



## Open Burning

This report provides an overview of the impact of open burning on human health and the environment. It also compares Iowa's open-burning law to its neighboring states and discusses how these laws are enforced.

### **Impact on Human Health and the Environment**

The Iowa Administrative Code defines open burning as “any burning of combustible materials where the products of combustion are emitted into the open air without passing through a chimney or stack.”<sup>1</sup> Research shows that this practice emits compounds that are harmful to both human health and the environment.<sup>2</sup> The compounds include dioxins, hexachlorobenzene, volatile organic compounds, particulate matter, hydrocarbons, carbon monoxide, and nitrogen oxides.

#### Dioxins

Dioxins are a group of 30 toxic chlorinated organic chemicals. The U.S. Environmental Protection Agency has concluded that uncontrolled backyard burning is the largest contributor to the release of dioxins into the atmosphere. Dioxins settle on plants and are consumed by livestock. If these animals are slaughtered and consumed in a human diet, the dioxins can alter human cell growth and potentially cause cancers.<sup>3</sup>

#### Hexachlorobenzene

Open burning also produces hexachlorobenzene. Studies indicate that long-term, low-level exposure to hexachlorobenzene may “damage a developing fetus, cause cancer, lead to kidney and liver damage, and cause fatigue and skin irritation.”<sup>4</sup>

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<sup>1</sup> Iowa. Iowa Administrative Code. 16 Mar. 2005.

<http://nxtsearch.legis.state.ia.us/NXT/gateway.dll/IAC?f=templates&fn=default.htm>.

<sup>2</sup> United States. Environmental Protection Agency. Backyard Burning: Basic Information. 12 Nov. 2007. <<http://www.epa.gov/epaoswer/non-hw/muncpl/backyard/basic.htm>>.

<sup>3</sup> United States. Environmental Protection Agency. Backyard Burning: Human Health. 4 Sept. 2007. <<http://www.epa.gov/epaoswer/non-hw/muncpl/backyard/health.htm>>.

<sup>4</sup> Ibid

### Volatile Organic Compounds

For humans in the immediate vicinity of burning trash, volatile organic compounds also pose a health risk, potentially leading to “eye, nose, and throat irritation; headache; loss of coordination; nausea; and damage to the liver, kidney, and central nervous system.” Volatile organic compounds also react with sunlight producing substances, like ozone, that exacerbate smog.<sup>5</sup>

### Particulate Matter (PM)

Open burning releases PM into the environment. If small enough, PM can seep into human lungs and “aggravate respiratory conditions such as asthma and bronchitis.” The substance is also associated with heartbeat irregularities and heart attacks. In addition, PM creates haze and causes cosmetic damage to homes and cars. PM also transports chemicals dangerous to human health, including dioxins.<sup>6</sup>

### Hydrocarbons

Hydrocarbons released by leaf burning irritate the eyes, nose, throat, and lungs. A “substantial proportion of hydrocarbons in leaf smoke consists of polynuclear aromatic hydrocarbons, some of which are known carcinogens.”<sup>7</sup>

### Carbon Monoxide

Open burning releases carbon monoxide. At low levels, the substance can cause a variety of neurological symptoms, such as nausea, vomiting, and headaches. Like volatile organic compounds, carbon monoxide also reacts with sunlight to produce substances like ozone.<sup>8</sup>

### Nitrogen Oxides

Nitrogen oxides, also produced by open burning, contribute to climate change, ozone depletion, smog and acid rain.<sup>9</sup>

## **State Comparison**

Iowa and each of its surrounding states allow open burning under certain benign conditions, such as to abate other fire hazards, clear ditches, and, for firefighting agencies, to practice putting out fires. Additionally, the legislatures of most states allow counties and cities to adopt stricter ordinances than those imposed at the state level.

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<sup>5</sup> United States. Environmental Protection Agency. Backyard Burning: Human Health. 4 Sept. 2007. <<http://www.epa.gov/epaoswer/non-hw/muncpl/backyard/health.htm>>.

