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RACHEL'S HAZARDOUS WASTE NEWS #198

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News and resources for environmental justice.

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SCIENTISTS SUSPECT POISONING OF FISH BY MERCURY EMISSIONS FROM INCINERATORS.

Incineration of municipal solid waste (msw) is releasing massive amounts of the potent neurotoxin, mercury, into the air, according to a study published last week by scientists Robert Collins and Henry S. Cole of Clean Water Action's Research and Technical Center in Washington, DC. Garbage burners now operating in 40 states are releasing an estimated total of 74,356 pounds of mercury into the air each year, according to Collins and Cole; garbage burners on the drawing boards would release an additional 52,339 pounds into the air annually when they start operating, for a total of 126,695 pounds per year. This makes garbage burning the second largest source of mercury entering the atmosphere, after coal-burning power plants, which put an estimated 162,000 pounds per year into the air.

Even at very low exposures, mercury can damage the human central nervous system, impair mental development, and damage kidneys.

Mercury--the familiar "quicksilver" metal used in many thermometers--is contained in many household products, including batteries, paints, dyes, electric and electronic devices (silent light switches, for example), fluorescent lights, plastics, pharmaceuticals, pesticides, pastes, glues, adhesives and other items. When these items are landfilled, their mercury escapes slowly into the soil and groundwater, contaminating the local environment. However, burning any of these items turns their mercury into a gaseous vapor which escapes from the smoke stack and thus contaminates an area extending many miles from the incinerator stack. As the airborne mercury cools off, it turns back into a solid form and settles to earth where it begins to interact with living organisms. Some of the mercury is held for a time in the soil, but eventually it moves with rainwater toward the nearest stream, river, or lake. Once in an aquatic environment, the mercury moves into the food chain or food web, concentrating as it goes. It starts by entering plankton--the smallest, floating plants--and ends up contaminating the largest fish, which often become so toxic that they are dangerous for humans to eat. The U.S. Food and Drug Administration has

set one part per million (1 ppm) as the "action level" for mercury in fish. Fish containing 1 ppm or more of mercury can be banned from interstate commerce and people are warned against eating any of it. Many states issue warnings not to eat fish containing more than 0.5 ppm.

At least 20 states currently have one or more bodies of water in which excessive mercury has been identified and where warnings have been issued to restrict or avoid fish consumption because of a human health hazard from mercury contamination of the fish. Collins and Cole surveyed states with fish advisories and found a suspicious pattern: of the 16 states burning the largest amounts of garbage, 12 have fish advisories for mercury. The sixteen biggest garbage burning states [with their incinerator mercury emissions in pounds listed inside parentheses, and an asterisk indicating those that have issued fish advisories for mercury contamination] are: *Massachusetts (10,605); *New York (9,698); *Florida (8,203); Ohio (6,132); Maryland (4,433); *Connecticut (3,956); Michigan (3,831); *Virginia (3,449); Maine (2,466); Indiana (1,771); *Tennessee (1,699); *Minnesota (1,694); Pennsylvania (1,429); *Wisconsin (1,360); California (1,324); *Oklahoma (1,139).

Fifteen to 20 years ago, industry (chemicals and allied products; petroleum refining; copper and lead smelters; and instrument and electronics manufacture) were much larger sources of mercury air emissions than either incinerators or coal-burning power plants, with total air emissions of 262,298 pounds in 1973. In the past two decades, these industries have evidently reduced their mercury emissions substantially (according to data industry reported to EPA in 1988 under the federal Community Right to Know law) while power plant emissions have increased 80% since 1980. However, the fastest-growing source of mercury emissions in the past decade has been garbage burners, which increased their mercury air emissions 122% between 1979 and 1989.

The air pollution control devices used on most U.S. garbage incinerators (called electrostatic precipitators) do not capture mercury at all; mercury slips right by them and out the stack. More modern pollution control equipment for garbage burners combines dry lime scrubbers (which spray crushed lime into the exhaust gas to neutralize hydrochloric acid) followed by a fabric (baghouse) filter (essentially a huge vacuum cleaner bag). EPA (U.S. Environmental Protection Agency) has evaluated the ability of these modern systems to control mercury emissions and has found inconsistent results. EPA's proposed regulations of garbage burners contain the following statement:

"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 [spray dry scrubber/fabric filter (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."

In short, the designers, operators and regulators of garbage burners do not understand the behavior of the machines they design, operate and regulate, at least so far as mercury emissions are concerned. It is interesting to recall that Dr. Barry Commoner recently reviewed the history of dioxin emissions from garbage burners and showed that the incinerator industry spent a decade denying that their machines

create dioxin in the combustion process. After a decade of keeping their heads in the sand like ostriches, they had to admit that their original understanding of their machines was simply wrong. Commoner concluded, "Clearly, trash-burning incinerators have serious environmental problems. But they reveal a failing that is even worse: the incinerator industry has been building these devices without fully understanding how they operate, at least with respect to their impact on the environment." (Commoner, *MAKING PEACE WITH THE PLANET* [NY: Pantheon Books, 1990], pg. 120.) In sum, both the mercury and the dioxin situations indicate that the people who design, operate, and regulate garbage burners have been conducting a massive experiment without fully understanding the conditions of the experiment or its consequences, exposing large segments of the American public to toxic effluents, claiming all the while to know precisely what they are doing. It is a stark lesson worth remembering the next time a "state of the art" facility (of any kind) is proposed for your community. Lois Gibbs of the Citizens' Clearinghouse for Hazardous Waste has said, "State of the art really just means industry's latest experiment." The recent history of the garbage burning industry seems to confirm Ms. Gibbs's maxim. Air pollution control devices that capture mercury exist; they are simply not used in the U.S. because government has not required garbage burners to use them. (It is worth noting that the National Resource Recovery Association, which promotes incineration, is a subsidiary of the U.S. Conference of Mayors, so the relationship of this industry to government is cosier than most.) Recently, all 11 solid waste incinerators in the Netherlands have been required to install activated carbon filters on their smoke stacks, to capture mercury effectively.

Of course capturing mercury from the smoke stack simply puts it into the ash, which must be landfilled somewhere. The mercury will then make its way into the local environment around the landfill, sooner or later. Ultimately, the only real solution to the problem of mercury emissions from incinerators is to stop using incinerators for solid waste management, or to stop manufacturers from putting toxic mercury into household products, or both.

Get: Robert Collins and Henry S. Cole, *MERCURY RISING: GOVERNMENT IGNORES THE THREAT OF MERCURY FROM MUNICIPAL WASTE INCINERATORS* (Washington, DC: Clean Water Action Research and Technical Center [1320 18th St., NW, Washington, DC 20036; phone (202) 457-1286, ext. 128], September, 1990. 44 pgs. \$7.50 for citizen activists; \$50.00 for for-profit groups. --Peter Montague, Ph.D.

Descriptor terms: msw; mercury; robert collins; henry cole; clean water action; incineration; health effects; nervous system disorders; mental illnesses; kidney disorders; household hazardous wastes; food; diet; chemical industry; air pollution; air quality; water pollution; waste treatment technologies; scrubbers; studies; barry commoner; msw; waste disposal industry; ash; toxic waste;

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