

## BACKYARD BURN BARRELS VS. MUNICIPAL WASTE COMBUSTORS

When the amount of chemicals emitted from a barrel burn is compared to what is emitted from a municipal waste combustor (MWC) it becomes obvious how much dirtier the smoke is from a burn barrel than a MWC.

Pound for pound of garbage burned:

- A burn barrel emits 10,000 times more total dioxin than a MWC.
- A burn barrel emits 1000 times more total furans than a MWC.
- A burn barrel emits 3000 times more polycyclic aromatic hydrocarbons than a MWC.

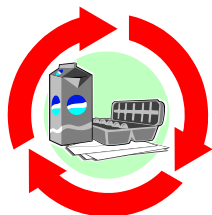
## ALTERNATIVES TO BURNING HOUSEHOLD WASTE

**Reduce:** Avoid disposable items. Buy products in bulk or economy sizes versus individually wrapped or single serving sizes. Buy durable, repairable products and products that can be recharged, reused, or refilled.

**Reuse:** Donate unwanted clothing, furniture and toys to friends, relatives or charities. Give unwanted magazines and books to hospitals or nursing homes. Mend and repair rather than discard or replace.

**Recycle:** Separate the recyclable items from your residential waste and prepare them for collection or drop-off at a local recycling program.

**Disposal:** As a last resort have your household waste picked up by a licensed waste removal company or take it to a licensed disposal facility (landfill or incinerator).



## HOUSEHOLD WASTE BURNING LAWS

Determining *if* you may burn and, if so, *what* you may burn can be confusing. Michigan residents and business owners usually want to “do the right thing” but may not be quite sure just what the right thing is. Some of the laws that regulate the burning of household waste in Michigan include Parts 55 (regarding air pollution control); 115 (regarding Solid Waste Management); and 515 (regarding Forest Fire Prevention) of the Natural Resources and Environmental Protection Act (Act 451 of 1994). In addition, local units of government such as city, county and township boards often regulate the burning of household waste through local laws.

For information regarding the regulation of open burning in Michigan, visit the DEQ Internet Website at [www.michigan.gov/deqair](http://www.michigan.gov/deqair). Open burning information is located under “Spotlight” - or- contact the Department of Environmental Quality’s Environmental Assistance Center at 1-800-662-9278.



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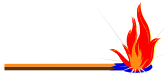
**DEQ** Michigan Department of Environmental Quality

# Burning Household Waste



## A Source of Air Pollution in Michigan

**DEQ** Air Quality Division  
Michigan Department of Environmental Quality  
Jennifer M. Granholm, Governor Steven E. Chester, Director



In many parts of Michigan -- in urban as well as rural areas -- burning of household waste continues to be the disposal method of choice for a significant part of the population. It may be illegal to burn household waste in the area where you live, or you may need a permit to burn your waste. Even if you live in an area where burning household waste is allowed there are several reasons why you should choose to dispose of your waste in another manner.

### Burning Garbage Releases Toxic Air Pollution

Household burn barrels or similar homemade devices produce low temperature fires. They receive very little oxygen and produce a lot of smoke. Under these conditions a great many toxic substances are produced. Virtually all of the pollutants are released into the air close to ground level where they are easily inhaled.

### Pollutants Are Emitted From Burn Barrels

Carbon monoxide, carbon dioxide, and nitrogen oxides represent the largest portion of pollutants emitted from burning household waste in a burn barrel. Smaller amounts of more poisonous chemicals are also released into the air when household waste is burned. Chemicals commonly detected in the smoke include benzene, styrene, formaldehyde, polychlorinated dibenzodioxins (PCDDs; also known as dioxins), polychlorinated biphenyls (PCBs), polychlorinated dibenzofurans (PCDFs; also known as furans), and heavy metals such as lead, mercury and arsenic. Estimates of garbage burned at home show that this is a significant source of air pollution (see Table 1).

### REASONS NOT TO BURN HOUSEHOLD WASTE

#### Burning household waste is unhealthy

Smoke from burning household waste is unhealthy to breathe. Small children, pregnant

women, older adults and people with asthma or other respiratory ailments are especially sensitive to its effects.

- **ACIDS & ALDEHYDES:** Smoke from burn barrels can contain hydrochloric acid as well as formaldehyde and other aldehydes. These chemicals are especially irritating to the eyes and lungs.
- **DIOXINS:** Bleached paper products, lightweight white cardboard, and certain plastics contain chlorine which create dioxins when burned with other trash at low temperatures. Exposure to dioxins is associated with cancer, birth defects and altered immune function.
- **HEAVY METALS:** Burning slick colored papers and cardboard printed with synthetic inks releases heavy metals into the atmosphere. The absorption of heavy metals by humans has been linked to birth defects and cancer.
- **STYRENE:** The burning of polystyrene polymers - such as foam cups, meat trays, egg containers, yogurt and deli containers - releases styrene. Styrene gas can readily be absorbed through the skin and lungs. At high levels styrene vapor can damage the eyes and mucous membranes. Long term exposure to styrene can affect the central nervous system, causing headaches, fatigue, weakness, and depression.

### Burning household waste harms the environment

Pollutants released from burning waste in a burn barrel are transported through the air either short or long distances, and are then deposited onto land or into bodies of water. A few of these pollutants such as mercury, PCBs, dioxins and furans persist for long periods of time in the environment and have a tendency to bioaccumulate which means they build up in predators at the top of the food web. Bioaccumulation of pollutants usually occurs indirectly through contaminated water and food rather than breathing the contaminated air directly. In wildlife, the range of effects associated with these pollutants includes cancer, deformed offspring, reproductive failure, immune diseases and subtle neuro-behavioral effects. Humans can be exposed indirectly just like wildlife, especially through consumption of contaminated fish.

### Burning household waste causes odor problems

Smoke released from burning waste in a burn barrel is released close to the ground and may drift onto a neighbor's property. Field staff from the Michigan Department of Environmental Quality Air Quality Division are frequently asked to respond to odor complaints resulting from burning garbage.

### EVERY LITTLE BIT COUNTS

The United States is a big place. How can burning a little trash be so bad? The average person in the U.S. generates 3.72 pounds of solid waste (excluding yard waste) per day. More than 50 million people live in non-metropolitan areas in America. The U.S. EPA<sup>1</sup> estimates that 40% of the people living in non-metropolitan areas burn their waste and that 63% of their daily waste is burned in burn barrels. This means that over 1.8 billion pounds of household waste is burned in burn barrels every year.

Table 1. National Emissions from Household Burn Barrels

Chemical	Estimated Emissions from all Household Waste Burn Barrels in the US (lbs./year)**
benzene	4,500,000
styrene	3,400,000
formaldehyde	3,100,000
total PCDD	139
total PCDF	22
total PCBs	10,962
hydrochloric acid	1,000,000
hydrogen cyanide	1,700,000
lead	1790
mercury	232
arsenic	8186

\*\*Based on a household that does not recycle.

<sup>1</sup> EPA. 1998. The Inventory of Sources of Dioxin in the United States. EPA/600/P-98/002Aa.