

Trash and Wood Burning

Why be concerned about trash and wood burning?

When wood, household garbage, plastic, or leaves are burned, they produce smoke and release toxic gases. The smoke contains vapors and solid compounds suspended in the air called particulate matter. The particulate matter and toxic gases released during burning can be very irritating to people's health.

People who are exposed to these air pollutants can experience eye and nose irritation, breathing difficulty, coughing, and headaches. People with heart disease, asthma, emphysema, or other respiratory diseases are especially sensitive to air pollutants. The chance of human health effects occurring depends mostly on the concentration of air pollutants in people's breathing zone (the air that's breathed around the nose and mouth). Typically, no adverse health effects are expected, unless people are very close to the source of smoke or the smoke isn't diluted enough with clean air.

The toxic chemicals released during burning include nitrogen oxides, sulfur dioxide, volatile organic chemicals (VOCs), and polycyclic organic matter (POMs). Burning plastic and treated wood also releases heavy metals and toxic chemicals such as dioxin.

Trash burning

Before scientists learned about the dangers of burning trash, it was commonly burned at homes and landfills. Because of the smoke, air pollution, and odor complaints of backyard burning, many local governments prohibit residential trash burning. Wisconsin state law also restricts certain types of open-burning.

Backyard trash burning is especially harmful because it releases chemicals that are persistent in the environment, polluting our air, food, lakes and streams. A recent study found that residential trash burning from a single home could release more dioxin into the air than an industrial incinerator.

Wood burning for residential heating

Most people do not know that wood smoke can be a cause of air pollution. Camp fires, residential fireplaces, and wood stoves all release toxic chemicals when they burn wood. However, burning only clean, dry wood with lots of oxygen can greatly reduce air pollution and smoke. New U.S. Environmental Protection Agency (EPA) approved wood stoves and fireplaces greatly reduce the level of air pollution. Also burning particleboard, treated, stained, painted or wet wood should be avoided because when burned, they release very toxic chemicals.

Outdoor wood burning stoves, also called waterstoves, are used to heat water for homes. These stoves operate by damping the fire to prolong the fuel source. This "damping" produces harmful chemicals and smoke due to incomplete (low temperature, oxygen starved) burning. For this reason, some local ordinances ban or regulate their use.

How does trash and wood burning cause health problems?

The gases released by trash and wood burning can cause breathing irritation. Some of these gases are called aldehydes, which cause strong irritation when they contact the eyes, nose, and throat. Aldehyde and other organic gases are the reason why smoke burns one's eyes.

Smoke from wood and trash contains very small particles that can be breathed deep into the lungs. Once trapped in the lungs, these particles can cause cell damage. The cell damage can eventually make breathing difficult. In general, the health risk posed by smoke is small, as long as the smoke is mixed with plenty of outdoor air. However, smoke from burning trash and wood can still be harmful if the smoke accumulates near homes.

The small particles in wood smoke can worsen heart conditions by preventing oxygen from reaching tissues. Breathing difficulties such as asthma, may increase in adults or children, if they breathe too much smoke. Other health problems aggravated by burning include lung infections such as acute pneumonia and bronchiolitis. Allergies can be worsened. Burning trash can cause other long-term health problems.

What can be done to reduce air pollution from residential burning?

- Do not burn residential trash, such as garbage, plastic, old furniture, or construction material, like treated wood products or particleboard.
- Become aware of state and local burning laws, e.g. Wisconsin Administrative Code NR 429.04 prohibits burning:
 - Wet cardboard, paper or other trash
 - Plastics of any kind, including milk bottles and plastic bags
 - Oily substances, such as greasy rags, oil filters
 - Rubber products, including tires and hoses
 - Asphalt, including asphalt roofing shingles or tarpaper.
- Ensure that wood stoves are properly installed and swept regularly. Reduce pollution further by increasing chimney height, allow plenty of oxygen (keeping the flue open), and burn only clean, dry, and untreated wood.
- Use cleaner heating devices, like EPA certified wood stoves. Fireplace inserts and indoor wood burning stoves manufactured after 1992 meet EPA efficiency standards. These stoves emit 85% less smoke or pollution and require 30% less wood to heat than older stoves.
- Use composting, mulching, recycling, or other garbage disposal options.
- Encourage your local government to regulate leaf burning, waterstoves, etc.

For more information

- Contact the Wisconsin Division of Public Health, Bureau of Environmental Health, PO Box 2659, Madison, WI 53701-2659, (608) 266-1120; or
- Visit the department's website, <http://www.dhs.wisconsin.gov/eh>

