

**Bag 'Em--
Don't Burn 'Em**

**Leaf Burning:
Effects &
Alternatives**



**When You Can't Breathe,
Nothing Else Matters®**

How to Stop Leaf Burning in Your Community

Some people feel that autumn just wouldn't be the same without the smell of burning leaves. In Iowa communities where leaf burning is still allowed, those with some form of lung disease are forced to head inside to escape the irritation caused by the smoke.

By requesting this information you have taken an important step toward initiating and implementing a ban against open leaf burning in your community.



TABLE OF CONTENTS

• Iowans at Risk From Air Pollution	Page 2
• Effects of Leaf Burning	Page 3
• Human Respiratory System	Page 4
• Leaf Smoke	Page 5
• Tips for Banning Leaf Burning	Page 6
• Alternatives to Burning Leaves	Page 7
• Advantages to Composting	Page 7
• Examples of Leaf Burning Ordinances	Page 8
• Resources	Page 12

When You Can't Breathe, Nothing Else Matters



This booklet was developed by the American Lung Association of Iowa,
5601 Douglas Ave., Des Moines, IA 50310
(515) 278-5864 * 1-800-LUNG-USA

Iowans at Risk From Air Pollution

Approximately one in every six people is susceptible to the irritating effects of smoke from burning leaves. They include:

- **Children under age 10**
397,598 Iowa children are under the age of 10 (1992)
- **People over age 65**
433,114 Iowans are over age 65 (1990)
- **Pregnant women**
- **People with asthma**
105,209 adults and 54,058 children in Iowa suffer from asthma (1999)
- **People with chronic respiratory diseases**
23,625 Iowans suffer from emphysema (1999)
159,008 Iowans suffer from chronic bronchitis (1999)
- **Smokers**
23% of Iowa's adult population smokes
- **People with heart disease**
One in six men and one in seven women in Iowa has heart disease (source: American Heart Association)
- **People with allergies**



Statistics on Iowans at risk in your county are available from the
American Lung Association

Effects of Leaf Burning

- The continued allowance of open burning leaves in Iowa communities poses many threats to Iowans: economically, medically and emotionally. Effects of leaf burning include:
- Increased hospitalizations for respiratory illnesses.
- Increased costs for trips to the doctor and medications for sensitive people.
- Increased mortality.
- Decreased visibility from intense leaf burning which increases the potential for auto accidents and death.
- Costs related to out-of-control fires such as personal injuries, property damage and cost for the fire department.
- Personal injury and increased potential for injury to children.
- Airborne particles can aggravate the symptoms of those with respiratory problems.
- Those with chronic problems such as allergies and asthma are affected.
- 85% of the particles from leaf smoke are inhaled deep in the lungs which can cause adverse physical or chemical effects.
- Serious forest and grass fires may result from out-of-control leaf fires.
- The smoke from burning leaves affects more than just the yard or neighborhood where the burning occurs.
- Those experiencing respiratory problems have decreased mobility and cannot enjoy the fall season.
- Damage to streets can occur from the piles of burning leaves.
- Taking account the results of burning leaves such as illness, decreased strength and a shortened life span, it must be realized that in the long run these things cannot be measured in a dollar amount.

The Human Respiratory System

The tracheobronchial region of the human lungs is made up of both large and small airways. If particles are deposited in the lungs over a period of time in sufficient quantity, it can lead to disease.

The largest particles that are inhaled will be removed by the sinus passages.

The medium particles are usually carried out by the cilia (hairlike projections whose constant motion carries foreign material out of the lungs) and mucous in that portion of the lungs.

The smaller particles are able to go directly into the bloodstream.

Any excess material will build up and interfere with the passage of air through the lungs and will eventually lead to disease.

Particles less than 1 micron in size can reach the deep regions of the lungs.

