OPEN BURNING

Kentucky Division for Air Quality

What Is Open Burning?

As defined by the EPA:

- Any open flame in the environment, including wildfires, camp fires, ceremonial fires, etc.

As defined by the Division for Air Quality:

- Burning any matter without an approved burn chamber or without an approved stack/chimney with control devices.

Impact to Human Health

Most open burning is prohibited in Kentucky because toxic gases are often emitted, which harm human health and/or the environment.

Air pollution created from open burning can:

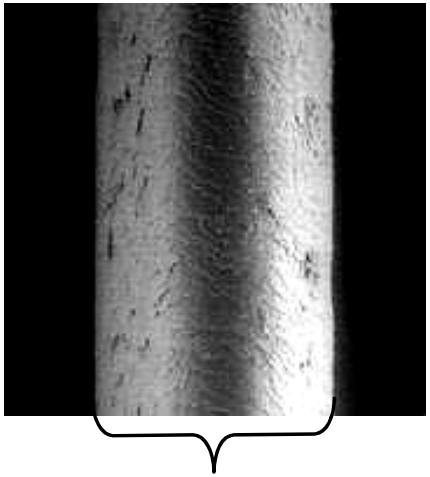
- Cause respiratory diseases such as asthma, emphysema, and chronic bronchitis.
- Irritate the eyes and skin, depress the central nervous system, and cause headaches, dizziness, and fatigue.

Smoke from open burning contains harmful substances, such as:

- **Dioxins** that can cause birth defects, and have been linked to cancer in humans.
- **Particulate matter**, which can become trapped in the lungs.
- **Volatile organic compounds** including acetaldehyde, formaldehyde and naphthalene. VOCs are a precursor to ozone formation.
- **Corrosives** like hydrochloric acid.

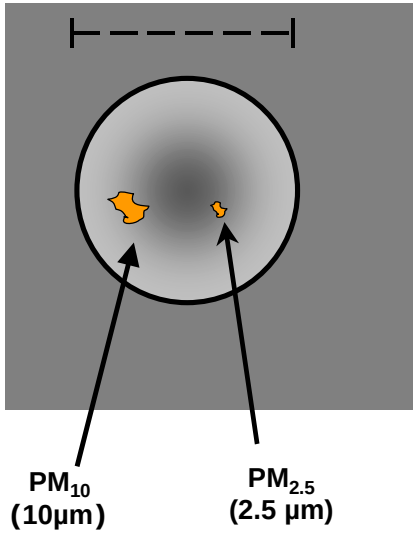
Particulate Matter: What is It?

A complex mixture of extremely small particles and liquid droplets



Human Hair (70 µm diameter)

Hair cross section (70 µm)



M. Lipsett, California Office of Environmental Health Hazard Assessment

- Lung irritant
- Associated with heartbeat irregularities and heart attacks
- May contain more harmful particles, such as dioxins

Ozone: Good or Bad?

- Good up high (filters overhead UV light)
- Bad near by (manmade pollutant that causes breathing difficulties)
- O_3: Bad (ground-level) ozone is formed when NOx and VOCs combine in the presence of heat and strong sunlight.

Dioxin

- A study conducted by EPA and the New York State Department of Health revealed that burning ordinary household rubbish in a barrel generated large amounts of dioxins and furans.
- Dioxin is a persistent compound that bio-accumulates in fatty tissues.
- Exposure to dioxin can alter the fundamental growth and development of cells that can lead to:
  - Immune system suppression
  - Disruption of hormonal systems
  - Cancer

Volatile Organic Compounds

- Formaldehyde: Colorless, pungent smelling gas
- Commonly found in pressed wood products, paints, coatings, siding, urea-formaldehyde foam and fiberglass insulation.
- Symptoms of exposure >0.1 PPM include:
  - Watery eyes
  - Burning sensation in eyes and throat
  - Nausea
  - Difficulty in breathing: Coughing, chest tightness, wheezing
  - Skin rashes
  - May cause cancer

Corrosives

- Hydrochloric Acid
- Commonly released when PVC pipe or other Poly Vinyl Chloride products (#3 plastics) are burned
- Symptoms of exposure include:
  - Dermatitis, skin burns
  - Rhinitis, laryngitis, tracheitis, hoarseness, choking
  - Bronchitis, pulmonary edema, cough
  - Nausea, vomiting, abdominal pain, diarrhea, dehydration
  - Convulsions, chills
  - Shock, lethargy, stupor
  - Permanent visual damage
  - Circulatory collapse which may lead to death

Environmental Impact

Open burning pollutes the air that we breathe; particulate matter from open burning can contaminate and accumulate in water and soil.

Open Burning
Creates a Fire and Safety Hazard
A small burn. . .

Photo by John McColgan, US Forest Service Firefighter

. . .could turn into a disaster. An estimated 35-40% of Kentucky's wildfires start when open burning gets out of control.

Open Burning may be Legal or Illegal

- ***When, where,* and *how* a material is burned, and *what* the material is, determines if the burn is legal or illegal.**
- **Local county/municipal ordinances may have more stringent rules than the state regulation described in this presentation.**

Legal Burning Activities

- Fires set for recreational or ceremonial purposes (camp fires, bonfires)
- Fires set for cooking (camp fires)

Legal Burning Activities

- Comfort heat fires if:
  - ambient temperature is ≤ 50 degrees Fahrenheit;
  - Excessive or unusual smoke is not created
  - Only clean lumber or vegetative matter is burned; and
  - The fire is burned in a container not exceeding fifty-five (55) gallons in size.

