

DO YOU KNOW WHAT YOU'RE BREATHING?

Improving **health** by reducing **air pollution**
in Sacramento County and the region



SACRAMENTO AIR QUALITY 101

BY THEA MARIE ROOD

ABOUT THE SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT (SMAQMD)

1960 The year the District was formed in response to the rapidly worsening air pollution problem in California caused by an increase in automobiles, trucks and heavy industry.

Mission: To achieve *clean air goals* by leading the region in *protecting public health and the environment* through innovative and effective programs, dedicated staff, community involvement and public education.

WHY WE NEED AIR QUALITY MANAGEMENT DISTRICTS

We can't put up a fence or a checkpoint at the county line to keep polluted air out, so clean air requires intense collaboration between these regulatory agencies:

FEDERAL

United States Environmental Protection Agency (EPA)
Authorized since 1970 by the Clean Air Act to regulate air emissions from stationary and mobile sources, and to protect public health from hazardous air pollutants.

STATE

California Air Resources Board
Authorized since 1967 to work with local governments, businesses and the public to reduce California's air pollution.

LOCAL

Regional Air Districts
Enforce local, state and federal regulations.

Sacramento Metropolitan Air Quality Management District
airquality.org

Placer County Air Pollution Control District
placer.ca.gov/departments/air

El Dorado County Air Quality Management District
edcgov.us/AirQualityManagement

Yolo-Solano Air Quality Management District
ysaqmd.org

Feather River Air Quality Management District
fraqmd.org

ABOUT AIR POLLUTION

What Is Particulate Matter?

A combination of microscopic solids and liquid droplets that may include:

DUST/
SMOKE

METALS

ACIDS

ORGANIC
CHEMICALS

Highest levels:

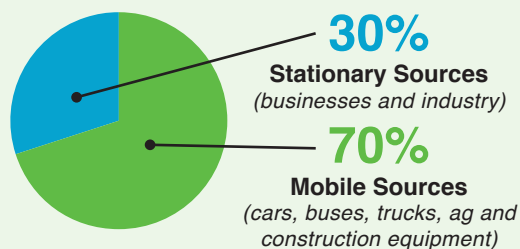
During winter months from wood burning and active wildfires.

What Is Ozone?

An air pollutant caused by a chemical reaction between **volatile organic compounds (VOCs)** and **nitrogen oxides (NOx)**.

Highest levels: In summer months, when sunlight and high temperatures, combined with vehicle exhaust, create what we call "smog."

Sources of Summer Air Pollution



The 'Bowl'

Sacramento's "bowl-shaped valley" traps heat and pollution. Add lots of cars, high temperatures, no wind in the summer and maybe even a wildfire, and you have a recipe for **high levels of ozone and PM.**

HOW IT AFFECTS US

Each one of us breathes **3,000 gallons of air every day**, so it's important that it's clean. The smaller the particle, the more dangerous it can be: Fine particles from smoke and haze can be inhaled deeply into the lungs or go directly into the bloodstream.



Health impacts related to air pollution include:

RESPIRATORY DISTRESS
ASTHMA

HEART ATTACKS
EARLY DEATH

Most susceptible: Young children, the elderly and people in poor health.

"We take our air for granted, but every single human being relies on the quality of air for our health. It is the most important thing — other than water — that we consume."

