

# Fact Sheet

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## AIR EMISSION STANDARDS AND GUIDELINES FOR HOSPITAL/MEDICAL/INFECTIOUS WASTE INCINERATORS

### TODAY'S ACTION

The U.S. Environmental Protection Agency (EPA) is issuing final standards and guidelines to reduce air pollution from incinerators that are used to burn hospital waste and/or medical/infectious waste [which will be abbreviated in this fact sheet as Medical Waste Incinerators (MWI)]. The standards and guidelines will apply to incinerators used by hospitals and health care facilities, as well as to incinerators used by commercial waste disposal companies to burn hospital waste and/or medical/infectious waste. Specifically, EPA is:

- 1.) Issuing stringent final air emission guidelines for use by States in developing State plans to reduce air pollution from "existing" MWIs (those built on or before June 20, 1996).
- 2.) Issuing stringent final air emission standards to reduce air pollution from "new" MWIs (those built after June 20, 1996).

When burned, hospital waste and medical/infectious waste emit various air pollutants, including hydrochloric acid, dioxin/furan, and toxic metals (lead, cadmium, and mercury). EPA's air emission standards and guidelines will reduce air emissions from MWIs by 75 to 98 percent from current levels.

The regulations will substantially reduce emissions in highly populated urban areas, as well as in more rural areas. Additionally, the regulations will provide some flexibility for small rural community hospitals to help them reduce emissions in a way that is affordable.

### HOW WILL THIS ACTION AFFECT MEDICAL WASTE DISPOSAL PRACTICES IN THE UNITED STATES?

EPA expects the final standards and guidelines to result in a dramatic change in medical waste disposal practices in the United States. Because of the

increased cost of on-site incineration under the final rules, few health care facilities are likely to install new MWIs and many health care facilities are likely to discontinue use of their existing MWIs. Instead, they are likely to switch to other methods of waste disposal such as off-site commercial waste disposal or on-site disinfection technologies.

As a result of many facilities switching to other methods of waste disposal, EPA expects the standards to apply to between 10 and 70 new MWIs by the year 2002. EPA expects the guidelines to result in the discontinued use of as many as 50 to 80 percent of the almost 2,400 existing MWIs.

#### BACKGROUND

Section 129 of the Clean Air Act requires EPA to set air emission standards and guidelines to reduce pollution from incinerators that burn solid waste. Incinerators that burn medical waste (MWIs) are classified as solid waste incinerators and therefore must be regulated. The Clean Air Act also requires EPA to develop standards and guidelines that require the application of stringent air pollution controls, known as maximum achievable control technology.

These are the first Federal standards and guidelines regulating air emissions from MWIs.

Until now, MWIs were only subject to State and local requirements, where applicable.

Hospital/medical/infectious waste incinerators are used by hospitals, health care facilities, and commercial waste disposal companies to dispose of hospital waste and medical/infectious waste. EPA estimates that there are approximately 2,400 of these facilities currently operating incinerators in the U.S.

For regulatory purposes, EPA is making a distinction between the terms "hospital waste" and "medical/infectious waste" because most "hospital waste" (85 to 90 percent or more) is not at all infectious. Waste from cafeterias, administrative offices, loading docks, and even most patient rooms is no more infectious than municipal waste from homes and businesses. In fact, many items that meet EPA's definition of "medical/infectious waste" are not necessarily infectious.

EPA is not attempting to define infectious waste through this

regulation. Instead, EPA is defining hospital waste and medical/infectious waste only to determine which incinerators are subject to this regulation.

There are approximately 7,000 hospitals in the United States. EPA estimates there are about 2,400 incinerators burning medical waste. Therefore, fewer than half the hospitals in the United States operate their own incinerator.

WHAT AIR STANDARDS IS EPA ISSUING FOR NEW MWIS AND WHO WILL BE AFFECTED BY THESE STANDARDS?

The air standards for new MWIs will affect any MWI which is built after June 20, 1996 (the date that EPA re-proposed the standards). The standards will establish limits on the amount of air pollution which may be released from exhaust stacks of MWIs.

There are separate emission limits depending on the size of the MWI. EPA based these emission limits on stringent air pollution controls known as maximum achievable control technology. In order to meet the emission limits, new MWIs will almost certainly need to install add-on air pollution control systems called "scrubbers."

The final standards also include:

- 1.) monitoring and testing requirements to ensure compliance,
- 2.) siting requirements which include an analysis of the impacts of MWIs,
- 3.) a requirement to develop a waste management plan, specific to each facility,
- 4.) a fugitive emission limit for ash handling from new large (> 500 pounds/hour) MWIs, and
- 5.) a requirement that a trained and qualified operator be readily available during operation of a MWI.

WHAT GUIDELINES IS EPA ISSUING FOR EXISTING MWIS AND WHO WILL BE AFFECTED BY THESE GUIDELINES?

The emission guidelines for existing MWIs require States to develop plans for EPA approval which will affect any MWI built on or before June 20, 1996 (the date that EPA re-proposed the guidelines). The State plans will establish limits on the amount of air pollution which may be released from the exhaust stacks of

MWIs.

Similar to the standards for new sources, there are separate emission limits depending on the size of the MWI. To provide some relief to small rural hospitals, the rule also contains separate emission limits for small (< 200 pounds /hour) MWIs located in remote rural areas. These facilities generate less than 1 percent of the waste from MWIs and comprise only 2 percent of the total emissions from MWIs.

