

BUTTE COUNTY GRAND JURY REPORT 2008/2009 AIR QUALITY MANAGEMENT DISTRICT

SUMMARY

The 2008/2009 Grand Jury visited the Butte County Air Quality Management District. The primary purposes were to gain an understanding of the District's operations, the challenges it faces, and to identify any major air pollution concerns for Butte County.

Clean, pollution free air is essential to public health. Air pollution is created by two different sources; harmful gases, and particulates. Recent studies have found that particulates are more harmful than previously thought and are known to cause respiratory problems and lung damage. There is also evidence that high concentrations of ozone, created by pollution and daylight ultra-violet rays, can irritate the respiratory system and affect lung function.

The District is mandated by the federal government and the State of California to monitor and maintain air quality standards, including levels of particulates and the volume of harmful gases, such as ozone. These mandates are not funded by the federal government

In recent years, portions of Butte County have not met the federal and state air quality standard for particulates, during winter months. The District is working to eliminate the primary source of these particulates, specifically emissions from wood burning devices.

The District is responsible for monitoring other harmful air components, such as ozone, which are regulated by state and federal laws. At present, Butte County does not meet the federal standard for ozone emissions during some months. The greatest concern is regarding ozone levels near the ground. Most ground level ozone in Butte County is created in the Sacramento area, and then blown by winds to Butte County. However, as agriculture burning contributes to particulates and smog, the District also monitors this activity.

There is concern regarding the District's future annual budgets which may be impacted by the current financial condition of the state government. Funding for programs to reduce emissions from wood burning devices, and to provide public education to insure compliance, will require finding new funding sources.

GLOSSARY

EPA - Environmental Protection Agency

DMV - Department of Motor Vehicles

Micron - A unit of measure equal to one millionth of a meter, or one thousandth of a millimeter. A human hair is 70 microns in diameter.

Particulates - Matter of a certain size. In terms of air quality, the particulates are 2.5 microns or smaller.

ppm - parts per million

Ozone - Ozone is a gas formed by the reaction of sunlight on air containing hydrocarbons and nitrogen oxides emitted by vehicle engines and industrial operations. The reaction to form ozone can be directly at the source of the pollution or many kilometers down wind.

Smog - A combination of ozone, other gases, and particulates from motor vehicle emissions and other sources.

BACKGROUND

The main focus of the Butte County Air Quality District is public health. Their goal is to insure that the quality of air in Butte County corresponds to current standards. Clean, pollution free air is essential to the public health of our communities.

The District is governed by a Board of Directors, consisting of the five Butte County Supervisors, and one elected official from each of the five incorporated cities in the County. It is not supported by the county general fund, but receives monies from state licensing fees and penalties, and federal grants when available.

DISCUSSION

Currently, the District regularly monitors air quality in Chico, Paradise and Gridley, with occasional spot monitoring in other locations. Previously, the District monitored air quality at higher elevations, but found it consistently conformed to standards. Hence, they no longer monitor at higher elevations.

Particulate Sources

Prior to 1991, the burning of rice stalks created a serious air pollution problem in the inland valleys of California. As a result, the Rice Straw Burning Reduction Act was enacted in 1991 by the California Legislature to decrease, but not phase out, burning of rice straw. Since 2001, rice straw burning has been limited to 25% of the planted acres in California. Farmers are continuing to seek alternatives to burning.

In Butte County, woodstoves and fireplaces are the primary source of airborne particulates. From November through February, particulate emissions average 50% to 75% of the annual total.

At present there are no regulations controlling emissions from wood burning devices, except laws relating to new installations. The City of Chico prohibits yard waste and leaf burning and is in the process of enacting an ordinance to regulate wood burning devices.

The Air Quality Control District had a voluntary incentive program to encourage upgrading wood burning devices to more efficient EPA certified models. Previously, funding for this program was obtained through grants and penalty fees, which are now exhausted. In addition, some purveyors of wood burning devices offered discounts to encourage upgrading. These sources

are no longer available, requiring the District to actively search for new funding sources. The District offers public education programs, such as "Check before You Light".

Ozone

Studies have found evidence showing that high concentrations of ozone, created by pollution and daylight ultra-violet rays at the Earth's surface, can irritate the respiratory system and harm lung function. Air quality guidelines, such as those from the World Health Organization, are based on detailed studies of what ozone levels can cause negative health effects. Exposure to ozone, and the pollutants that produce it, has been linked to premature death, asthma, bronchitis, heart attack, and other cardiovascular problems. According to scientists with the EPA, susceptible people can be adversely affected by ozone levels as low as 0.04 ppm.

