DESERT BREEZE

VOLUME XII ISSUE III SEPTEMBER 2024

The Zero Emission Vehicle Rebate Program is Back!

The District receives funds through an "air quality impact" fee collected by the DMV. The revenues generated are used to reduce motor vehicle related air pollution in Eastern Kern County. A substantial portion of the DMV funds has been allocated to the District's Zero Emission Vehicle (ZEV) Rebate Program.

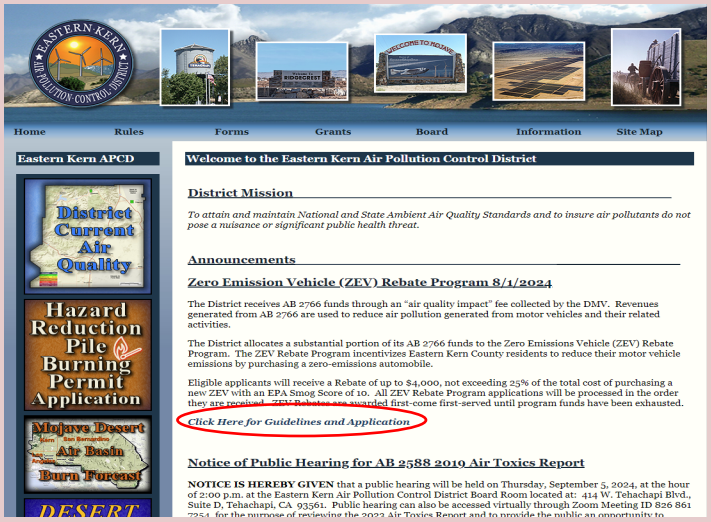
The ZEV Rebate Program incentivizes Eastern Kern residents to reduce their motor vehicle emissions by purchasing a new zero-emissions automobile. Eligible applicants can receive a rebate of up to $4,000 after they purchase a new qualifying ZEV. There is no requirement to replace or retire an existing vehicle.

ZEV Program Eligibility Requirements

Applicants must meet all the following requirements to qualify for a ZEV rebate.

* The new vehicle must be rated zero-emissions and must be a new purchase from a dealership. ***Leased or used vehicles are not eligible for a rebate.***
* A complete application package must be submitted within 30-days of purchase date of a new eligible ZEV. ***A rebate will not be issued for a vehicle that was purchased greater than 30 days from application receipt date.***
* Applicant must primarily reside in Eastern Kern County and provide proof of residency.
* Applicant must be 18 years of age or older.
* Applicant is only eligible to receive one ZEV rebate per 12 months.

ZEV Rebate Program guidelines and applications are available on the District's website www.kernair.org. It is recommended applicants review the guidelines prior to purchasing a new vehicle to ensure they qualify for a rebate. All applications will be processed in the order they are received. ZEV Rebates are awarded first-come first-served until program funds have been exhausted. There is no guarantee all applicants will receive a rebate.



Please visit Kernair.org for more information

Written By: Jeremiah Cravens, Senior Air Quality Specialist

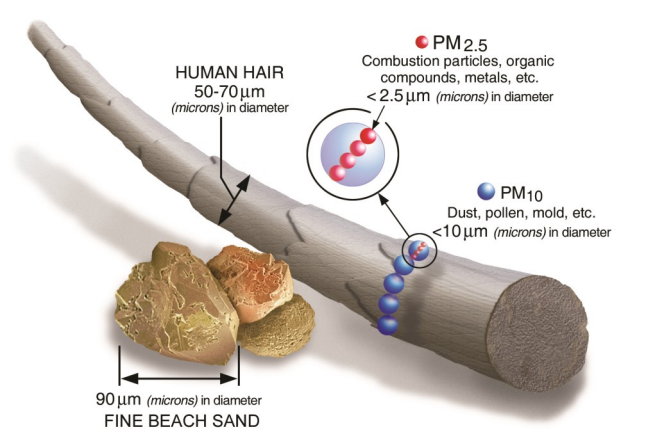
Staff Re-Introduction: The District welcomes back David!

