DESERT BREEZE

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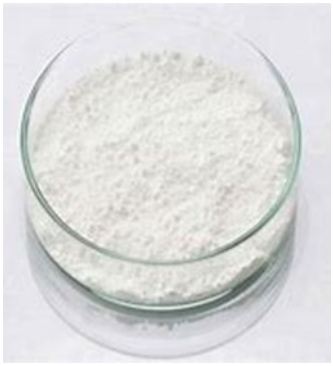
Pollutant of the Quarter:

Chloroacetic Acid

Chloroacetic acid is a colorless to light-brown crystalline solid or a colorless solution. It is toxic to humans via ingestion, skin absorption, and inhalation.

Chloroacetic acid is used in manufacturing of cellulose ethers, which are used in detergents, food preservatives, pharmaceuticals, and post-emergence contact herbicide. It is most commonly manufactured by chlorination of acetic acid or by hydrolysis (breakdown of a chemical compound) of trichloroethylene in a solution of water and sulfuric acid.



Chloroacetic acid is listed as a hazardous air pollutant by the Environmental Protection Agency (EPA), and an extremely hazardous substance in the U.S. Emergency Planning and Community Right to Know Act. Inhalation or dermal (skin) exposure can cause severe damage to skin, eyes, and respiratory tract; ingestion can lead to intestinal perforation and peritonitis (inflammation of the abdominal membrane enclosing organs) in humans. Exposure to chloroacetic acid is most likely to occur in the workplace, as it is not commonly found in consumer goods.

District Rule 414.1 (Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants) and Rule 414.5 (Pump and Compressor Seals at Petroleum Refineries and Chemical Plants) regulate fugitive emissions of volatile organic compounds (VOC), including chloroacetic acid. These rules prohibit leaks from equipment connections, valves, and drains in operation at chemical manufacturing facilities, and specify inspection and repair time frames for such equipment. Additionally, the EPA has created National Emission Standards for Hazardous Air Pollutants (NESHAP) that regulate the Synthetic Organic Chemical Manufacturing Industry (SOCMI) under Part 63 of Title 40, Code of Federal Regulations; these standards set emission limits, control device requirements, emission testing and monitoring requirements, and reporting requirements.

There are currently no facilities that handle chloroacetic acid within eastern Kern County; in addition to the above Rules, any new facility would be required to implement what is called "Best Available Control Technology" (BACT), which is the most stringent emission limitation or control technique found to be achieved in practice, or that is cost-effective to implement for reducing emissions.

By: Sam Johnson,
Air Quality Engineer

Eastern Kern Ozone Attainment Challenges

The Federal Clean Air Act required the U.S. EPA to develop an 8-hour National Ambient Air Quality Standard (NAAQS) for Ozone (O_3). In order to achieve attainment of the NAAQS, the District has adopted a variety of rules and regulations designed to limit and reduce the O_3 precursor emissions: Oxides of Nitrogen (NOx) and Volatile Organic Compounds (VOC) from all applicable sources. Through implementation of these rules the District has attained the 1997 NAAQS of 80 parts per billion (ppb). However, the District has not yet attained the 2008 (75 ppb) or 2015 (70 ppb) NAAQS even though air monitoring data has shown a downward trend in O_3 levels. In order to achieve the 2008 and 2015 NAAQS by the required attainment date of July 26, 2026, the District is developing attainment plans that include revising applicable NOx and VOC rules. Even with implementation of these attainment plans, meeting the NAAQS will be a challenge. There are issues such as meteorology, geography, and pollutant transport affecting attainment that are outside of the District's control.

Meteorology

High temperatures and low relative humidity play a major role in O_3 formation. Meteorological data collected from ambient air monitoring stations during the summer months (peak O_3 season) showed temperatures in the District can exceed 95° Fahrenheit for sixty to seventy days per year. Relative humidity also averages below 10 percent during the hottest part of the day. The combination of a hot dry climate, mixed with little to no rainfall or cloud cover, produces an intense solar radiation that creates photochemical O_3. As a result, O_3 concentrations tend to be the highest in the District from June to September, which contributes to O_3 NAAQS exceedances.

Geography and Topography

The District is located on the western edge of the Mojave Desert and is comprised of unique geography and topography that create a challenging environment for attaining the O_3 NAAQS. The District is separated from populated valleys and coastal areas to the west and south by several mountain ranges. O_3 and its precursor emissions NOx, and VOCs being transported from these valleys and coastal areas are the major factors affecting O_3 exceedances in the District.

The surrounding mountain ranges contain a limited number of passes serving as "transport corridors". These passes include Tehachapi Pass, connecting the western Mojave Desert to the southern San Joaquin Valley, and Soledad Pass and Cajon Pass connecting to the South Coast Air Basin. The Kern County portion of the western Mojave Desert is influenced primarily by transport through the Tehachapi Pass corridor with some potential influence through Soledad Pass. Soledad Pass and Cajon Pass mainly influence air quality in the eastern portion of the Mojave Desert due to prevailing wind directions.