<sup>6</sup> Ibid

<sup>7</sup> Ibid

<sup>8</sup> Ibid

<sup>9</sup> Ibid

## IOWA<sup>10</sup>

Open burning is allowed in Iowa if it falls under one of the following categories:

- Disaster rubbish – any refuse resulting when a declared emergency condition exist. If entire structures are burned, they must conform to National Emission Standards for Hazardous Air Pollutants
- Landscape waste – any waste originating on the premises. However, the burn site must be at least a quarter of a mile away from any buildings that are inhabited by anyone beside the person conducting the open burn
- Residential waste – trash accumulated at dwellings occupied by up to four families
- Agricultural structures – must obtain permission from the local fire chief and be at least a quarter of a mile away from buildings inhabited by someone beside the person conducting the open burn
- Recreational fires – fires for cooking, heating, and ceremonies
- Paper or plastic pesticide containers and seed corn bags – must be a quarter mile away from occupied structures and cannot burn more than a day's accumulation or 50 pounds of bags, whichever is less
- Trees and tree trimmings – can burn at a tree-trimming pile site that is operated by local government and which is burned regularly, supervised, and fenced off from the public
- Waste gases – may be burned inside a flare stack

Iowa law allows cities and counties to enact more stringent regulations than those mandated by the legislature. Many larger Iowa cities and counties, like Iowa City<sup>11</sup> and Polk County,<sup>12</sup> have completely banned both landscape waste and trash burning. Smaller Iowa towns and counties, like Iowa Falls<sup>13</sup> and Cherokee County,<sup>14</sup> do not have regulations that are more stringent than the state law.

## ILLINOIS<sup>15</sup>

Open burning is allowed in Illinois if it falls under one of the following categories:

- Residential waste – trash resulting from regular family activities if the household is not within one mile of a city with a population of 1,000 or more
- Landscape waste – must be burned on the site where it was generated, between 9 a.m. and 5 p.m., with winds exceeding 5 mph; it cannot create a visibility hazard
- Agricultural waste – any matter, except garbage and dead animals, generated by crop and livestock production. The following restrictions apply:
  - Must burn between 9 a.m. and 5 p.m. with a wind exceeding 5 mph
  - Burning cannot create a visibility hazard

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<sup>10</sup> Iowa. Iowa Administrative Code. 16 Mar. 2005.

<http://nxtsearch.legis.state.ia.us/NXT/gateway.dll/IAC?f=templates&fn=default.htm>.

<sup>11</sup> Iowa City. Iowa City Fire Department. Iowa City Fire Department Reminds Residents Open Burning is Illegal in Iowa City. 1 Oct. 2007. <<http://www.icgov.org/news.asp?ID=5683>>.

<sup>12</sup> Polk County. Open Burning. <[http://www.airquality.co.polk.ia.us/Forms/open\\_burning.pdf](http://www.airquality.co.polk.ia.us/Forms/open_burning.pdf)>.

<sup>13</sup> Phone interview with city officials, conducted 11/04/2007

<sup>14</sup> Phone interview with county officials, conducted 11/04/2007

<sup>15</sup> City of Aurora. Open Burning. 2007. <<http://www.aurora-il.org/fireprevention/community/openburning.php>>.

- Cannot burn within one mile of town with 1,000 or more people
- Burning must occur more than 1,000 feet from residential areas or other populated areas
- Burning must be demonstrated as the only economically feasible method of disposal

## **WISCONSIN<sup>16</sup>**

Wisconsin allows open burning of landscape waste only if it is at a private residence or facilities with a special license.

## **MINNESOTA<sup>17</sup>**

Minnesota allows open burning under these areas:

- Agricultural waste
- Cities outside of the Twin Cities area may enact ordinances allowing the burning of leaves specifically, but such burning must be allowed only between Sept. 15 and Dec. 1, and limits must be set to minimize air pollution, fire damage, and nuisance conditions

## **NEBRASKA<sup>18</sup>**

Nebraska allows open burning for these purposes:

- Recreational fires
- Burning of waste gases in flare-stacks
- Agricultural fires
- Residential waste –at dwellings occupied by less than ten dwellings units

Permits must be obtained from both the Nebraska Air Quality Regulations Board and local fire authorities if burning for the following purposes:

- Destruction of dangerous materials
- Abatement of another fire hazard
- Clearing natural disaster debris
- Clearing land for construction and/or right-of-way purposes
- Destruction of trees, brush, and untreated lumber at community sites

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<sup>16</sup> Wisconsin. Department of Natural Resources. Open Burning Guide for Individual Property Owners. Feb. 1996. <<http://dnr.wi.gov/org/aw/air/hot/indvprop.htm>>.