Legal Burning Activities

- Burning of natural growth disturbed as part of land clearing and maintenance (development sites, etc.) if:
  - Burning is limited to two (2) contiguous acres at any one time
  - No materials such as tires or heavy oil which tend to produce dense smoke are used to cause ignition or aid combustion, and
  - The burning is done on days when conditions do not pose a threat of igniting a forest fire.

Legal Burning Activities

- Trees and/or tree limbs, felled by storms
- Flood debris composed only of vegetative debris (plastics, etc. removed)

Legal Burning Activities

- Fires set to dispose of household rubbish
  - Material and trash, excluding garbage, accumulated by < five (5) family units on a daily basis, if the fires are maintained by an occupant.
  - Really allows only burning of paper products.

Does *not* include:

- Garbage, defined as putrescible animal or vegetable matter
- Plastic materials, foam insulation, Styrofoam, etc.

Legal Burning Activities

Fires set for recognized agricultural, ecological, silvicultural, range, or wildlife management practices.

Legal Burning Activities

Fires set for the purpose of instruction and training of firefighters, as recognized by the KY Fire Commission .

Legal Burning Activities

- Fires set to burn leaves:
  - In cities with < 8,000 population

The following counties are not allowed to burn leaves during the ozone season:

- Jefferson, Boone, Kenton, Campbell, McCracken, Boyd, Henderson, Bullitt and Oldham

- Remember, check w/ local city or county agencies on any further restrictions.

When can Approved Material be Burned?

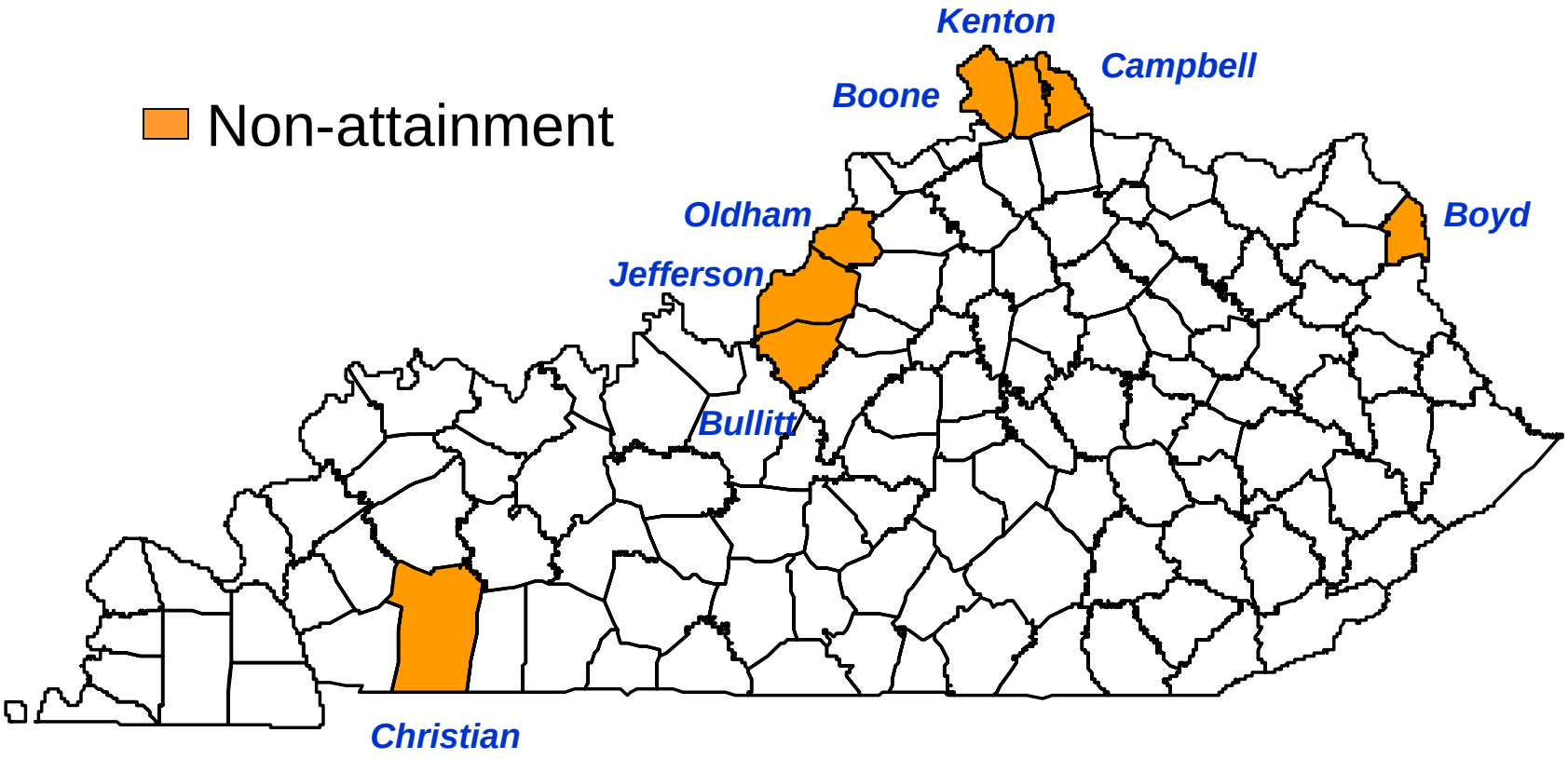
Approved materials may be burned anytime, *EXCEPT:*

•In current or previous non-attainment areas for Ozone & Particulate Matter, between the dates of May 1- September 30

•During fire season (February 15 - April 30 and October 1 - December 15), between 6 am and 6 pm, and only when the wind is at a minimum.

