



The Dangers of Backyard Trash Burning

Ilda T. Hershey, MS
Assistant State Extension Specialist

Nicole L. Wolf
Program Research Assistant

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: <http://osufacts.okstate.edu>

What is Backyard Trash Burning, and Is It Legal to Burn Trash in Oklahoma?

Backyard trash burning is a serious problem in Oklahoma. From 2004 to 2008, three Oklahomans died and 44 were hospitalized due to backyard trash burning (Oklahoma Department of Health, 2011). Many more Oklahomans are affected though, because smoke and ash from open burning increases the risk of long-term health problems.

Open burning is defined in Oklahoma as the burning of combustible material in such a manner that the products of combustion are emitted to the outside atmosphere (Oklahoma Department of Environmental Quality, 2011).

Backyard burning (or open burning) is different than prescribed burning. Prescribed burning is a burn that is started under specific weather conditions to achieve land manage-

ment objectives, such as the burning of wheat stubble after a harvest.

Typical household trash that is burned includes:

- paper
- cardboard
- food scraps
- plastics
- yard trimmings
- leaves

While trash burning may be legal in some areas, under state law it is illegal to burn household refuse in areas where trash collection services are available. The legality of burning trash may also depend on local ordinances. Even if trash burning is legal, it is illegal to burn tires, furniture, carpet, electrical wire, and non-wood construction debris in Oklahoma (Oklahoma Department of Environmental Quality, 2009).

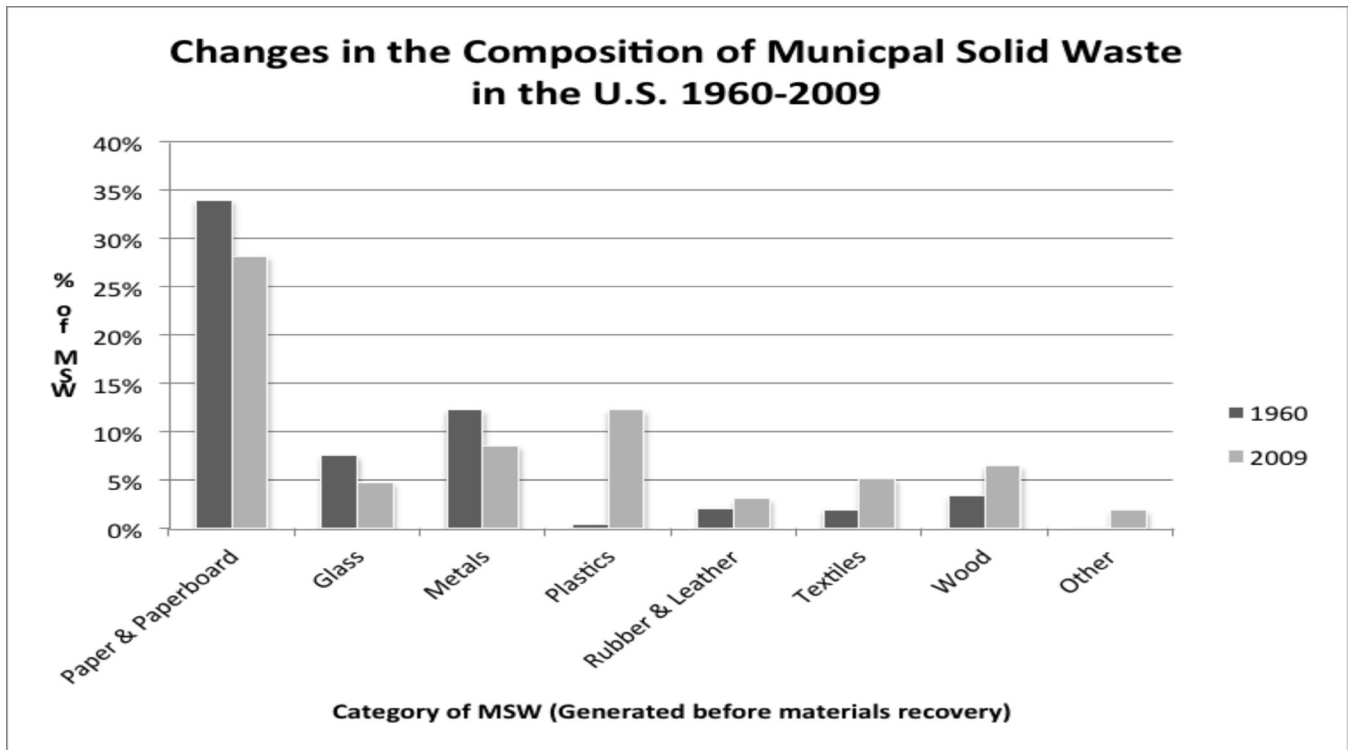


Figure 1. Municipal Solid Waste Composition. Chart Data Source: EPA, 2009.

