



DESERT BREEZE

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Santa Ana Winds

The Santa Ana are hot and dry winds originating from the Great Basin Desert. The winds are a key characteristic that shape southern California climate as the summer season comes to a close. The fall, specifically September through November, is peak season for the Santa Ana winds. As the Great Basin cools in the autumn months, the air becomes denser. Naturally, the pressure gradient flows from high pressure to low pressure. The California coast has its warmest temperatures in September. This causes air to rise, leading to a low-pressure system on the coast. The cold air accumulated in the high-pressure system over the Great Basin begins to rapidly fall and flow toward the coast. The air becomes hot and dry as it moves down from the atmosphere and funnels through wind corridors, including Tehachapi pass. Active Santa Ana wind events can last two to three days, with varied events throughout the autumn months. Over the last several years, Santa Ana winds have occurred earlier in the year and consistently last longer.

As the Santa Ana wind sweep through eastern Kern County, the powerful gusts can create dangerous conditions in its desert and mountainous areas. Large dust plumes can limit visibility on roadways and decrease air quality. Blowing dust is composed of particulate matter that can lead to serious health effects if inhaled, such as a decrease in lung function, chronic bronchitis and increased respiratory susceptibility.



Dust emissions can be hard to control in extreme weather conditions. Avoiding areas where dust could potentially become airborne or staying indoors during an extreme wind event could help prevent exposure to harmful particulate matter. Owners/operators of an activity or property that has the potential for causing fugitive dust must implement reasonably available control measures. If you see fugitive dust, please contact the Eastern Kern Air Pollution Control District (District) at (661)-862-5250.

By: Melissa Atkerson, Air Quality Specialist

How Can I Learn About the Air Quality in My Area?

As the air begins to cool with fall approaching, many of us get outdoors more often to enjoy the weather. But, how can we find out if the air will be safe to breath during our time outside? Fortunately, air quality data is available to us online. Air pollutants that are widely monitored are particulate matter (PM) and Ozone; other pollutants that are monitored more selectively are Carbon Monoxide and Lead.

The California Air Resources Board (CARB) posts data from its air monitors throughout the state on the Air Quality and Meteorological Information System (AQMIS): www.arb.ca.gov/aqmis2/aqmis2.php

The Environmental Protection Agency also publishes air quality data on their AirNow website: www.airnow.gov

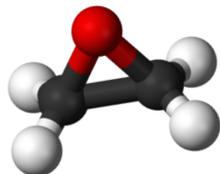
In eastern Kern County, the District and CARB operate ambient air monitors for PM and Ozone. Air quality data from monitors in the District is available on the District website (pictured right): www.kernair.org

By: Sam Johnson, Air Quality Engineer



Pollutant of the Quarter: Ethylene Oxide

Ethylene oxide (EtO) is a compound with the chemical formula of C_2H_4O . It is a colorless, highly flammable, gas at room temperature with a slightly sweet odor. It is highly reactive due to the unstable oxygen ring structure of the molecule. The United States produces the largest amount of ethylene oxide by way of the Dow Chemical Company. It is one of the most important raw materials used in the world. Most ethylene oxide is used to



create ethylene glycols, which are used in the production of antifreeze, polyester and polyethylene terephthalate (PET) which is used in the manufacturing of plastic bottles. It is also used to make such products as adhesives, solvents, polyurethane foam, medicines, detergents, thickening agents, and other textiles. Ethylene oxide can also be used as a crop fumigant and sterilizer for medical equipment, foods, and cosmetics. It is used in the manufacturing of PEG (polyethylene glycol) which is a less reactive compound that is used in pharmaceuticals as a stabilizer to active ingredients in medications. Ethylene oxide is so reactive that it is used as a fuel in thermobaric weapons, which are explosives that use oxygen from the air to generate an explosion.