EPA's 8-hour Ozone Non-attainment Designations

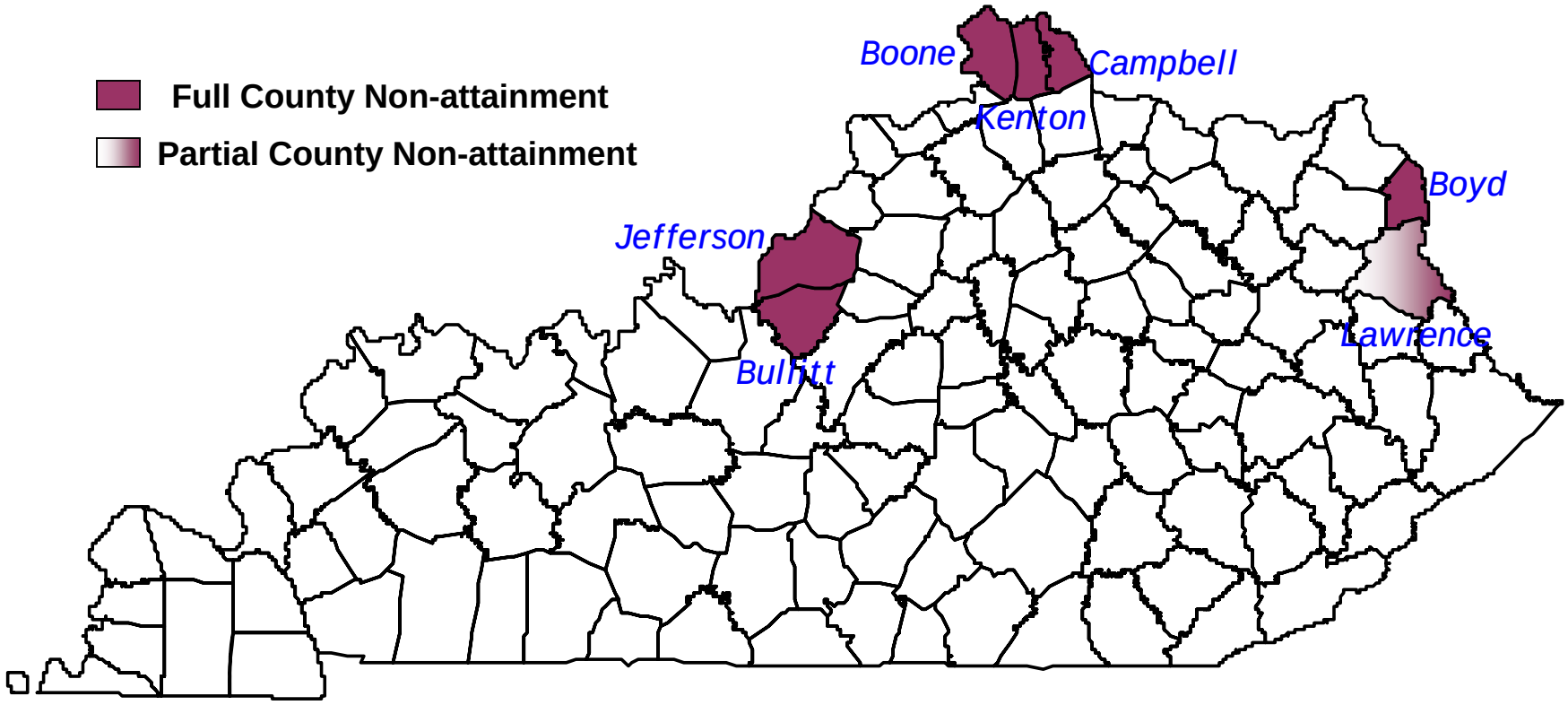
Published April 5, 2005
Based on 2002-2004 Monitoring Data



EPA's PM2.5 Non-attainment Designations

Published April 5, 2005

Based on 2002-2004 Monitoring Data



Where Can You Burn Approved Materials?

- During fire season, at least 150 feet from the nearest forested area.
- Use common sense to locate fires away from nearby residences or businesses.
- Do not locate fires near streams, sinkholes, or under/over utility lines.
- Check to make sure local city/county ordinances allow burning.

What Burning Methods Are Allowed?

Open fires

Air Curtain Burners

Approved burn chambers with stacks/chimneys

55-gallon drums used for comfort heat fires

Air Curtain Burners

- Air Curtain Burners (ACBs) provide another way to legally dispose of <u>specified</u> types of debris.
- ACBs are contained units that supply air to minimize particulate matter.
- ACBs are allowed by **40 CFR 60, subpart CCCC,** a regulation that applies to municipal solid waste incinerators.