Larry Greene

SMAQMD Executive Director/Air Pollution Control Officer

ACHIEVING SUCCESS

Tools for Success



Partnerships with business sector



Incentive programs reduce sources of air pollution



Public education

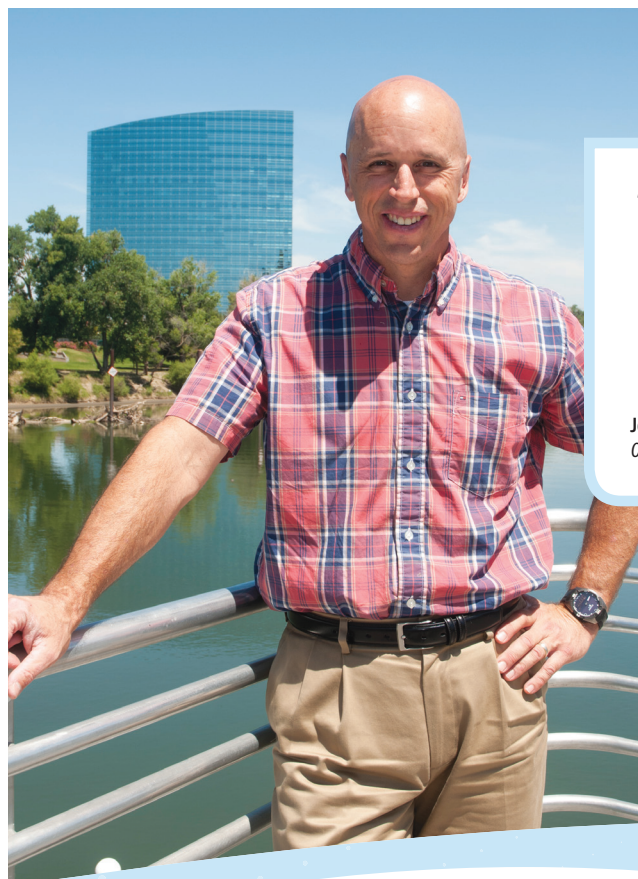
"With the help of truckers and farmers, business leaders and the public — who are willing to switch to cleaner wood stoves and fireplaces and reduce driving on Spare The Air days — we've had a lot of success."

Larry Greene

SMAQMD Executive Director/
Air Pollution Control Officer

WORKING TOGETHER TOWARD CLEANER AIR

BY THEA MARIE ROOD



John Lane is chairman of the Cleaner Air Partnership, which includes health, environmental and business leaders working to improve air quality while allowing businesses to continue.
PHOTO BY ANNE STOKES

"We've been able to do things other areas have not ... [because] we are able to have a good dialogue and educate each other."

John Lane
Chairman, Cleaner Air Partnership

Partnerships between business, government and individuals can help achieve air quality goals while preserving economic vitality

Clearly, something as big as "clean air" cannot be accomplished by one person, one board, one air management district. Sacramento has been successful in improving air quality primarily because of partnerships.

One good example: **The Cleaner Air Partnership**, currently chaired by John Lane, a project manager for Teichert Construction. "It was put together back in 1979," he says. "And at the time, it was unique in the country — it still is. It was formed out of a recognition that solutions to poor air quality require multiple fronts and stakeholders."

In this case, the partnership includes health, environmental and business leaders — as well as representatives from Valley Vision, a regional leadership organization focusing on business, community needs and the environment. "The goal is to have cities, counties and air districts pass and implement rules that make air cleaner, but still let business continue," Lane says. "We've been able to do things other areas have not ... [because] we're able to have a good dialogue and educate each other."

Another powerful collaboration is **Capitol-to-Capitol (Cap-to-Cap)**, a Sacramento Metropolitan Chamber of Commerce group that originated 46

years ago to take Sacramento issues to Washington, D.C. Lane, who is on Cap-to-Cap's air quality team, describes more than 30 recent in-person meetings with members of Congress, the U.S. Environmental Protection Agency and the American Lung Association. "You get an amazing amount of action when you put that kind of face on your issue," he says.

But clean air is not just the job of politicians and professionals — residents, too, must be involved in this cause. And the best way to do it? "Get people out of their cars," says Larry Greene, executive director/air pollution control officer of the Sacramento Metropolitan Air Quality Management District. "We can't force people not to drive ... but when you're idling on the freeway because you're caught in stop-and-go traffic, that is the worst type of pollution."

Other huge impacts are the Sacramento Metropolitan AQMD's winter Check Before You Burn rule and its Change Out Program to replace wood burning fireplaces with natural gas. These changes done on the individual level directly contributed to the Sacramento region's attainment of federal particulate matter standards. "We're one of the first areas to [offer this program]," says Lane. "Now other regions are starting their own programs."

Snapshot of Success

Federal **24-hour PM** (particulate matter) 2.5 standard
ATTAINED

New federal 8-hour ozone standard
ON TRACK

Number of wood fireplaces changed out for gas:

5,328

Number of emission reduction projects involving on-road trucks, transit and school buses:

4,130

Number of emission reduction projects involving off-road tractors and construction equipment:

927

Number of diesel agricultural pumps replaced with electric:

1,709

But There's More Work to Be Done

- State and federal air quality standards are a moving target. As more research is done and acceptable levels of ozone and particulate matter are reduced, more needs to be done to achieve those goals.
- As Sacramento grows, so will the number of individuals, cars and businesses. Success we have made will be lost as more sources of pollution come to our area.