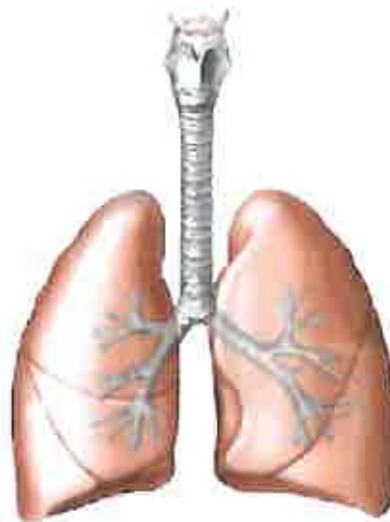
Human Respiratory System

Filtering:

The nose - 7 microns and above

Secondary Bronchi - 2.0 to 3.3 microns

Alveoli - Back up filter, submicron



Trachea & Primary Bronchi - 3.3 to 7.0 microns

Terminal Bronchi - 1.1 to 2.0 microns

85% of the particles from burning leaves travel deeply into the lungs, placing an unnecessary burden on the respiratory system.

Leaf Smoke in The Lungs

Leaf burning gives off major pollutants in the form of particulates, hydrocarbons and carbon monoxide. In addition to the chemical pollutants released, mold spores are distributed in the plume of the fire. These spores may affect people with allergies.

Particulates - Make up the majority of the leaf smoke. Particulates that are small in size reach the pulmonary region, the deepest part of the lungs. It is in the pulmonary region where the alveoli facilitates gas exchange and oxygen is supplied to the bloodstream. Particles that are small enough may be absorbed directly into the bloodstream. These particulates can be toxic. The toxic chemicals that adhere to the particles can cause the greatest health threat.

High Risk Groups For Particulates

- Those with cardiovascular problems
- Asthmatics
- Children 0-6 years
- Some people with bronchitis and emphysema

Hydrocarbons - The unburned chemicals in combustion. Leaf smoke contains seven hydrocarbons known to cause cancer. Eighty-five percent (85%) of the hydrocarbons given off by leaf smoke are small enough to reach the deepest part of the lungs and eventually are absorbed into the bloodstream.

High Risk Groups For Hydrocarbons

- Those with cardiopulmonary problems
- Those with cardiovascular problems
- Tobacco smokers

Carbon Monoxide - Combines with hemoglobin in the blood and reduces the blood's oxygen carrying capacity. Relatively low levels of carbon monoxide can cause dizziness, headaches and fatigue. Most of the carbon monoxide inhaled will be absorbed into the bloodstream.

High Risk Groups For Carbon Monoxide

- Those with cerebrovascular problems
- Those with cardiovascular disease
- Those with anemia
- Those with chronic lung diseases
- Unborn fetuses
- Newborn infants and children
- Tobacco smokers
- Post coronary joggers
- The elderly

On average, 1 ton of leaves will produce 38 pounds of fine particulate matter, 26 pounds of hydrocarbons, and 112 pounds of carbon monoxide.

Tips for Banning Leaf Burning

- Educate yourself first. Get all the information you can on leaf burning. Find out such things as cost effectiveness, health effects and alternative methods for disposing of the leaves within your community.
- Generate community support for banning leaf burning before presenting the issue to the city council. Find council members or supervisors who will endorse your efforts. Call council members individually to see if they would be in favor of a ban.
- Involve community or activist groups for support such as women's groups, local organizations or a Sierra Club that are in favor of a ban and will support your efforts.
- Invite people in the community to sign a petition supporting a ban on leaf burning.
- Research alternative methods such as composting or mulching.
- Ask the health department or the American Lung Association to speak about the harmful effects of leaf burning. This will add credibility to the issue in your community.
- Obtain accurate information about hospital costs, insurance costs and fire damage costs related to leaf burning.
- Talk to the local fire chief and find out about the number of calls for out-of-control fires due to the burning of leaves.
- Develop a public information campaign to encourage alternative disposal methods for the leaves.
- Find out if there is funding available to monitor the local air quality during the leaf burning season.
- Every community will be different in regard to how bans are made effective.
- Find out how to get on the agenda at the next city council meeting.
- If a complete ban will not be put into effect, would the city council consider a compromise such as a partial ban?

**Remember: There is power in numbers!!
Get as much support behind you as possible!!**

Alternatives to Burning Leaves

- **Mulching**

- Adds vital nutrients to the soil
- Prevents wind and water erosion

Shred leaves while mowing and leave on your lawn. Most lawn mowers now come with a detachable mulching blade, or you can purchase one for you mower at a minimal cost.