40 CFR 60, subpart CCCC

1. Exempts air curtain burners from certain requirements, as compared to incinerators.

40 CFR 60, subpart CCCC

2. Requires that opacity during startup remain ≤ 35% & ≤ 10% opacity during operation.

- Recordkeeping is required.
- Determination of opacity will require that someone becomes certified to read opacity.

40 CFR 60, subpart CCCC

3. Limits usage to burning **only** clean wood waste, clean lumber, yard waste, or combinations of all three.

Wood Waste

- Untreated wood and untreated wood products
- Tree stumps and tree limbs (whole or chipped)
- Felled trees
- Bark, sawdust, chips, scraps, millings and shavings

Does not include:

- Yard waste
- Construction, renovation, or demolition wastes
- Clean lumber

Clean Lumber

Wood or wood products that have been cut or shaped and include wet, air-dried, or kiln-dried wood products.

Does not include:

- Commercial or industrial waste
- Wood products that have been:
  - Painted,
  - Pigment-stained, or
  - Pressure-treated by compounds such as CCA, pentachlorophenol , or creosote.

Prohibited Burn Items

Open burning of the following items is PROHIBITED at ALL TIMES!

Prohibited Burn Items…

- Tires
- Garbage
- Plastic
- Rubber
- Coated Wire
- Insulated wire
- Motor Oil
- Used Oil

Prohibited Burn Items: Garbage

Sample List

- Plastic
- Styrofoam
- Plastic coated papers
- Metal
- Food items
- Aerosol cans
- Bedding material
- Treated lumber

Prohibited Burn Items: Construction/Demolition

- Asbestos materials
- Buildings (houses, barns, garages)
- Construction debris
- Demolition debris
- Drywall
- Shingles

Prohibited Burn Items: Wood

- Fence posts
- Painted wood
- Pallets
- Treated wood
- Wood mulch

Prohibited Burn Items: Agricultural

- Hay
- Animal bedding
- Muck piles (horse manure/hay)

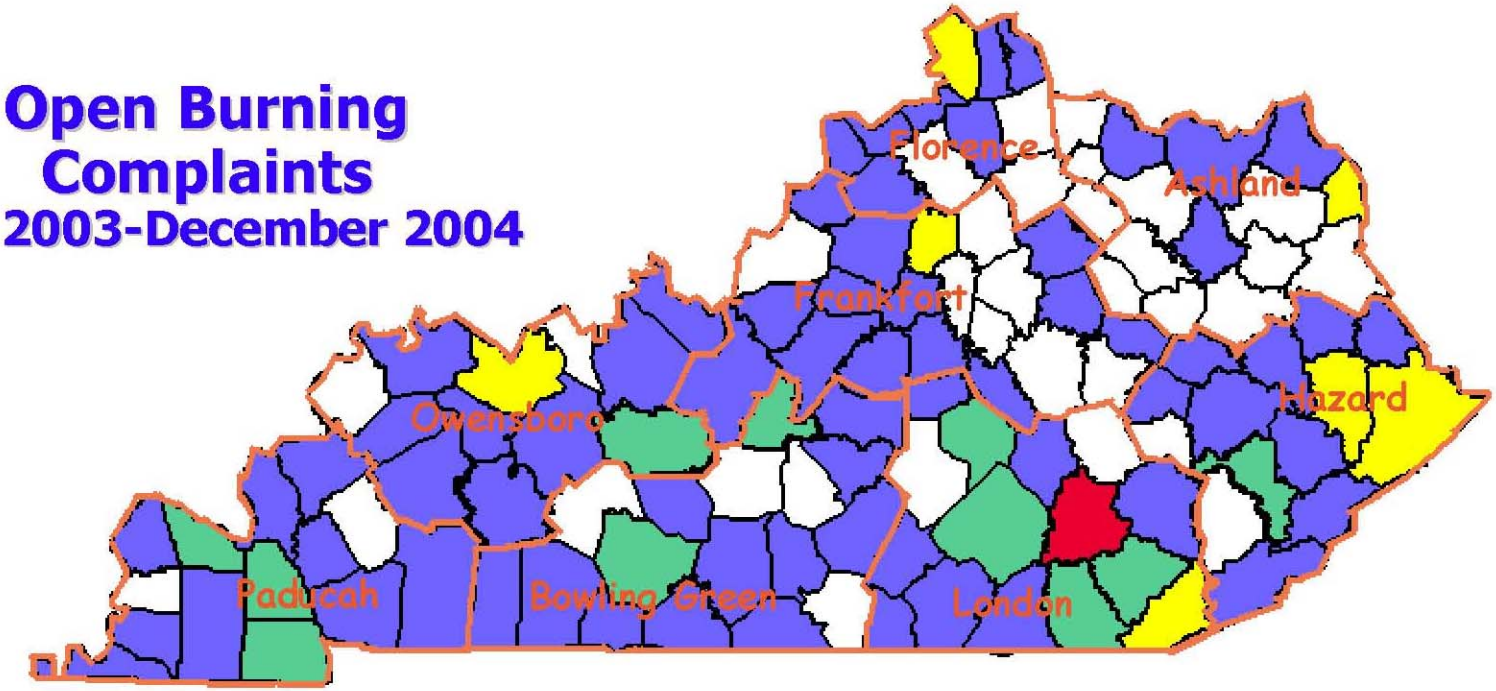
Prohibited Burn Items:

- All chemical containers

Illegal open burning has continued to be a serious issue for many years in Kentucky.