MOVING **FORWARD**

Reducing mobile sources of pollution will take more than getting people out of their cars

BY THEA MARIE ROOD

Vehicles continue to be the biggest source of ozone air pollution in the Sacramento region. But changing how we use what is the primary source of transportation for most people can be tricky.

"We don't have legal regulatory authority over vehicle use," says Tim Taylor, Sacramento Metropolitan AQMD division manager, which means no one can be forced to change how or what they drive. "So we're offering incentive programs to help people [switch] to lower emission technology."

The District also focuses on getting the most bang for its buck. "The bigger something is and the more hours it operates, the more emissions it gives out," says Taylor. "So we're looking at the biggest, longest running vehicles that spend the most time in our air basin."

Sacramento Metropolitan AQMD offers many incentive programs to encourage public and private entities to replace high-emission vehicles and equipment:



Agricultural Pump Electrification Program

The Ag Pump program **funds replacement of diesel pumps with electric**, and helped Bill Payne, co-owner of Payne Brothers Ranches, convert 29 wells and 14 booster pumps. The District also helped negotiate a 10-year freeze on his PG&E rates.

"I'm always up for cleaning the environment, and burning less or cleaner fuel," he says. He also urges his fellow farmers to follow his lead. "A lot of people think, 'Well, there's a lot of paperwork with a government program,'" he says, "but I've been very pleased."

He added, it basically comes down to whether you want old equipment or new equipment. "That's pretty cut and dried," he says.



Carl Moyer Memorial Air Quality Standards Attainment Program

The Moyer program **provides incentives to upgrade construction and agricultural equipment that will reduce emissions**.

Private, public and government agencies and the general public can apply for these funds.

Tom Muller, co-owner of Joe Muller & Sons, a ranch in Woodland, has participated in the program since it began in 1998. He has completed more than 25 separate projects for more than 100 pieces of equipment, including tractors and agricultural pumps.

"It's very progressive," Muller says. "We've gone from diesel to [low-emission]

diesel, and now diesel to electric. It's really innovative in terms of new technologies, and it saves us money."

While the program offers partial funding up front to replace high-emission equipment, Muller says his business continues to reap the benefits because the newer, cleaner engines use less fuel.

Most of all, Muller is proud to be improving local air quality. "As farmers, we are environmentalists," he says. "We want to be part of the solution."



Lower-Emission School Bus Program

This program provides **funds to Sacramento County school districts to replace pre-1987 diesel buses, retrofit older buses and replace expiring compressed natural gas (CNG) tanks**. What does that mean? Less exposure for school children to cancer-causing pollution from public school buses.

The program is especially crucial because of very minimal state transportation funding. "We'd been forced to use 'classroom dollars,'" says Jill Gayaldo, director of transportation for Elk Grove Unified School District. "We had to find another funding source." So Elk Grove paired up with two other school districts — Sacramento City Unified School District and Twin Rivers Unified School District — and has become a trial program for cleaner emission technology. This includes new CNG buses, propane buses and new CNG tanks (which are cheaper at \$20,000 per tank versus purchasing a \$150,000 CNG bus).

But the most exciting development: the tentative approval for 10 electric buses next year. "The benefits, of course, are these have no emissions at all," Gayaldo says.



Sacramento Emergency Clean Air Transportation (SECAT) Program

SECAT offers **federal funds to replace 2006 or older on-road, heavy-duty diesel trucks with cleaner emission vehicles**.

And it's a program Tom Jurin, owner of Jurin's Distributing Company, Inc., knew nothing about until he walked into his local Ford dealership.

"I was so excited," says Jurin, whose Sacramento-based company transports bar and restaurant supplies throughout the region. "The dealer actually did the initial paperwork for me, and the [Sacramento Metropolitan AQMD] people made it so easy — they walked me through it step by step."

Jurin was able to purchase a \$65,000 clean-emission diesel truck — replacing a high-emission vehicle with 250,000 miles on it — and 20 percent was covered by SECAT. Today, Jurin proudly displays large SECAT stickers on his new ride. "It's a great program," he says.



