# Waste Not

The Weekly Reporter for rational resource management

#87

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**"M E R C U R Y  R I S I N G - FROM INCINERATORS TO THE FOODCHAIN: THE GROWING THREAT OF MERCURY."** This report is an excellent and timely review of mercury emissions from municipal waste incinerators. Written by Bob Collins of **Clean Water Action** the report was published in January 1990. The report focuses on the state of Massachusetts which burns more trash than any other state, "about 11,000 tons of trash each day, more than 14% of all trash incinerated in the United States. The study presents a conservative estimate showing that **incinerators in Massachusetts release about 19 tons of mercury each year."** Though the report focuses on Massachusetts, the information is clearly relevant to any incinerator state.

* **Control Technology.** "Mercury is liquid at room temperature, and is easily vaporized by an incinerator. That makes it difficult to capture using the technology chosen by EPA to control for particulates -- dry scrubbers and fabric filters (baghouses) or electrostatic precipitators (ESPs). There have been few tests on the capability of dry scrubbers and baghouses to control mercury emissions, and the results vary widely. **Recent tests of two modern California incinerators (in Modesto and Commerce) fitted with dry scrubbers and baghouses showed that little, if any, of the mercury was captured. Tests on the Wheelabrator mass burn incinerator in Millbury, MA, (fitted with dry scrubber and ESP) showed that mercury was not removed by its pollution controls.** . . .A dry scrubber and baghouse system is best at removing metals in **particulae form,** but is ineffective in capturing **gaseous mercury** (or any other metal vapors) from incinerator emissions. Although some metals clearly exhibit tendency toward fine particle enrichment, **'mercury is an exception because it exists almost completely as a vapor at common stack exit temperatures."**

* **EPA'S PROPOSED NEW SOURCE PERFORMANCE STANDARDS** states that, "available data indicate wide variation in mercury collection efficiency and emission rates, even for MWC [municipal waste combustors] with GCP [good combustion practices] and SD/FF [dry scrubber/baghouse] controls. **The reasons for this variability and the mechanisms affecting mercury emissions and collection are not well understood. Therefore, an emission limit cannot be specified at this time'** . . .The EPA has little data on mercury emissions, mainly because few states regulate it. In fact, EPA decided that dry scrubbers and baghouses were the optimum mercury control with only limited data. EPA determined that a dry scrubber and baghouse could be expected to capture 50 percent of mercury emissions. However, this has never been verified. ...Evidence available from tests done in preparation of the [EPAs] New Source Performance Standards for Municipal Waste Combustors show poor mercury capture. Other evidence suggests that up to 90 percent of the mercury in waste regularly escapes into the air..." This report is an excellent review of mercury and the serious health threats it presents and is well referenced. "Mercury Rising" is available for $5 from **Clean Water Fund's Research & Technical Center,** 317 Pennsylvania Ave, SE, Washington, DC 20003. Tel: 202-546-6616.

**MERCURY AND ACTIVATED CARBON FILTERS.** Holland has announced that it plans to retrofit all of its existing municipal waste incinerators with activated carbon filters. According to Bernd Franke of the **Institute of Energy and Environmental Research** test results from two pilot experiments at West German muncipal waste incinerators fitted with activated carbon filters, results showed that these filters have the ability to remove dioxins/furans, heavy metals including mercury more effectively than existing best available control technology utilized in the U.S. For a copy of a paper presented at the 1989 Incineration Conference in Knoxville, TN, by a German company which manufacturers these filters, titled "Activated Carbon Technology," write to Dr. Walter Panknin, c/o American Energy Corp., 900 19th St., 5th Floor, Washington, DC 20036. Tel: 202-452-6078.

**EPA HAS KNOWN THAT MERCURY EMISSIONS FROM MUNICIPAL WASTE INCINERATORS HAS BEEN A MAJOR PROBLEM SINCE 1975!** Mercury sleuth Craig Volland (**Spectrum Technologists**) has unearthed an early paper from the EPA (see below) which indicated that as early as 1975 that mercury emissions from trash incineration is a major source of mercury entering the environment. Now with more incinerators going on line, the problem threatens to be worse. It is important to note in the tables below that the EPA projected a decrease in mercury emissions at the same time that they projected a doubling of the amount of trash to be incineratred or thermally treated. This was based upon the optimistic assumption that batteries and other objects containing mercury would be removed prior to burning and that air pollution devices would remove 50% of mercury from the flue gasses. Neither assumption has become a reality. However, the alarming discrepancy between optimistic assumptions and disturbing reality has not slowed the EPA in their support of incineration. The very agency set up to protect the environment is now sanctioning the insidious build-up of mercury in the foodchains.

The following comes from a U.S. Department of Commerce National Technical Information Service Report, **PB-247 000** (or **EPA 560/3-75-007**), titled "Materials Balance and Technology Assessment of Mercury and its compounds on National and Regional Bases," published in October 1975.

**POWER PLANT MERCURY LOSSES IN THE U.S., 1972**
**Kilograms - page 132**

| COAL-FIRED POWER PLANTS | | OIL-FIRED POWER PLANTS | | NATURAL GAS POWER PLANTS | |
|---|---|---|---|---|---|
| No. of Plants | Mercury Loss | No. of Plants | Mercury Loss | No. of Plants | Mercury Loss |
| 455 | 45,249 | 1,457 | 8,863 | 495 | 3,230 |

**ESTIMATED MERCURY LOSSES TO ENVIRONMENT FROM U.S. MUNICIPAL SOLID WASTE DISPOSAL, 1973 and 1983**
**Kilograms - Page 245**

| Losses to | 1973 | 1983[a] |
|---|---|---|
| ** Air | 40,000 | 24,000[b] |
| Water | 18,000[c] | 6,000 |
| Land | 466,000 | 448,000 |
| Reclamation | - | 52,000 |
| TOTALS: | 530,000 | 530,000 |

a. **Assuming total amount of mercury in solid waste stream will remain constant, even though the total quantity of solid waste will increase.**
b. **Assuming a100% increase in thermal conversion processes (incineration, pyrolysis, etc.), all operating with front-end material recovery units and air pollution units capable of 50% mercury recovery. [our emplhasis]**
c. **Assuming improperly operated landfills and dumps lose mercury to water at twice the rate of regulated fills.**

** **[NOTE: THESE LOSSES ASSUME 8% INCINERATION OF U.S. WASTE. Ed.]**

**Page 77 of this report:** "For all seven New York City incinerators, the mercury emitted to the air could range from 10,000 to 19,000 kg. per year. Our inventory of the city and adjacent areas indicated that just over 17,000 kg of mercury are emitted to the air from all sources. Assuming our inventory is reasonably accurate, **incineration is obviously one of the prime contributors of emissions to air."** [our emphasis, Ed.].

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