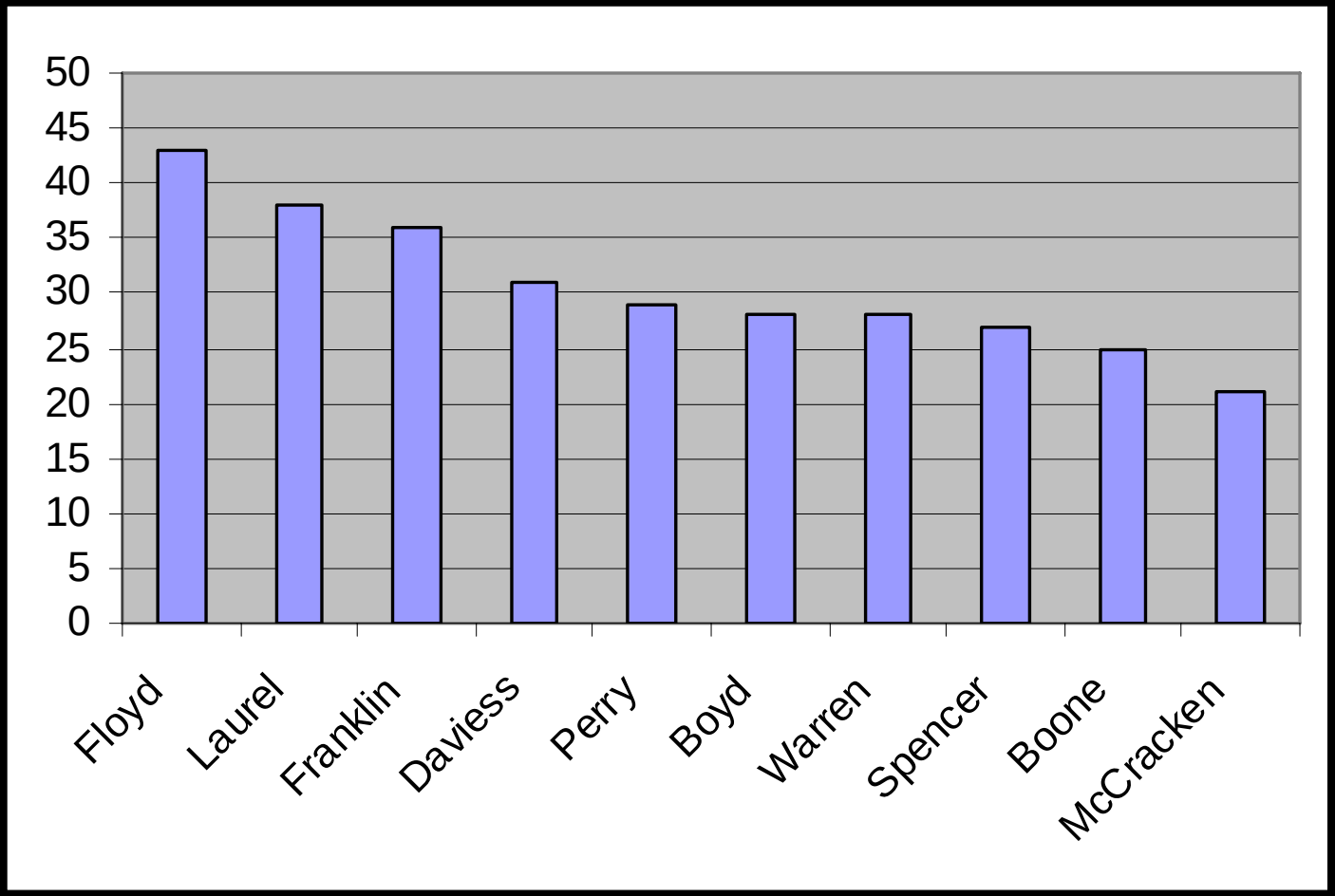
- In 2003, the Division for Air Quality received 223 open burning complaints, which resulted in the issuance of 105 Notices of Violation.
- In 2004, DAQ received 344 open burning complaints, and issued 215 citations.
- In 2005, DAQ received 456 open burning complaints and issued 308 citations .