Although ethylene oxide and its chemical derivatives are very common in products we use every day, it is very harmful to human health. In fact, the instability and reactivity of the molecule is what makes it so useful but also what makes it so harmful. Chronic exposure to ethylene oxide is mutagenic meaning it can cause mutations in a living organism's DNA. It has also been proven that it is carcinogenic which means it can cause cancer. There have been studies done on humans

who are chronically exposed to EtO during their occupation and a correlation was discovered between cancer incidence and exposure to ethylene oxide. Inhalation of EtO can be irritating to the nose and throat. This irritation can be seen at exposures of around 200 parts per million. At higher concentrations, it can cause damage to the lungs, trachea, cardio-vascular system, and nervous system. The odor threshold of ethylene oxide is around 250 and 700 parts per million so by the time it is smelled, it is already possibly doing damage to the body. Inhaling ethylene oxide can also cause vomiting, nausea, and headache besides the more serious affects. The Immediately Dangerous to Life and Health Level according to National Institute for Occupational Safety and Health is 800ppm.



It is important that those who are chronically and acutely exposed to ethylene oxide protect themselves with the proper PPE such as respirators and impermeable clothing. The Environmental Protection Agency (EPA) is currently reassessing EtO ambient air emissions due to its use as a pesticide and its manufacturing. Ethylene oxide is included in the Miscellaneous Organic Chemical Manufacturing National Emission Standards for Hazardous Air Pollutants and any industry producing and/or emitting EtO must install the Maximum Achievable Control Technology. Currently, the EPA has helped set up air monitors near sources of EtO to learn how to better measure EtO in the air.

*By: Nicole Dickerson,
Senior Air Quality Specialist*



District Grant Programs — Fall 2022

The District has three popular grant incentive programs opening fall 2022. Guidelines and applications will be released October 1, 2022, for the Wood Smoke Reduction Program, DMV Grant Program, and DMV Grant Voucher Program. The following are brief overviews of each incentive program. Complete information, program guidelines and applications can be downloaded from the District's website www.kernair.org.

WOOD SMOKE REDUCTION PROGRAM

The Wood Smoke Reduction Program (WSRP) offers incentive funds to promote the voluntary replacement of older high-emitting wood-burning stoves and fireplaces with new cleaner, more efficient in-home heating devices. This includes new natural gas, propane, electric, and pellet stoves and EPA certified catalytic fireplace inserts.



The WSRP was established in 2018; through California Climate Investments funding made available by Senate Bill 563. Eligible applicants will be awarded a WSRP voucher for up to \$4,000 that is to be given to a participating retailer at the time of purchase. The old high-emitting stove must be removed and recycled. Applications will be accepted and processed first-come, first-served until all WSRP funds have been awarded through vouchers.

DMV GRANT PROGRAM

The District allocates a substantial portion of its annually collected AB 2766 funds through its DMV Grant Program. The DMV Grant Program awards incentives of up to \$50,000 for eligible projects that reduce motor vehicle related emissions within Eastern Kern County.

Eligible DMV Grant Program projects include:

- ◆ Paving non-county maintained public dirt roads
- ◆ Installation of Level II or Level III public EV charging stations
- ◆ Installation of Public CNG refilling stations
- ◆ Public Education courses geared toward reducing emissions
- ◆ Vanpools
- ◆ Park & Ride Facilities
- ◆ Bike Paths

The DMV Grant Application will close on February 24, 2023. The program is generally oversubscribed and eligible projects will be selected using a random lottery.

DMV GRANT VOUCHER PROGRAM

The District's DMV Grant Voucher Program offers incentive vouchers to be used for the purchase (not lease), of a new eligible lower-emitting vehicle. Applications will be processed first-come first-served and vouchers will be issued until all funds have been allocated.



Vouchers are awarded as follows:

- ◆ \$4,000 for purchase of a Zero Emission Vehicle (ZEV) electric vehicle
- ◆ \$2,000 for purchase of a Partial Zero Emission Vehicle (PZEV) or Alternative Technology Partial Zero Emission Vehicle (ATPZEV).

*By: Jeremiah Cravens,
Senior Air Quality Specialist*

Board of Directors

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Phillip Peters (KC 1st District Supervisor)
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Board of Directors usually meet once every two months starting in January at the District's Board Room, 414 W. Tehachapi Blvd., Suite D, in Tehachapi. The Meeting Agenda can be located on the District website www.kernair.org, under the "Board" tab.

Air Pollution Control Officer

Glen E. Stephens, P.E.

Hearing Board Members

Doris Lora
Chris Ellis
Benjamin Dewell
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Brenton Smith



For news updates and other information, please visit the Eastern Kern APCD website at www.kernair.org

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