<sup>17</sup> <http://www.revisor.leg.state.mn.us/bin/getpub.php?type=s&year=current&num=88.171>

<sup>18</sup> Nebraska. Department of Environmental Quality. Environmental Fact Sheet: Open Burning. Jan. 2007. <[http://www.deq.state.ne.us/Publications/a9f87abbcc29fa1f8625687700625436/cf82dddacf2298c86257275007171b5/\\$FILE/07-279.pdf](http://www.deq.state.ne.us/Publications/a9f87abbcc29fa1f8625687700625436/cf82dddacf2298c86257275007171b5/$FILE/07-279.pdf)>.

## MISSOURI<sup>19</sup>

Missouri allows open burning in unincorporated areas of the state for these reasons:

- Agricultural fires – must obtain a permit and burn between April 15 and September 15
- Landscape waste – must burn between 10 am and 4 pm, and between September 16 and April 14
- Within the St. Louis area, open burning may only be utilized:
  - For recreational purposes or for the noncommercial preparation of food
  - For the combustion of gaseous trade wastes under certain restrictions
  - By government authorities for a variety of reasons

## SOUTH DAKOTA<sup>20</sup>

South Dakota is unique in that it allows all open burning *except*:

- Burning hazardous materials – oils, railroad ties, coated electrical wire, rubber, tires, asphalt shingles, tarpaper, and wood products treated inorganically
- Burning in wildfire-prone areas

### Enforcement

The burden for enforcing open-burning laws rests both at the local and state levels, and varies from state to state. Iowa,<sup>21</sup> Minnesota,<sup>22</sup> and Wisconsin<sup>23</sup> rely on the states' Department of Natural Resources to enforce burning regulations. Fines range from \$500 to \$1500 per violation and, in some states, illicit open burning can result in misdemeanor criminal charges.<sup>24</sup> Typically, if local governments enact more stringent regulations than those mandated by the state, they are responsible for enforcement. Some local jurisdictions, like McHenry County, Illinois,<sup>25</sup> employ officers to enforce burning and other nuisance codes.

This report was prepared in November 2007 by the Iowa Civic Analysis Network (I-CAN), a non-partisan public policy undergraduate research group at the University of Iowa. For additional research on this or other issues, please visit our website at <http://www.uiowa.edu/~ican> or contact us at [studorg-i-can@uiowa.edu](mailto:studorg-i-can@uiowa.edu).

<sup>19</sup> Missouri. Department of Natural Resources. Facts on Open Burning Under Missouri Regulations. June 2006. <<http://www.dnr.mo.gov/pubs/pub2047.pdf>>.

<sup>20</sup> South Dakota. Department of Environment and Natural Resources. Air Quality Guidelines for Open Burning. 1 Nov. 2007. <<http://www.state.sd.us/denr/des/airquality/openburn.htm>>.

<sup>21</sup> Rust, Mark. Minnesota. Minnesota: Closing the Gaps. <<http://www.iisgcp.org/learnnot2burn/3Minn.pdf>>.

<sup>22</sup> Iowa. Department of Natural Resources. DNR Enforcement Actions. <<http://www.iowadnr.gov/legal/eactions.html>>.

<sup>23</sup> Kessler, Kevin. Wisconsin. Wisconsin: Encouraging Local Ordinances. <<http://www.iisgcp.org/learnnot2burn/3Wisc.pdf>>.

<sup>24</sup> Ehardt, Suzanne. McHenry County. McHenry County Planning. Restrictions on the Open Burning of Landscape Waste. 1 July 2003. <<http://www.co.mchenry.il.us/common/CountyDpt/PlanDev/pdOpenBurning.asp>>.

<sup>25</sup> Ibid