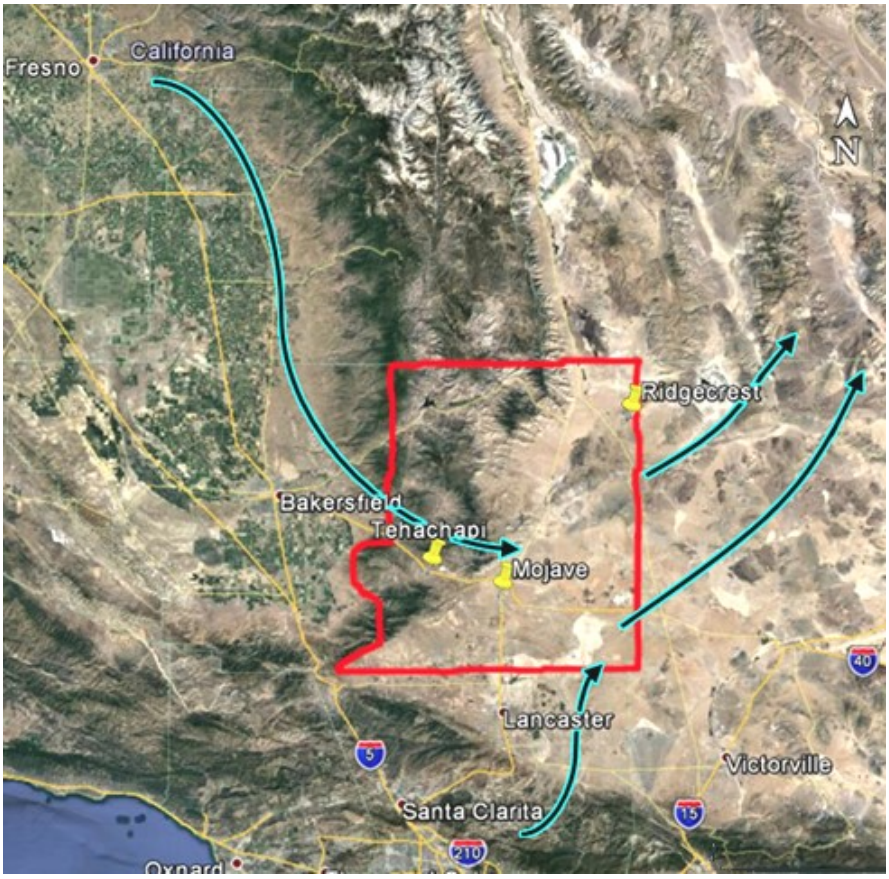


Figure A: Transport Corridors Surrounding Eastern Kern

Pollutant Transport

Transport occurs when winds are sufficient in magnitude, direction, and duration. Transport can take place from the surface up to several thousand feet in elevation. Atmospheric chemistry also determines how transported pollutants may affect downwind O_3 concentrations. The District's air quality is overwhelmingly impacted by O_3 and its precursor emissions NOx, and VOC being transported from the San Joaquin Valley Air Pollution Control District and South Coast Air Quality Management District, both of which are designated Extreme Non-attainment (Figure A).

By: Jeremiah Cravens, Senior Air Quality Specialist

New Board Chamber & Field Office

The District's field staff has occupied a small office just off Highway 202 on Brian Way (Tehachapi, CA) for several years. Over the years, the District has outgrown this space. In addition, it had become evident that the District needed a Board/Meeting Room of its own. Facilities previously utilized became unavailable during the pandemic, or were utilized by other agencies. District staff turned to the Brian Way field office to hold Board and public information meetings; however, the temporary fix did not adequately suffice.

Therefore, Glen Stephens, Air Pollution Control Officer (APCO) requested approval from the District's Board of Directors to pursue the lease of a larger facility that included adequate office space for the growing staff and a Board/Meeting Room. After a search of available spaces, the location at 414 W. Tehachapi Blvd., Unit D was selected.

Tenant improvements were initiated and the space was transformed to meet the direction of the Board and the vision of the APCO. This includes five offices, a Board/Meeting room, a conference room, and two storage areas.

Upon completion of the improvements, the District started the process to make the facility a home. Field staff officially moved into the new space the first week of January 2022.

Special Thanks to the following for making this project a success:

Board of Directors (Eastern Kern APCD)
Tim Garrison (Kern County General Services)
Kern County Information Technology Services
Yoo Family
Terri Juergens (Realtor)
Glen Stephens (APCO)

New Location:

Board of Directors Chamber & Field Office
414 W. Tehachapi Blvd, Unit D
Tehachapi, CA 93561

New District Staff Member

The Eastern Kern Air Pollution Control District would like to welcome Melissa Atkerson as its newest Air Quality Specialist. She joins the Districts' staff with a bachelor's degree in Biology from California State University, Bakersfield and is currently earning her master's degree in Environmental Science at California State University, Los Angeles. During her journey through upper education, Melissa found a passion in protecting the environment and human health through serving her community. Apart from her dedication to air quality, she also interns at the Kern River Conservancy in our Kern River Valley. Through her internship, she analyzes water quality in the Kern Watershed that provides resources and leisure to our community. Melissa is a lifelong Kern County local and is excited to be serving her community through the Districts' mission devoted to public health. She looks forward to working closely with District residents and businesses to ensure a safer environment for everyone.

Board of Directors

Michael Davies, Chairman (Councilman, Tehachapi)
Zack Scrivner, Vice-Chair (KC 2nd District Supervisor)
Phillip Peters (KC 1st District Supervisor)
Kyle Blades (Councilman, Ridgecrest)
Jim Creighton (Councilman, California City)

Board of Directors usually meet once every two months starting in January. The location, along with 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
Brett Moseley
One Vacancy

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

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