements and maintenance activities associated with submerged arc furnaces and casting operations are exempt from the opacity standards.

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