David has had a lifelong concern for the environment and the public health. He graduated from CSU San Bernardino with a bachelor's degree in Biochemistry and a Minor in Biology with an Ecology focus. He has worked for over 15 years in the environmental field, with most of his experience upholding regulatory compliance as an Air Quality Specialist and Leader, contractor for the Air Force and NASA at Edwards Air Force Base. David has experience working with major and minor permitted sources, working with aerospace, mining, gasoline dispensing facilities, as well as multiple other permitted sources. David is happy to be rejoining the Air District as an Air Quality Specialist and is glad to be working with the Air District's again, whom he has collaborated with in his previous employment.

Pollutant of the Quarter: Particulate Matter (Dust)

Particulate Matter (PM) is a mixture of finely divided solid or liquid particles found in the surrounding air. Examples of PM are soot, smoke, aerosols, dust, fly ash, fumes, and mists. PM is identified by its size: PM_{10} (particles that are 10 microns in diameter and smaller) or $PM_{2.5}$ (particles that are 2.5 microns in diameter and smaller). With using dust as an example, PM_{10} would be considered a coarse dust, while $PM_{2.5}$ would be considered a fine dust.

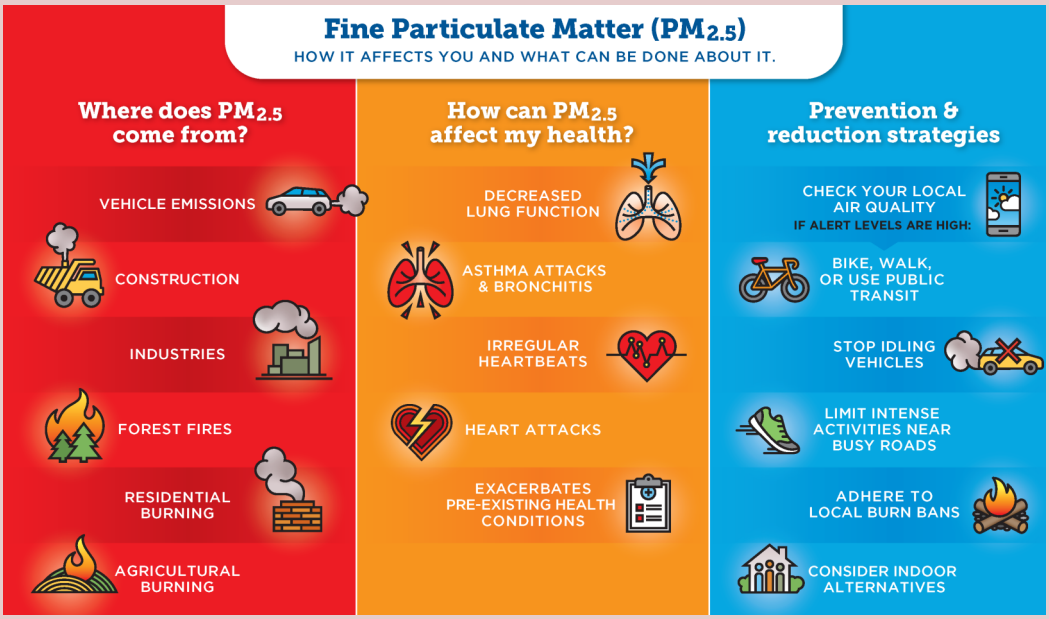
Particles form in the atmosphere because of complex reactions of chemicals which are emitted from power plants, industrial sources and motor vehicles. Sources of PM can also be emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Outside, blowing dust is a normal phenomenon in Eastern Kern County, and it can occur at any time. Strong winds blowing across the dry open desert landscape with little to no vegetation can generate large plumes of dust. Blowing dust can reduce visibility and worsen local air quality. The reduced visibility makes tasks such as driving much more dangerous and increases the likelihood of being involved in an accident.