EPA based the emission limits for existing MWI on stringent air pollution controls known as maximum achievable control technology. In order to meet the emission limits, most existing MWIs will need to install add-on air pollution control systems called "scrubbers." Only a relatively few small remote MWIs will be able to meet the emission limits without a scrubber. Instead, these few small remote units will have to reduce their emissions through use of "good combustion."

"Good combustion" involves ensuring that the incinerator maintains proper temperatures and allows sufficient time for the destruction of pollutants in accordance with the proper design and operation of the incinerator. For many of these facilities, "good combustion" will require an upgrade of equipment to achieve the emission limits.

The final guidelines also include:

- 1.) monitoring and testing requirements to ensure compliance,
- 2.) a requirement to develop a waste management plan, specific to each facility, and
- 3.) a requirement that a trained and qualified operator be readily available during operation of a MWI.

#### WHEN WILL FACILITIES HAVE TO COMPLY WITH THIS ACTION?

For compliance purposes, the official promulgation date is the date the rules are published in the Federal Register. Publication is expected in late August or early September 1997.

New MWIs must demonstrate compliance within 6 months after startup or within 6 months after the rule is published in the Federal Register, whichever is later. Existing MWIs have 3 to 5 years after the final rule is issued to demonstrate compliance.

#### HOW DOES THE RULE PROVIDE FLEXIBILITY TO INDUSTRY AND PROMOTE

POLLUTION PREVENTION?

Although EPA based the air emission limitations on specific air pollution control technologies, MWIs may choose their own control technologies and process change combinations to meet these regulations.

In setting these regulations, EPA worked closely with small hospitals to provide more flexibility as to how they will meet the standards.

WHAT ARE THE HEALTH AND ENVIRONMENTAL BENEFITS OF THIS ACTION?

This regulation will provide important improvements in protecting human health and the environment by reducing hazardous air pollutant releases. Hazardous air pollutants are also known as air toxics; pollutants which are known or suspected to cause cancer or other serious health effects (such as birth defects or reproductive effects). EPA estimates the final air standards and guidelines will result in the following annual reductions:

Pollutant	Emission Reduction	Percent Reduction
Mercury	about 15 tons	(about 94 percent)
Particulate Matter	over 900 tons	(about 90 percent)
Hydrogen Chloride	over 6,000 tons	(about 98 percent)
Dioxin/Furan	over 140 grams	(about 95 percent)

In 1995, EPA projected MWI's to comprise 8 percent of total national mercury emissions into the air. This action will reduce mercury emissions from MWIs by 94 percent.

EPA remains concerned about the potential health and environmental impacts associated with exposure to mercury. Mercury is highly hazardous and is of particular concern because it persists in the environment and bioaccumulates through the food web. Serious developmental and adult effects in humans, primarily damage to the nervous system, have been associated with exposures to mercury. Harmful effects in wildlife have also been reported; these include nervous system damage and behavioral and reproductive deficits. Human and wildlife exposure to mercury occur mainly through the ingestion of fish.

When inhaled, mercury vapor attacks also the lung tissue and is a cumulative poison.

Short-term exposure to mercury in certain forms can cause hallucinations and impair consciousness. Long-term exposure to mercury in certain forms can affect the central

nervous system and cause kidney damage.

Exposure to particulate matter has been linked with adverse health effects, including aggravation of existing respiratory and cardiovascular disease and increased risk of premature death.

Hydrochloric acid is a clear colorless gas. Chronic exposure to hydrochloric acid has been reported to cause gastritis, chronic bronchitis, dermatitis, and photosensitization.

Acute exposure to high levels of chlorine in humans may result in chest pain, vomiting, toxic pneumonitis, pulmonary edema, and death. At lower levels, chlorine is a potent irritant to the eyes, the upper respiratory tract, and lungs.

This action will reduce dioxin emissions from MWIs by 95 percent.

Exposure to dioxin and furan can cause skin disorders, cancer, and reproductive effects such as endometriosis. These pollutants can also affect the immune system.

#### WHAT WILL BE THE COST OF THIS ACTION?

The estimated cost associated with the standards for new sources ranges from \$12 million to \$26 million in the fifth year after adoption (i.e., 2002), depending on the amount of switching to other waste disposal methods. The estimated cost associated with the guidelines for existing sources ranges from \$60 million/year to \$120 million/year in annualized expenditures, depending on the amount of switching to other waste disposal methods.

Because of the availability of other waste disposal methods, EPA's economic analysis suggests that the standards and guidelines will not impose adverse economic impacts on hospitals and health care facilities which currently operate MWIs. The standards and guidelines will also be affordable for commercial waste disposal companies that burn medical waste from health care facilities. EPA estimates the average cost of a hospital stay will increase by less than 35 cents per day.

#### FOR FURTHER INFORMATION

Interested parties can download the rule from EPA's Office of Air and Radiation's web site on the Internet under recently signed rules at the

following address:

(<http://www.epa.gov/ttn/oarpg>). This web site also 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 homepage address is: (<http://www.epa.gov/oar/>). For

further information about the final rule, contact Mr. Rick Copland of EPA's Office of Air

Quality Planning and Standards at (919) 541-5265 or via e-mail at

[copland.rick@epamail.epa.gov](mailto:copland.rick@epamail.epa.gov)