Open Burning Complaints
July 2003-December 2004

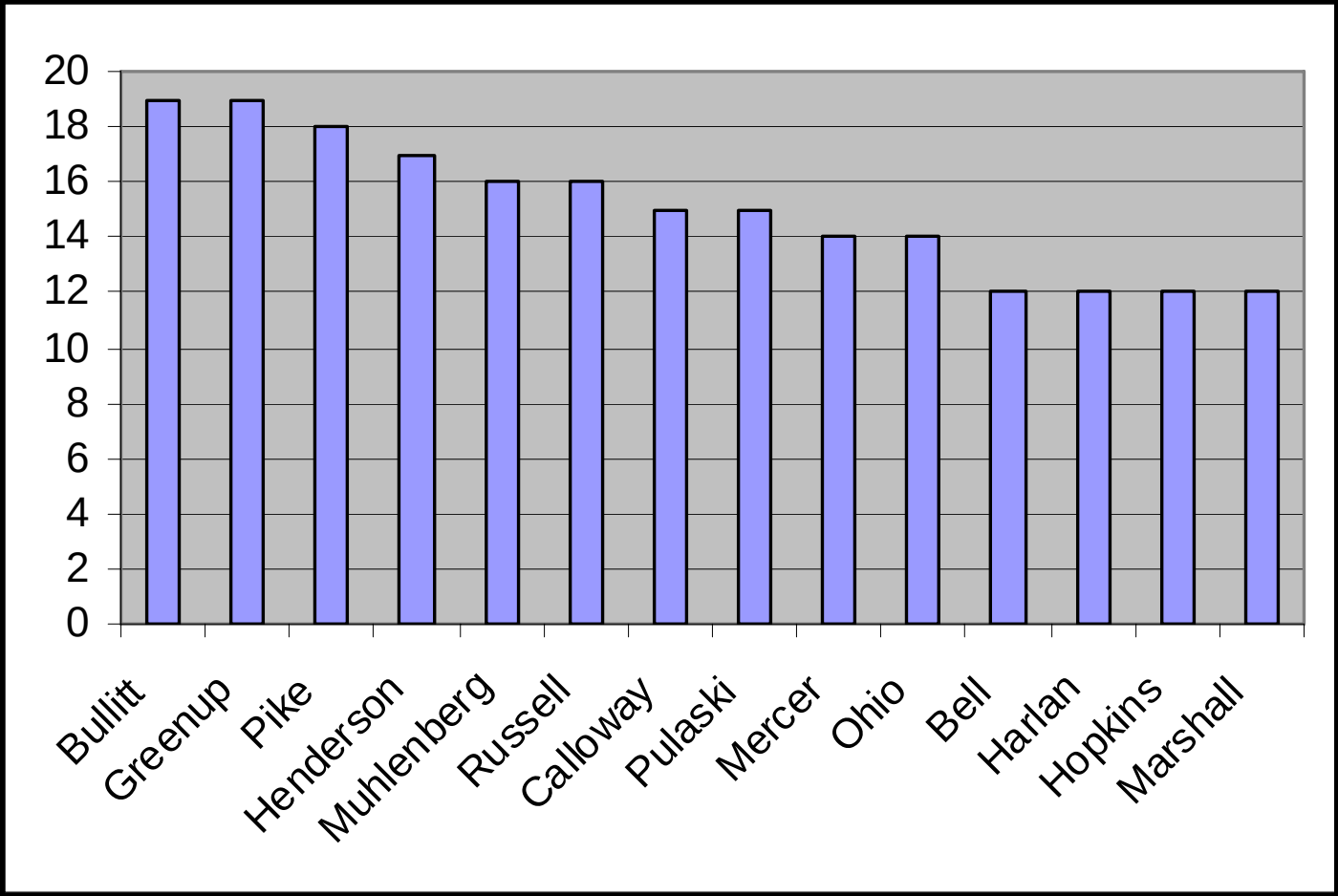


- Zero
- 1 - 5
- 6 - 10
- 11 - 15
- 16 or greater

Open Burning Complaints 2004-present



Open Burning Complaints 2004-present



Open Burning Complaints 2004-present

11 Complaints:

Grayson, Hardin, Knox, Shelby

10 Complaints:

Woodford, Barren, Garrard, Hart, Henry, Lincoln, Logan

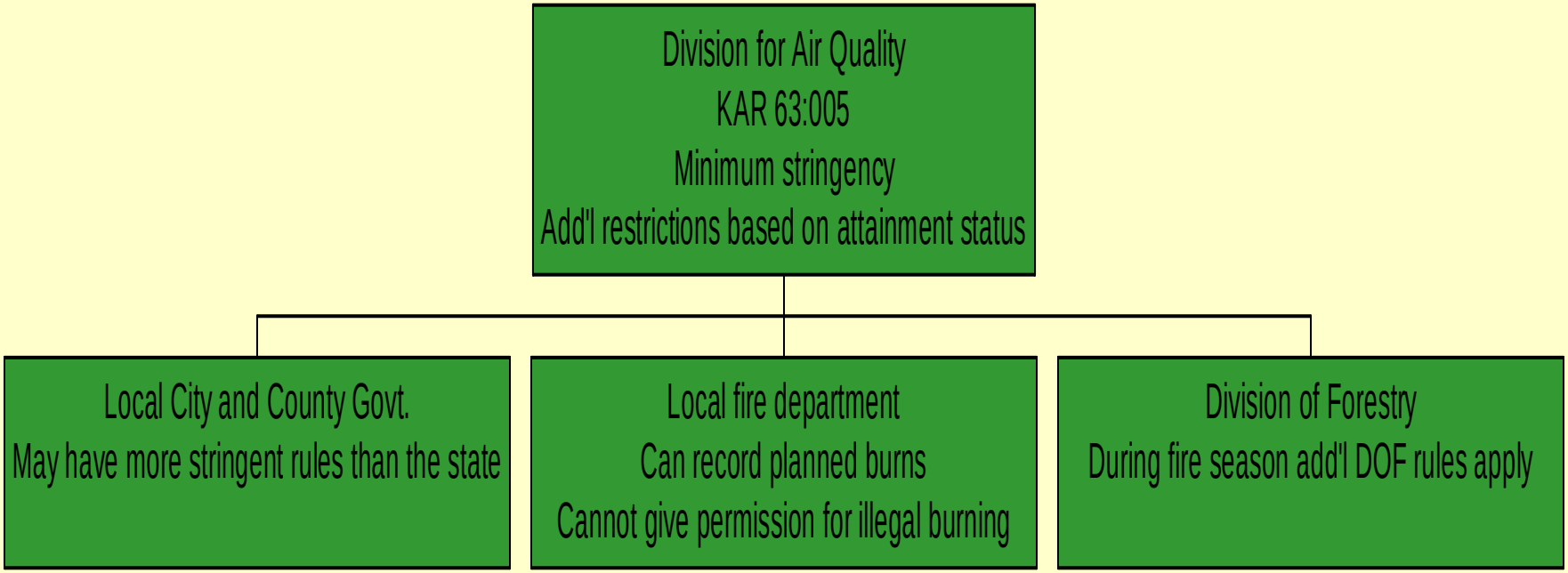
Most Open Burning is Not Necessary!