Tom Jurin, owner of Jurin's Distributing Company, Inc., in Sacramento. PHOTO BY ANNE

Tom Muller, co-owner of Joe Muller & Sons ranch in Woodland, says replacing his agricultural equipment through the Carl Moyer incentive program was not only good for the environment, it saved his operation money.
PHOTO BY ANNE STOKES

"As farmers, we are environmentalists. We want to be part of the solution."

Tom Muller,
co-owner of Joe Muller & Sons
participant in Carl Moyer Memorial Air Quality Standards
Attainment Program



owner, Jurin's
Company, participant
to Emergency Clean Air
on (SECAI) Program.
NE STOKES



Stationary Source Programs

Stationary sources of air pollution may not be the most prevalent contributors to air pollution (30 percent), but their impact is significant considering many homes have wood stoves and fireplaces. Sacramento Metropolitan Air Quality Management District has programs in place to curb these factors.

Wood Stove and Wood Fireplace Change Out Program



This program helps Sacramento County residents change out their wood burning stoves or fireplaces to help improve air quality. According to the District, "Wood smoke is a source of particulate matter, hydrocarbons, nitrogen oxides, toxic air contaminants and odors," and can have serious health impacts.

To reduce emissions, the District launched the Wood Stove and Wood Fireplace Change Out Program in 2006. The District provides \$150 to \$450 for non-low-income residents and up to \$1,500 for low-income residents in Sacramento County to replace their wood stoves and fireplaces with cleaner burning units through 20 hearth product retailers in the region.

"The goals are good," says Mitchell Heller, owner of Custom Fireside Shops, which participates in the program. "When they began restricting wood burning, it was really nice that they also started an incentive program where they provided people with options to burn cleaner burning products."

The program has helped people in more than 5,300 homes change out their wood stoves or fireplaces in Sacramento County.

Elissa Daniel used the voucher in 2015 for three new gas-burning inserts in her home. An environmentalist, Daniel didn't want to burn wood logs. She learned about the program at a participating store and qualified for a voucher.

"The gas logs look very realistic, they're very attractive and we're very happy," she says.

Find out whether you qualify for the incentive program and see a list of participating retailers at www.airquality.org.

Check Before You Burn

If your home still has a wood burning fireplace or stove that you light, you must be sure burning is permitted that day. To curb emissions and meet federal health standards, the District passed Rule 421, or Check Before You Burn, which restricts or prohibits businesses and residences from burning wood and pellet-burning devices from November through the end of February.



Elissa Daniel lives in Fair Oaks and is one of the thousands of Sacramento County residents who have benefited from the Wood Stove and Wood Fireplace Change Out Program.

PHOTO BY ANNE STOKES



Since 1995, the Sacramento region's Spare The Air program has let the public know when air quality reaches unhealthy levels so they can modify their activities.

301-500 HAZARDOUS

The entire population is more likely to experience serious health effects and should avoid all outdoor exertion.

201-300 VERY UNHEALTHY

Everyone may experience more serious health effects and should avoid all outdoor exertion.

151-200 UNHEALTHY

Everyone should limit prolonged outdoor exertion and members of a sensitive group should avoid it.

101-150 UNHEALTHY FOR SENSITIVE GROUPS

People with heart and lung disease, older adults and children should limit prolonged outdoor exertion.

Spare The Air when AQI is forecast to meet or exceed 126

51-100 MODERATE

Unusually sensitive people should limit outdoor exertion.

0-50 GOOD

No health impacts are expected.



Check daily forecasts and sign up for email alerts at www.sparetheair.com or download the free Sacramento Region Air Quality app, available in iOS, Google Play and Windows app stores.

'AIR QUALITY AFFECTS MY EVERYDAY LIFE'

Knowing the Air Quality Index can help the public breathe easy

BY ANNE STOKES

When Kimberly Kaufman got sick in 2004, a heart attack was the last thing on her doctors' radar – after all, the 29-year-old had no family history of heart disease. But after eight months of feeling unwell, she suffered a massive heart attack that left her heart working at a quarter of its capacity. Today she lives with end-stage congestive heart failure, which includes using an oxygen tank and staying indoors on days when the Air Quality Index (AQI) is high.

"The air quality affects my everyday life because I can't breathe," she says. "I can get so tired and unable to breathe in just a few short moments ... It affects everything."