Why is Burning Trash so Dangerous Now?

Household trash burning was a common and accepted practice in previous decades. However, with the development of new technology and products, the components of our trash have changed. In the past, household trash was primarily made up of wood and paper. Currently, household trash often contains many types of plastics, coated paper and other unnatural materials (see Figures 1 and 2).

The addition of these various types of synthetic materials to our household trash has consequently increased the levels of pollution produced by open trash burning (EPA, 2010). Furthermore, it is important to note that the estimated percentage of plastics in household trash today does not include the considerable amount of agricultural plastics being used on the farm, some of which is burned in open pits or barrels.

Open burning in burn barrels generates relatively low temperatures, usually between 400 degrees and 500 degrees Fahrenheit, and does not combust materials efficiently. This causes the release of many different types of pollutants into the air, which can lead to severe health issues, especially for children, teenagers (see Figure 3), pregnant women, older persons, and people with preexisting respiratory conditions (New Hampshire Department of Environmental Services, 2008). In addition, repeated burning at the same location can lead to a buildup of toxic substances around the burn area or burn barrel (Oklahoma Farm and Ranch Assessment System, 1995).

What are the Consequences of Burning Trash?

The open burning of trash carries with it a variety of risks, including health concerns, danger of wildfires, and many other issues. One of the chemicals released through trash burning is dioxin. Like many of the other toxic chemicals that are released, dioxins can wreak havoc on the body when inhaled, leading to adverse reproductive development, suppression of the immune system, disruption of hormonal



Figure 2. Plastics now make up more than 12 percent of the U.S. household waste stream, compared to less than 1 percent in 1960. Photo: GreenSafeguard.



Figure 3. Teenagers, one of the groups most susceptible to the dangers of open burning, are often put at risk. Photo: Kentucky Department for Environmental Protection.

systems, asthma attacks, cancer and other health problems. Dioxins are dangerous even at extremely low levels. Open burning and burn barrels do not have the same strict controls as municipal incinerators or waste-to-energy facilities, therefore significant amounts of dioxins are released during backyard trash burning (EPA, 2003).

Backyard burning is particularly dangerous because it releases pollutants at ground level where they are more readily inhaled or incorporated into the food chain (see Figure 4). Moreover, in Oklahoma, both smoke and ash can easily be carried by strong winds. Whether at the burn site or on your neighbor's property, the chemicals produced by backyard burning are released into the soil and water where they can be ingested by animals directly or by way of their feed. Such pollutants can later be passed on to humans when they consume these animals (California Air Resources Board, 2003).

In addition to dioxides, many other toxic chemicals are released through open burning:

- nitrogen oxides
- sulfur dioxide
- volatile organic chemicals (VOCs)
- polycyclic organic matter (POMs)
- hexachlorobenzene (HCB)

(Wisconsin Dept of Health Services, 2001).



Figure 4. Burning plastics and other materials in an open fire emits hazardous toxins. Photo: Andy Arthur.

The ash produced through open burning can contain heavy metals such as:

- cadmium
- lead
- arsenic
- chromium
- mercury

The release of all of these chemicals and heavy metals has been shown to have negative impacts on human health (EPA, 2009).

The release of particulate matter through trash burning can cause cardiac and respiratory problems. During the last decade it has become known that the particulate matter produced during open burning is more dangerous to human health than was previously thought (Michigan Department of Environmental Quality, 2010). In individuals with preexisting conditions, such as bronchitis, asthma, and emphysema, particulate matter can exacerbate these issues (EPA, 2010).

Furthermore, chemicals contained in smoke produced from open burning can speed the deterioration of man-made materials such as concrete, paint, and metal when these chemicals are mixed with rainwater (Oklahoma Department of Environmental Quality, July 2009).

There is also significant danger of a trash fire getting out of control during burning, which can cause wildfires, injury or death. Between 1988 and 2000, 226 Oklahomans were hospitalized for injuries related to trash burning, including three deaths (Oklahoma Department of Health, 2002). More recent statistics, as stated in the introduction of this fact sheet, indicate that fatalities caused by open burning are actually increasing in Oklahoma.