- **Use leaf mulch around shrubs and garden plants**

- Discourages weeds
- Reduces moisture loss
- Helps control temperature
- Provides a neat, finished appearance

- **Home composting of leaves for use as a fertilizer and soil conditioner**

- A properly managed compost pile emits no odors
- Adds vital organic matter to build up soil and retain more moisture

How to make a leaf compost pile

1. Select an out-of-the-way area that is accessible to water.
2. Make a 2-foot deep pit or enclose the compost pile in fencing or other framework.
3. Place leaves in loose layers, alternating with soil and other vegetative waste.
4. Leaves will decompose faster if a high nitrogen fertilizer is added to each layer.
5. Keep moist
6. Cover with straw, tarp or plastic to retain heat.
7. Keep well aerated by frequent turning of the pile after a few weeks to ensure all parts are thoroughly mixed.

Advantages to Recycling Your Leaves

- Save money in costs of peat and fertilizer
- Reduce the city's waste collection load at less cost to the tax payer.
- Reduce the danger of leaf fires.
- Reduces the city's air pollution problem as caused by leaf burning.
- Eliminate the waste of a material that could be of benefit to you.

- **Bag your leaves for collection**

Examples of Leaf Burning Ordinances

Ordinance No. 91-3489

AN ORDINANCE TO AMEND CHAPTER 24, MISCELLANEOUS PROVISIONS, TO PROHIBIT OPEN BURNING IN IOWA CITY.

WHEREAS, open burning of garden waste and rubbish have been shown to cause high levels of air pollution in Iowa City; and

WHEREAS, air pollution resulting from open burning is a significant cause of respiratory problems for many citizens.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF IOWA CITY:

SECTION 1. Chapter 24 be amended by adopting the following:

“ARTICLE XI. OPEN BURNING PROHIBITED

Sec. 24-171. Open Burning Prohibited

No person shall ignite, cause to be ignited, permit to be ignited, allow, or maintain any open fire.

Sec. 24-171. Exceptions

(a) Open burning of the following types may be permitted, in compliance with Fire Department:

- (1) Ceremonial or Controlled Bonfires. Ceremonial or controlled bonfires may be permitted.
- (2) Disaster Rubbish. The open burning of rubbish, including landscape waste, may be permitted for the duration of the disaster period in cases where an officially declared emergency exists.
- (3) Prescribed Agricultural Burns. The open burning of fields may be permitted if necessary for the maintenance of native prairie grass.
- (4) Training Fires. Fires set for the purpose of bonafide instruction and training of public, institutional, or industrial employees in the methods of fire fighting.
- (5) Flare Stacks. Open burning or flaring of waste gases may be permitted.

(b) Open burning for campfires and outdoor cooking is permitted without any burning permit if performed in an approved container constructed of steel, brick, or masonry.

Sec. 24-172. Penalties.

Any violation of this article shall be considered a misdemeanor or municipal infraction as provided for under Chapter 1 of the Code of Ordinances of the City. Such remedies shall be deemed cumulative in nature.

SECTION II. REPEALER. All Ordinances and parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed.

SECTION III. SEVERABILITY. If any section, provision, or part of the Ordinance shall be adjudged to be invalid or unconstitutional, such adjudication shall not affect the validity of the Ordinance as a whole or any section, provision or part thereof not adjudged invalid or unconstitutional.

Ordinance No. 91-3489

Page two

Passed and approved this 19th day of February, 1991.