Kaufman's condition puts her firmly in the "sensitive" group category on the AQI, which includes people with heart and lung disease, older adults and children. To protect her health, she checks the AQI before going outdoors.

"Going out when the air is dirty, polluted and heavy is going to put me down for a couple days," she says. "I'll watch it on the news or check it online, especially in the heat."

According to pulmonary specialist Dr. Michael Schivo, UC Davis School of Medicine, air quality affects everyone, not just those in sensitive groups such as

As someone who lives with end-stage congestive heart failure, Kimberly Kaufman takes oxygen with her wherever she goes, and she does so with style, sporting tanks in a colorful backpack. She also makes use of daily AQI readings to ensure that it's safe for her to go outside.

PHOTO BY ANNE STOKES



Kaufman. Chronic exposure to air pollution poses health risks to asthmatics as well as the general public, possibly including risks such as heart disease and other inflammatory diseases.

"We think that air pollution affects everybody, whether they have lung disease or not," Schivo says. "There have been many studies looking at increased

levels of air pollution [that] might be seen in cities and by freeways that directly correlates with increased incidents of lung disease."

Dr. Schivo advises patients to pay attention to daily AQI readings, especially if they are in a sensitive group, and to avoid outdoor activities during afternoons when air quality is generally poorest. On days with very poor air quality, he advises staying indoors altogether.

For Kaufman, going outdoors during a Spare The Air alert is not an option – even walking to and from the car on those days can have adverse effects. She urges others to be aware of the

daily AQI and how air quality impacts everyone.

"I think people just think they're invincible," says Kaufman. "If people really knew how the air affects them, I think they might be a little leery about going out when it's so hot and when the AQI is so high."

"If people really knew how the air affects them, I think they might be a little leery about going out ... when the AQI is so high."

Kimberly Kaufman

IMPROVING TODAY FOR TOMORROW

Sacramento Metropolitan AQMD Executive Director Larry Greene answers some of your most frequently asked questions

Q. Why does the District ask us to Spare The Air in our homes and personal lives instead of regulating large vehicles, diesel trucks, etc.?

A. Seventy percent of our summer air pollution comes from mobile sources, which are the cars, trucks, buses, agriculture and construction equipment that are used every day. State and federal programs regulate emissions from mobile sources, but no air district has that authority.

Instead, the Sacramento Metropolitan AQMD reduces pollution through its heavy-duty vehicle incentive programs to decrease NOx (oxides of nitrogen) emissions from mobile sources. The District asks you to reduce emissions because small changes made during your daily travels, around the home, workplace and school help improve air quality.

Q. Is our summer air quality getting worse?

A. The amount of ground-level ozone pollution in the region has been on a steady decline for the past decade. However, health studies continue to show serious health effects of ozone pollution at lower levels. This resulted in the U.S. Environmental Protection Agency lowering the federal health standard in 2015.

Because we project health impacts at lower pollution levels than before, you'll see more orange and red days on the Air Quality Index. If our ozone levels continue to decline as expected, we will have fewer impacted days over time.

Q. How does climate change affect us in Sacramento County?

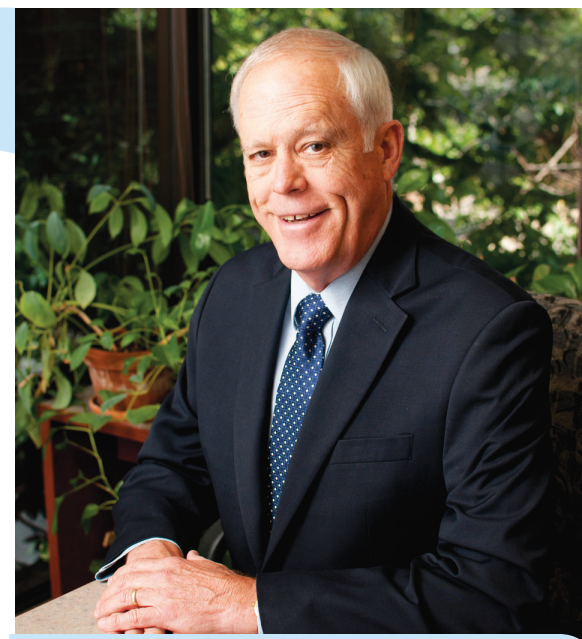
A. The Sacramento region is subject to a range of environmental risks. Many have been made worse by climate change based on scientific studies, including flooding, drought, wildfires, and significant increases in average temperatures and heat events.

