What's Wrong With Incineration?

The burning of solid and regulated medical waste generated by health care creates many problems. Incineration produces both toxic air emissions and toxic ash residue.[1] The air emissions affect the local environment and may affect communities hundreds or thousands of miles away. The ash residue is sent to landfills for disposal, where the pollutants have the potential to leach into groundwater. Waste treated by other methods and then landfilled will also produce leachate.

In addition to releasing the pollutants from the waste stream into the air and into the ash, burning medical waste actually creates new toxic compounds, such as dioxins. Medical waste incineration has been identified by the U.S. Environmental Protection Agency as the third largest known source of dioxin air emissions,[2] and as the contributor of about 10 percent of the mercury emissions to the environment from human activities.[3]

Many, if not most, on-site medical waste incinerators burn not only infectious waste, but also readily recyclable items such as office paper and cardboard. This destroys resources and prevents cost savings that could be recouped through recycling. Medical waste incineration's identification as a primary source of some very toxic pollutants stands in direct contradiction to the physicians' oath to "do no harm."

Dioxin

Dioxin belongs to a family of 419 chemicals with related properties and toxicity, but the term "dioxin" is often used to refer to the 29 that have similar toxicity. Dioxin is one of the most toxic chemicals known to humankind. While exposure of the general population occurs through the ingestion of many common foods, children exposed *in utero* during critical periods of development appear to be the most sensitive and vulnerable to the effects of dioxin.[4]

Dioxin exposure has been linked to disrupted sexual development, birth defects and damage to the immune system. Dioxin has been associated with IQ deficits, hyperactive behavior and developmental delays.[5, 6]

The International Agency for Research on Cancer (IARC), an arm of the World Health Organization, acknowledged dioxin's cancer-causing potential when they classified it as a known human carcinogen.[7] The U.S. Environmental Protection Agency (EPA) has determined that most Americans are exposed to dioxin through ingestion of common foods, mostly meat and dairy products. Dairy cows and beef cattle absorb dioxin by eating contaminated feed crops. The crops become contaminated by airborne dioxins that settle onto soil and plants. Dioxins enter the air from thousands of sources including incinerators that burn medical, municipal and hazardous waste.[8]

Mercury

Mercury is a potent neurotoxin, which means it attacks the body's central nervous system; it can also harm the brain, kidneys and lungs. It can cross the blood-brain barrier as well as the placenta. Mercury poisoning can cause slurred speech, impaired hearing, peripheral vision and walking, muscle weakness, mood swings, memory loss and mental disturbances. The risks of damage to the nervous systems of developing fetuses and young children are primary reasons for fish-consumption advisories, aimed at discouraging pregnant women, women of child-bearing age, and young children from eating too much fish. Studies done on women who ate methylmercury-contaminated fish or grain showed that even when the mothers showed few effects of exposure, their infants demonstrated nervous system damage. If mercury-containing items are put into a "red bag" for infectious waste and sent to an incinerator or other waste treatment technology, mercury

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will contaminate the environment. Airborne mercury then enters a global distribution cycle in the environment, contaminating fish and wildlife.

Other Hazardous Pollutants

Many other hazardous pollutants have been identified in the emissions from medical waste incinerators: arsenic, ammonia, benzene, bromodichloromethane, cadmium, carbon tetrachloride, chromium, chlorodibromomethane, chloroform, cumene, 1,2-dibromoethane, dichloromethane, dichloroethane, ethyl benzene, lead, mesitylene, nickel, particulate matter, naphthalene, tetrachloroethane, toluene, trichloroethane, 1,1,1-trichloroethane, trichloroethylene, trichloromethane, vinyl chloride, and xylenes.[9] Analysis of emissions of other treatment methods is necessary to determine if these emissions occur in the absence of combustion.

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