Blowing dust can transport organic chemicals, airborne bacterial species, trace metals, and other toxic compounds that can also cause a wide range of acute and chronic health effects. Depending on its size and composition, airborne dust particles can cause property damage, impair visibility, and penetrate deep into the lungs and impair the respiratory processes.

People with heart or lung diseases, older adults, and children are the most likely to be affected by fine particulate exposure. However, even a normally healthy adult may experience temporary symptoms from exposure to elevated levels of particle pollution. Short-term exposures to PM_{10} (hours or days) can aggravate lung disease, cause asthma attacks, and may also increase susceptibility to respiratory infections. Healthy children and adults have not been reported to suffer serious effects from short term exposures, although they may experience temporary minor irritation when particle levels are elevated. Long-term exposures to PM_{10}, such as those experienced by people living in areas with elevated levels of PM_{10} for many years, can develop problems such as reduced lung function and chronic bronchitis.

PM_{10} is considered a "criteria air pollutant" and the District has two rules implemented to mitigate fugitive dust from human activity: District Rule 402 (Fugitive Dust) requires reasonably available control measures (RACM) to be implemented for construction projects that will disturb two or more contiguous acres, while operations over 10 acres are required to have a District approved Fugitive Dust Emission Control Plan which must be obtained prior to commencing operations. Fugitive dust from agriculture activities larger than 10 acres is regulated by District Rule 402.2.



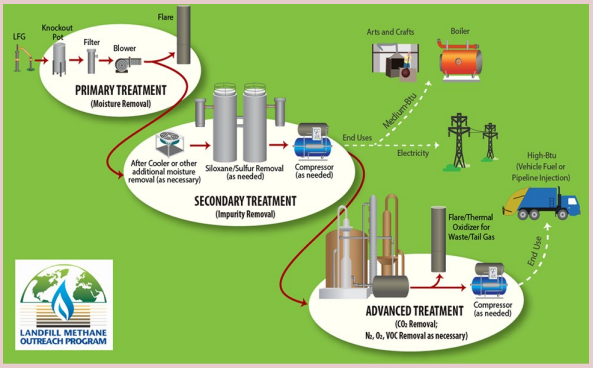
Additionally, the District is responsible for permitting the equipment and operations which cause emittance of pollution. The District requires industrial sources use control technology which capture and greatly reduce the emissions during manufacturing or operational practices. PM control technology such as scrubbers, cyclones, electrostatic precipitators, and/or baghouses can be used in capturing particles and chemicals before they are released into atmosphere. Refer to the June 2023 Desert Breeze to learn more about Baghouses and their function in reducing PM emissions into the atmosphere.

Written By: Katharine Lantz, Air Quality Specialist

Landfill Series: Part 3

How are emissions controlled at landfills?

In the last two editions of Desert Breeze we covered the ins and outs of landfills from how they operate to what emissions they emit. In this edition, we will cover how those emissions are controlled or mitigated. As we learned from last edition, the anerobic decomposition of organic matter within the landfill creates what we refer to as landfill gas (LFG). This gas is primarily composed of up to 98% Methane (CH_4) and CO_2 but also contains small amounts of non-methane organic compounds (NMOC) which includes VOCs responsible for ozone formation and Hazardous Air Contaminants (HAP) including hydrogen sulfide (H_2S). For more info, please see previous versions of Desert breeze in our website (kernair.org). Various technologies have been used over the years to collect, and purify landfill gas ultimately reducing the amounts of methane and CO_2 emitted into the air.



How is the gas extracted from landfill?