What are Alternatives to Burning Trash?

There are many alternatives to burning trash. Some of these alternatives include:

- Self-hauling trash
- Reducing the volume of trash
- Recycling
- Composting
- Chipping
- Utilizing the services of a private trash hauler

Residents can self-haul trash to a landfill, transfer station or in the case of recyclable materials, a recycling center. It can also be helpful to reduce the volume of trash. This can be accomplished through buying products with less packaging, reusing products and recycling. Donating used or left over items to charitable organizations can also help to reduce the volume of refuse. In the case of organic materials these can be composted in a compost pile for use as fertilizer or mulch (OCES, 2003).

Chipping natural vegetation for use as mulch can also reduce the volume of trash produced. Many rural areas of Oklahoma are serviced by private trash haulers. These private trash haulers offer the same services as municipal trash haulers, and often offer competitive rates. Contact your local Extension office with questions about your trash hauling options.

While open trash burning may be legal in some areas, the risks of health issues and injury along with the toxic effects to our natural environment do not outweigh the benefits. There are many alternatives to backyard trash burning that do not pose human health risks and are better for the environment.

References/Additional Reading

- California Air Resources Board (2003) "Backyard Household Waste Burning" http://www.arb.ca.gov/ch/factsheets/residential_waste_burning.pdf
- EPA (2010) Improving Air Quality in Your Community http://www.epa.gov/air/community/details/barrelburn_addl_info.html
- EPA (2009) Human Health: Backyard Burning <http://www.epa.gov/osw/nonhaz/municipal/backyard/health.htm>
- EPA (2009) "Municipal Solid Waste in the United States 2009 Facts and Figures: Table 1, Materials Generated in the Municipal Waste Stream, 1960 to 2009" <http://www.epa.gov/wastes/nonhaz/municipal/pubs/msw2009rpt.pdf>
- EPA (2003) "The Hidden Hazards of Backyard Burning" www.epa.gov/osw/nonhaz/municipal/backyard/pubs/residents.pdf
- Michigan Department of Environmental Quality (2010) "DNRE Seeks Comment on Trash Burning Amendments" <http://www.michigan.gov/deq/0,1607,7-135--237198--00.html>
- Oklahoma Cooperative Extension Service (2003) "Backyard Composting in Oklahoma"
- Oklahoma Department of Environmental Quality (2011) Oklahoma Administrative Code 252:100-13-2.
- Oklahoma Department of Environmental Quality (July 2009) Land and Air Fact Sheet.
- Oklahoma Department of Environmental Quality (2009) Oklahoma Environmental Crimes Handbook.
- Oklahoma Department of Health (2011), interview with Darrell Eberly, Chief, Chronic Disease Service and Injury Prevention.
- Oklahoma Department of Health (2002) "Injury Update: A Report to Oklahoma Injury Surveillance Participants" <http://www.ok.gov/health/documents/BrushFires.pdf>
- Oklahoma Farm and Ranch Assessment System (1995) "Reducing the Risk of Ground Water Contamination by Improving Hazardous Waste Management" <http://agecon.uwyo.edu/riskmgt/humanrisk/RRGWCHazWasteMang.pdf>
- Wisconsin Division of Public Health (2001) "Human Health Hazards: Trash and Wood Burning" www.dhs.wisconsin.gov/eh/hlthhaz/fs/woodbrn.htm

Contact:

Ilda T. Hershey
Assistant State Extension Specialist
Oklahoma Cooperative Extension Service
Solid Waste Management Programs
Oklahoma State University
536 Ag Hall, Stillwater, OK 74078
405-744-9806
ilda.hershey@okstate.edu
www.agecon.okstate.edu/waste

The Oklahoma Cooperative Extension Service

Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
 - It is administered by the land-grant university as designated by the state legislature through an Extension director.
 - Extension programs are nonpolitical, objective, and research-based information.
 - It provides practical, problem-oriented education
- for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
 - It utilizes research from university, government, and other sources to help people make their own decisions.
 - More than a million volunteers help multiply the impact of the Extension professional staff.
 - It dispenses no funds to the public.
 - It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
 - Local programs are developed and carried out in full recognition of national problems and goals.
 - The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
 - Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of \$1.35 per copy. 0911 GH