MAYOR

ATTEST _____

Approved by

City Attorney's Offices

firc/openburn.ord

Section 9. OPEN BURNING

- A. No person shall ignite, cause to be ignited, permit to be ignited or suffer, allow or maintain any open burning except as follows.
1. Open burning of the following types may be allowed provided a valid open burning permit is obtained:
- a. Dangerous Materials. Fires for the disposal of dangerous materials or for the prevention of a fire hazard when other alternative methods of disposal are not available or impractical.
 - b. Training Fires. Fires set for the purpose of bonafide instruction, and training of public and/or industrial employees in the methods of fire fighting. These fires shall not contain any asphaltic or asbestos materials.
 - c. Disaster Rubbish. The open burning of rubbish, including landscape waste, for the duration of the community disaster period in cases where an officially declared emergency condition exists.
 - d. Flare Stacks. The open burning of flaring of waste gases, providing such open burning or flaring is conducted in compliance with Section 6 of this code.
 - e. Landscape Wastes. fires set for the disposal of landscape wastes including grass, leaves, weeds, trees, tree limbs, natural growth for land clearing, agricultural wastes, etc., providing these fires comply with Section 6 of this Ordinance.
 - f. Ceremonial Burning. Fires for ceremonial/recreational purposes such as American Legion flag burning, pep rallies, religious ceremonies, etc. These fires must be under the legitimate sponsorship of a bonafide civic, fraternal, religious, educational, or similar organization and must comply with Sections 6 and 10 of this Ordinance.
 - g. Other Burning. Other open burning such as but not limited to native prairie management may be allowed on a case by case basis, through the issuing of an open burning permit, provided the Air Pollution Control Officer has determined, that the burning will not adversely affect the air quality or will not violate any Sections of this Ordinance and is reasonable and practical as compared to other alternatives available.

Open Burning Permits shall be issued by the Linn County Air Pollution Control Officer and the fire district having jurisdiction at the place of burning. Burning permits are valid provided the following conditions are met and maintained.

- i. Burning is conducted during the dates stated on the permit;
- ii. Unless otherwise approved by the Air Pollution Control Officer and the Fire Chief having jurisdiction, burning shall be conducted during the hours of one half hour after sunrise until one half hour before sunset;
- iii. Burning is conducted in a safe and reasonable manner so as not to endanger life or property;
- iv. Fires must be attended by the person the permit is issued to or his or her agent at all times. This person shall have the burning permit in their possession at the time of burning.

- v. Open burning permits must be signed by the Air Pollution Control Officer and the fire district having jurisdiction at the place of burning.
 - vi. A fee of two dollars shall be charged for the issuance of open burning permit and shall be paid to the Linn County Health Department before permits are issued. Any permits issued for a period greater than one month duration shall be charged at the rate of two dollars per each month in length.
2. The following types of open burning are exempt and may be conducted without an open burning permit.
- a. Open burning use solely for cooking out or barbecuing of food. These fires must be no larger than two feet in diameter.
 - b. Camp fires, burning clean wood material, when in association with camping out or similar related recreational activities provided that these fires comply with all other sections of the Ordinance and are no larger than three feet in diameter.
 - c. Fires for the disposal of household rubbish (including grass and leaves), but not to include rubber, and asphaltic compounds, or garbage at dwellings of four family units or less, conducted in an approved container. An approved container shall be any container whose capacity does not exceed three bushels in volume and has a one inch spaced wire or other suitable spark arresting device for the control of wind blown materials.

B. Unavailability of Exemptions in Certain Areas. Notwithstanding Section 9(A) (1) (e) & (A) (2) (C) no person shall allow, cause or permit the open burning of residential waste, including landscape waste and leaves, within the city limits of Cedar Rapids, Hiawatha, Marion.

C. Any fire in violation of this Ordinance may be ordered extinguished by any agency designate by the Air Pollution Control Officer. This provision shall not limit the Air Pollution Control Officer from seeking penalties provided for in this Ordinance.

Resources

Following is a listing of statewide resources for you to contact. The state offices can put you in contact with their local affiliates.

Department of Natural Resources
(515) 242-5100
WWW.IOWACLEANAIR.COM

Polk County Air Pollution
(515) 286-3351

Linn County Health Department
(319) 398-3551

Your local health department

League of Women Voters
4815 University Avenue, Suite 3
Des Moines, IA 50311
(515) 277-0814

Sierra Club
3500 Kingman Blvd.
Des Moines, IA 50311
(515) 277-8868

Your local fire department for statistics on fires related to out-of-control leaf fires

Local hospitals for statistics on increased admissions from respiratory problems during leaf burning season

American Lung Association of Iowa
5601 Douglas Ave.
Des Moines, IA 50310
515-278-5864
1-800-LUNG-USA (586-4872)

References

American Heart Association

Iowa Department of Public Health
US Census Bureau

Iowa Department of Natural Resources

American Lung Association
Estimated Prevalence and Incidence of Lung Disease by Lung Association Territory, 1996