The Clean Air Act directs the EPA to set National Ambient Air Quality Standards (See Appendix A) for several pollutants, including ground-level ozone. Counties out of compliance with these standards are required to take steps to reduce their levels. In May 2008, the EPA lowered its ozone standard from 0.08 ppm to 0.075 ppm. During summer months, Butte County is not able to attain this standard.

The EPA has also developed an Air Quality Index (See Appendix B) to help explain air pollution levels to the general public. Eight-hour average ozone concentrations of 0.085 to 0.104 ppm are described as "unhealthy for sensitive groups", 0.105 ppm to 0.124 ppm as "unhealthy", and .125 ppm to .404 ppm as "very unhealthy".

Ozone is normally associated with smog, which is a combination of ozone and particulates. When viewed from a distance or above, smog looks like a haze or fog.

Smog

The primary source of smog, and thus ozone, in Butte County is created in the Sacramento Metropolitan Area, and transmitted to Butte County by winds from that area. At present, Butte County has no ability to reduce this source of smog.

Funding

District operations are funded by DMV surcharges on automobile registrations, business license fees, and non-compliance penalties. Funding is a continuous problem for incentive programs. The mandates for particulates and ozone are not funded by the federal government. Grants providing incentives for voluntary upgrade/compliance by wood burning device users are no longer available. Without new funding sources, the District will be unable to offer incentives to upgrade wood burning devices.

Carl Moyer Fund

The Carl Moyer Fund is a special state wide fund that provides money to individuals for such projects as replacing or retrofitting old diesel engines (on agricultural pumps, for example), or other old engines, including boats and locomotives. Approximately \$450,000 is currently available in this fund.

Current Efforts to Regulate Particulates

Chico City Council has decided to pursue a ban on wood burning devices based on a recommendation from the Air Quality Management District. EPA certified wood burning devices would be exempt, as would residents whose stoves are their sole source of heat. The regulations will only apply to the densely populated areas in and around Chico. As of April 21, 2009, the final ordinance had not been adopted.

FINDINGS

- F1. The City of Chico is considering a ban on non EPA certified burning devices, with some exceptions.
- F2. The ability of the District to conform to Ambient Air Quality Standards will be diminished unless new sources of funding are found.
- F3. Butte County does not currently meet the federal air quality standard for particulates, due to wood burning devices used in the winter.
- F4. Butte County does not meet the federal standard for ozone during the summer months. Butte County cannot reduce ozone that is created in another jurisdiction.
- F5. The District appears to be well managed by a professional and dedicated staff.

RECOMMENDATIONS

- R1. The District should continue to pursue all possible sources of funding to finance incentives to upgrade wood burning devices.
- R2. The District should continue to educate the public and encourage the voluntary conversion of ineffective wood burning devices to EPA certified models.

REQUEST FOR RESPONSES

Pursuant to Penal Code Section 933.05, the Grand Jury requests responses as follows:

Butte County Air Quality Management District

Butte County Board of Supervisors

The governing bodies indicated above should be aware that the comment or response of the governing body must be conducted subject to the notice, agenda and open meeting requirements of the Brown Act.

Reports issued by the Civil Grand Jury do not identify individuals interviewed. Penal Code Section 929 requires that reports of the Grand Jury not contain the name of any person, or facts leading to the identity of any person who provides information to the Civil Grand Jury. The California State Legislature has stated that it intends the provisions of Penal Code Section 929 prohibiting disclosure of witness identities to encourage full candor in testimony in Civil Grand Jury investigations by protecting the privacy and confidentiality of those who participate in any Civil Grand Jury investigation.
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APPENDIX A
Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.075 ppm (147 µg/m ³)		
Respirable Particulate Matter (PM₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		—		
Fine Particulate Matter (PM_{2.5})	24 Hour	No Separate State Standard		35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15.0 µg/m ³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m ³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—		
Nitrogen Dioxide (NO₂)	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m ³)		—		
Sulfur Dioxide (SO₂)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m ³)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (365 µg/m ³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m ³)	
	1 Hour	0.25 ppm (655 µg/m ³)		—	—	
Lead⁸	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m ³		
	Rolling 3-Month Average ⁹	—		0.15 µg/m ³		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride⁸	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (11/17/08)

APPENDIX B
Air Quality Index

Air Quality Index (AQI): Particle Pollution

Index Values	Levels of Health Concern	Cautionary Statements
0-50	Good	None
51-100*	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.
101-150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
151-200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
201-300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.
301-500	Hazardous	People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors.

*An AQI of 100 for particles up to 2.5 micrometers in diameter corresponds to a level of 40 micrograms per cubic meter (averaged over 24 hours). An AQI of 100 for particles up to 10 micrometers in diameter corresponds to a level of 150 micrograms per cubic meter (averaged over 24 hours).

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above $150 \mu\text{g}/\text{m}^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.
8. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
9. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

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