- Brush could be composted, piled up to provide wildlife cover, or simply left to decay.
- Most debris can be recycled.
- Debris that is not recyclable should be land-filled.
- By making a few sensible choices, you can reduce the amount of disposable materials you create in the first place!

Illegal open burning could result in a fine of up to **$25,000** per day per violation.

In addition to Division for Air Quality rules, other state and local regulations may apply. The Kentucky Division of Forestry and the State Fire Marshal's Office have regulations aimed at ensuring a blaze does not spread. Many city and county governments have ordinances regarding outdoor fires.

Open Burning Flow Chart



For More Information Concerning Recycling, Contact:

KY Division of Waste Management
14 Reilly Road
Frankfort, KY 40601
Phone: (502) 564-6716 Fax: (502) 564-4049
Email: waste@ky.gov

Tire Amnesty Program:
http://www.waste.ky.gov/programs/rcla/Tire+Amnesty.htm

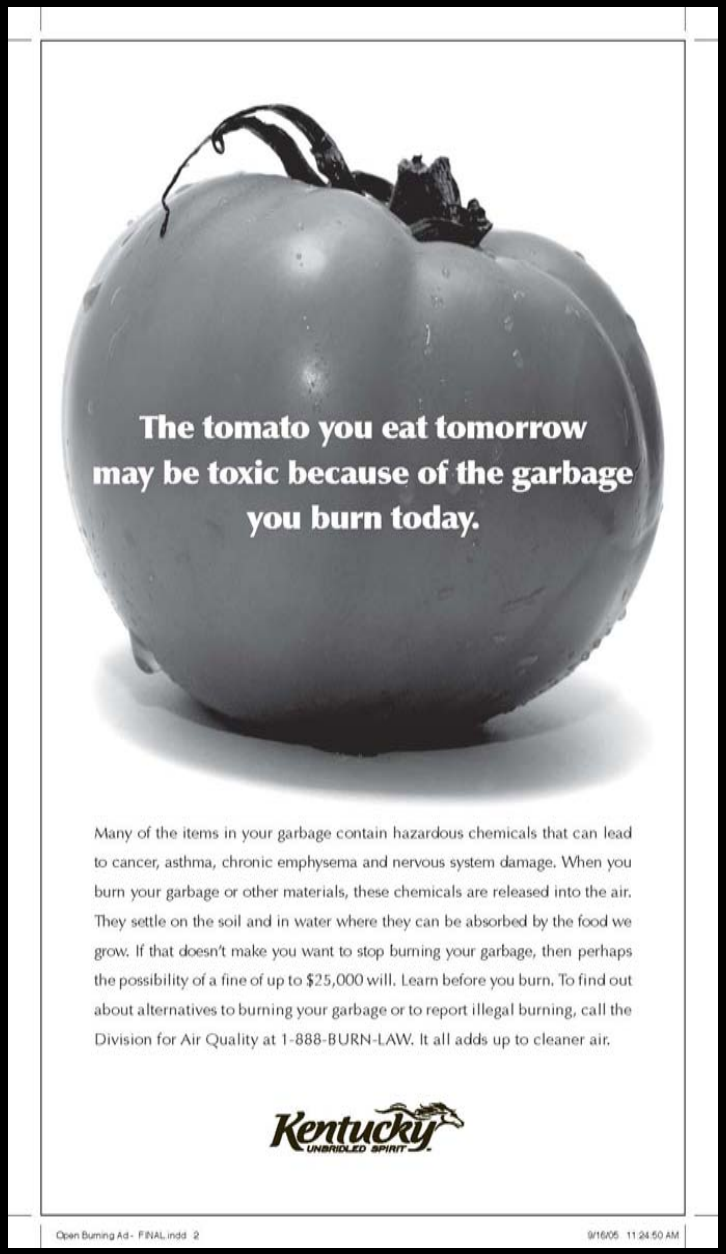
Kentucky Recycling & Marketing Assistance Program (KRMA):
http://www.waste.ky.gov/programs/rcla/Resource+Conservation+Section.htm

If you burn your garbage, you may be burning out your lungs. That's because garbage and other materials release toxic chemicals into the air as they burn. Breathing them in can lead to asthma, chronic emphysema and cancer. If you are cited for burning garbage, there can also be a fine of up to $25,000. Learn before you burn. To find out about alternatives to burning your garbage or to report illegal burning, call the Division for Air Quality at 1-888-BURN-LAW.

