Georgia Environmental Health
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FACT SHEET

COMMON HEALTH CONCERNS ABOUT CREMATORY OPERATIONS

Some people have health concerns about chemicals released to the air and soil, and about noise and odors during crematory operations. There is no evidence that chemicals released to the environment near a crematory are at levels of health concern.

What is cremation?

Cremation is the process of transforming human or animal remains to basic chemical compounds of gas and bone. A crematory is a funeral facility designed specifically for cremation. According to the National Funeral Directors' Association, approximately 15% of death care services conducted each year in Georgia include cremation.

Proper cremation procedures require the removal of medical devices and implants during body preparation. Medical devices are often powered by lithium-ion batteries. If left intact, heating lithium powered devices may cause violent combustion or explosions that will damage cremation equipment, brickwork, electronic sensors and door seals. Devices and implants are identified using various methods including interviews with the guardian, mortuary and medical staff, medical records review, body and scar inspection, and metal detectors.

Following final preparations, the body is placed in a casket and incinerated. Because cremation temperatures are so high, (1400 to 1800 degrees Fahrenheit), the only remains are ash and bone, known as "cremains".

Who regulates crematories in Georgia?

Crematories are licensed and inspected by the Secretary of State under the "Official Code of Georgia Annotated; Title 43, Professions and Businesses; Chapter 18, Georgia State Board of Funeral Service Rules: Funeral Directors and Establishments, Embalmers, and Crematories" *(http://rules.sos.state.ga.us)*.

There are no federal or state environmental regulations for crematories. Studies conducted by the U.S. Environmental Protection Agency (EPA) show that crematory emissions (substances discharged into the air) are at levels well below regulatory and health guidelines. The capacity, location, odors, noise, and hours of operation of a crematory are governed by local zoning ordinances.

What is released into the air during crematory operations?

Emissions from crematory operations may include a very small amount of several chemicals. The source of many of the chemicals is the body burden from lifetime exposures that is stored in fat and tissue. Chemicals emitted by crematories may include mercury, dioxin, hydrochloric acid, nitrogen oxide, sulfur dioxide, and dioxins. These chemicals are emitted at extremely low levels and when released into the air, most break down quickly by sunlight, or are diluted and carried by the wind.

One chemical, mercury, is sometimes a concern for nearby residents. The levels of mercury emitted from a crematory are considered extremely low and do not pose a health risk. Mercury emissions from crematoria are not regulated in Georgia.

Mercury is a silver colored metal found in nature and used in manufactured consumer products such as thermometers. People can be exposed to mercury by touching it, breathing it, eating contaminated fish or other food, or drinking contaminated water. Mercury emissions from crematories are often from dental fillings; however, its use as dental amalgam is declining because inexpensive substitute materials are now available.

Mercury becomes a gas (commonly called vapor) when burned at low temperatures (80 degrees Fahrenheit). The vapors are colorless and odorless, and can travel in outdoor air long distances. It eventually falls to the ground attached to dust and rain. Repeated exposure to low levels of mercury over a long period of time can be harmful to the brain and kidneys.

While estimates of the quantities vary significantly, it appears that each cremation releases between 2 and 4 grams of mercury to the air. A mercury flow worksheet developed for Region 5 of the EPA estimates that in 2005, approximately 3,000 kilograms of mercury were released to the environment from cremation in the U.S. In comparison, regulated industrial emissions of mercury are measured in tons per year. In 2005, coal-fired power plants in the U.S. emitted approximately 53 tons of mercury (or 53,000 kilograms).

Can other chemicals from crematories affect my health?

Dioxins are emitted into outdoor air from cremation in very small amounts. The term "dioxin" refers to a group of chemicals, however the most toxic is 2,3,7,8-tetrachlorodibenzo-p-dioxin, or TCDD. Because TCDD is the most toxic, health risk associated with dioxin is discussed in terms of TCDD. In a study conducted with the California Air Resources Board, the EPA determined that TCDD emitted from *all* crematories throughout the United States was approximately 0.0000002 pounds per year, which is far less than is released from motor vehicles.

In addition, extremely small amounts of lead, cadmium, hydrochloric acid, nitrogen oxide, sulfur dioxide, and carbon monoxide are released to air, and are diluted and carried by the wind. The trace amounts of these chemicals emitted during operations will not affect outdoor or indoor air quality. Crematory emissions are far below levels of environmental and health concern and, therefore, will not affect your health.

What about noise or odors from crematories?

Unpleasant odors and loud noises noise are nuisance issues, and may affect an individual's comfort and quality of life. They can have social and behavioral affects, such as diminishing one's sense of well being, enjoyment of daily activities, and ability to perform various tasks. However, odor and noise perception is subjective, meaning different individuals may react differently to the same type and intensity of odor and noise.

Residents concerned about noise, odor, or other nuisances in their neighborhoods should refer to local nuisance ordinances, or contact their local code enforcement offices.

Sources: John Reindl, P.E. (ret), Dane County Department of Public Works, Madison, WI, *Summary of References on Mercury Emissions from Crematoria (Draft)*, Sept, 2012; U.S. Environmental Protection Agency, *Mercury*, www.epa.gov/mercury: Leopold, Barry R. Science Applications International Corporation, *Use and Release of Mercury in the United States*; EPA/600/R-02/104, Dec 2002.

FOR MORE INFORMATION

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