These have impacted wildlife habitat and farming conditions related to the plants and animals that inhabit our region. We're seeing impacts in the types of crops we can grow, higher impacts from diseases like West Nile virus, and millions of dead and dying trees in California.

Q. Does the District care about land use and development in Sacramento County?

A. Yes. One of the best measures to have a lasting positive impact on the air pollution burden on our communities is reducing average energy use from transportation and the built environment. Better designed and more compact communities make more efficient use of transportation and transit resources and will continue to lower our average energy use.

Land use and development decisions we make today have a 50- to 100-year lifetime of impact and well-designed, energy-efficient development also reduces average greenhouse gas emissions. When we offer communities multiple modes of transportation, design for active lifestyles and plant more of the correct mix of trees, then pollution is less, energy costs are lower and the population is healthier ... all these improve our quality of life in Sacramento County.



"The District asks you to reduce emissions because small changes made during your daily travels, around the home, workplace and school help improve air quality."

Larry Greene
Executive Director/Air Pollution Control Officer
Sacramento Metropolitan AQMD

Q. Why does the District tell me that I can't burn wood in my fireplace?

A. Wood smoke from fireplaces and wood stoves is the single largest contributor to air pollution in Sacramento County during the winter. It causes over 50 percent of the particulate matter 2.5 (PM2.5) that we breathe each season. PM2.5 is dangerous. It is linked to difficulty breathing, aggravated asthma and other breathing problems, irregular heart-beat, nonfatal heart attacks, and premature death in people with heart and lung disease. It's nothing to ignore.

The District is responsible for cleaning the air to meet state and federal health standards. The Check Before You Burn program started in 2007 and runs from November through February. Your cooperation and compliance is why our PM2.5 levels during those months have dropped significantly over the years. Thank you for checking during the winter to see if it's legal to burn wood or not.

HELP KEEP OUR AIR CLEAN

Air quality affects everyone. Whether on the road or at home, we all can do our part to ensure the air we breathe is as clean as possible.

Here are things you can do to make a difference:

SACRAMENTO METROPOLITAN



AIR QUALITY
MANAGEMENT DISTRICT



CONNECT WITH THE DISTRICT



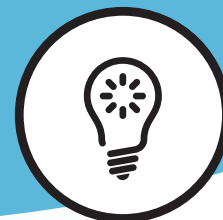
- Friend air quality mascot Scooter by searching "**SpareTheAir Scooter**" at Facebook.com.
- Follow on Twitter **@AQMD**.
- Find on Instagram **@sacramentoaqmd**.
- Get air quality info on your phone with the **Sacramento Region Air Quality app** (available in iOS, Google Play and Windows app stores). Sign up for Spare The Air alerts, Check Before You Burn forecasts, wildfire smoke advisories and more.
- Visit **www.sparetheair.com** or call **916-874-4801** to check daily air quality forecasts or sign up for email alerts.

SPARE THE AIR



- **Reduce driving** on a Spare The Air day.
- **Walk, bike, carpool or take public transit.** Better yet, work from home if possible.
- **Brown bag** your lunch instead of eating out.
- **Postpone errands** on Spare The Air days. If you must drive, make one big trip rather than several smaller ones.
- **Fill up your tank after sunset** to reduce evaporative emissions.
- In the market for a new car? Purchase a **low-emission vehicle**.
- Keep your **vehicle well-maintained** with regular tuneups, and change fuel and air filters annually.
- Pay attention to **AQI readings** and sign up for **Spare The Air alerts**.

BE ENERGY EFFICIENT AT HOME



- **Avoid aerosol spray** products like hairspray, cleaners, air fresheners and antiperspirants. Unnecessary pesticide use, oil-based paints and varnishes also contribute to smog.
- **Low-maintenance landscaping** requires less upkeep using gas-powered lawn tools.
- **Solar energy** creates less pollution than burning fossil fuels.
- **Purchase ENERGY STAR** label appliances.
- **Replace wood burning stoves or fireplaces** with cleaner burning natural gas. (Some Sacramento County residents may qualify for financial incentives.)
- **Check Before You Burn** during the months of November through February by calling **1-877-NO-BURN-5** (1-877-662-8765) before you light your wood burning fireplace.