It all adds up to cleaner air.

When you burn your garbage, hazardous chemicals are released that can lead to cancer, asthma, chronic emphysema, and nervous system damage. These chemicals settle on the soil and in water where they can be absorbed by the food we grow. If that doesn't make you want to stop burning your garbage, then perhaps the possibility of a fine of up to $25,000 will. Learn before you burn. To find out about alternatives to burning your garbage, or to report illegal burning, call the Division for Air Quality at 1-888-BURN-LAW.

It all adds up to cleaner air.



KY DIVISION FOR AIR QUALITY

OPEN BURNING HOTLINE

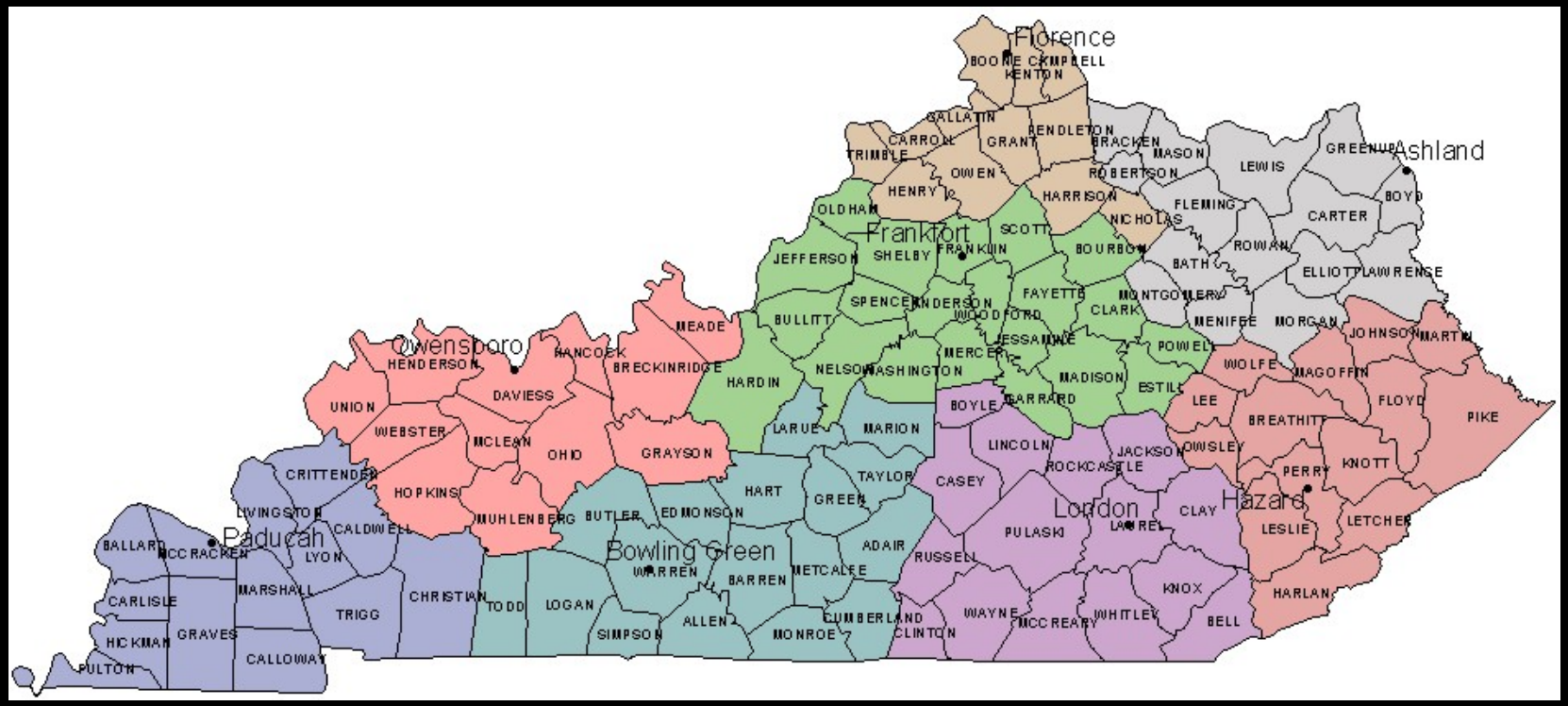
1-888-BURN-LAW

OPEN BURNING E-MAIL

burnlaw@ky.gov

KENTUCKY DIVISION FOR AIR QUALITY

DAQ Regional Offices



For more information concerning open burning, you may also contact your regional DAQ office:

Ashland	Karen Deskins	(606) 929-5285
Bowling Green	Troy Tabor	(270) 746-7475
Florence	Clay Redmond	(859) 525-4923
Frankfort	Mark Ritter	(502) 564-3358
Hazard	Greg Ratliff	(606) 435-6022
London	Mike Hannon	(606) 878-0157
Owensboro	Pat Barker	(270) 687-7304
Paducah		(270) 898-8468

KENTUCKY DIVISION FOR AIR QUALITY

KY Division for Air Quality
803 Schenkel Lane
Frankfort, KY 40601
(502) 573-3382
http://www.air.ky.gov

Kentucky UNBRIDLED SPIRIT™

24-hour Emergency Contact

1-800-928-2380

or

502-564-2380

Questions?