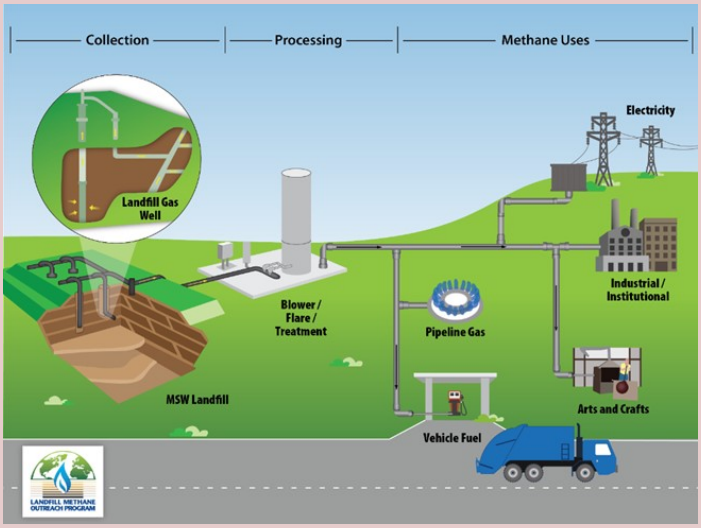
The first step to reducing emissions is the collection of landfill gases. These are collected by installing a network of wells and extracted from subsurface using a network of piping. Landfill gas (LFG) collection systems are either active or passive depending on the amount of methane generation. Methane generation in landfills is dependent on several factors including biodegradability of waste and climate where landfill is located, specifically humidity. Active collection systems use of mechanical blowers or compressor to assist extraction of LFG while passive systems allow the natural pressure gradient created to mobilize the gases for collection.

What happens to gas extracted from landfill?

Depending on the amount of LFG collected this can either be combusted in a flare or treated to remove moisture and impurities for use as a fuel. Combusting LFG in a flare significantly reduces the amount of methane emission released into the atmosphere by more than 98%. On the other hand, when a high amount of LFG is produce, the LFG can be purified and used as fuel providing electricity or pipeline quality natural gas. Landfill gas is approximately 50% methane which is the primary component of pipeline natural gas. This mean LFG can be used a clean fuel alternative.

Gas treatment- Non-combustion

The LFG collected is treated first by removing moisture using knockout drum, then the gas is passed through activated carbon Activated carbon to remove Hydrogen Sulfide (H_2S) and other VOCs from gas stream. Activated carbon is the most widely used type of adsorption system but there are other types of biofilters are often used to purify landfill gas. Some of these purification techniques can also be used to process raw landfill gas to pipeline quality natural gas by using adsorption, absorption, and membranes.



LFG Combustion

Open flame flares (e. g., candle stick or pipe flares), the simplest flaring technology, consist of a pipe through which the gas transported, a means to regulate the gas flow, and a pilot light to spark and ignite the gas. These flares are simple and inexpensive to operate. However, the disadvantages include inefficient combustion, and monitoring difficulties.
Enclosed flares are more complex and significantly more expensive than open flame flares. Enclosed flame flares consist of multiple burners enclosed within fire- resistant walls or refractory that extend above the flame. Unlike open flame flares, the amount of gas and air entering an enclosed flame flare can be controlled, making combustion more efficient with higher retention time providing greater contaminant destruction. Combustion at high temperatures in the presence of sufficient oxygen is able to oxidize emissions to primarily carbon dioxide and water.

Other enclosed combustion technologies such as boilers, gas turbines, and internal combustion engines can be used to efficiently destroy organic compounds in landfill gas, but also to generate useful energy or electricity. However, this often required pre-treatment of LFG to remove impurities as described before.

Written By: Miguel Sandoval, Air Quality Engineer

Board of Directors

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Vacant, Vice-Chair (KC 2nd District Supervisor)
Phillip Peters (KC 1st District Supervisor)
John 'Skip' Gorman (Councilman, Ridgecrest)
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Board of Directors 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

Gary Ray, Jr.

Hearing Board Members

Doris Lora
Chris Ellis
Benjamin Dewell
Brett Moseley
Brenton Smith

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

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