



DESERT BREEZE

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High Wind Events

Many residents in Kern County are familiar with the seasonal high winds that come around annually. The result of gas molecules flowing from areas of high atmospheric pressure to low pressure, these winds can vary from a refreshing breeze to a dangerous gale. Areas of rugged topography (i.e. mountains & valleys) create barriers that distort air flow; this distortion can result in acceleration of air flow along the barrier. Mountain passes also act as a funnel for the wind, resulting in higher wind speeds due to the Bernoulli principle. These winds can create airborne fugitive dust when they travel across dry, loose soil. When



high winds travel across these areas, the winds can lift small particles off the ground and into the air, where they can obscure the visibility of motorists, cause property damage (since fugitive dust likely contains abrasive material), and are able to reach the breathing height of humans. Of particular concern to the District are particles smaller than 10 microns in diameter, commonly referred to as PM₁₀, which can stay airborne for a substantial amount of time and is small enough to travel past the lungs' natural defenses and enter the respiratory tract. PM₁₀ is considered a "criteria air pollutant"; inhalation of PM₁₀ is known to result in a variety of adverse health effects, including but not limited to aggravation of asthma and permanent lung damage. 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 (Agricultural Operations).

By: Sam Johnson

Pollutant of the Quarter: **TOLUENE**

Toluene, also known as Methylbenzene, Toluol, or Phenylmethane is a clear, colorless liquid with a distinctive smell. Toluene is a useful and common chemical used in making paints, paint thinners, finger-nail polish, lacquers, adhesives, and rubber. Used in industrial settings, repeated exposure to toluene has been shown to be harmful to workers by depressing and even damaging the central nervous system (CNS). Workplace safety procedures, that evolve as new information becomes available, are implemented to protect workers from recognized hazards.

Commonly used in many consumer products, toluene poses a potential harm to many people who may not be as aware of harmful properties of, and ingredients in the products used. One reason paint, solvents, and adhesives have been subject to reformulation is because of regulations to reduce emissions of Volatile Organic Compounds (VOCs). Another reason is to improve workers safety.

Clear and colorless, toluene is less dense than water, and it does not mix with water. The vapor is heavier than air, and the vapor pressure is greater than that of water. It is the characteristic aromatic odor that is most noticeable about toluene. Because the vapor is heavier than air it is very important to have adequate ventilation when working with products that contain toluene.

In a move to create a safer workplace for California's approximately 130,000 nail salon workers The Safer Consumer Products program of the Department Toxic Substances Control (DTSC) has proposed **naming nail products containing toluene a priority product. By listing toluene as a priority product of concern, manufacturers will be prompted to reformulate nail products to contain less toluene.** The eventual phase out of toluene in nail products will result in less chronic workplace exposure for thousands of nail salon workers.

By: Brenton Smith

CANNABIS: Why do we care?

Part 1 of 4



In recent times, Cannabis has resurfaced as a controversial and political issue, but although having a new name, the use and controversy of cannabis dates back many years. Cannabis, also known as marijuana, pot, hash, weed, reefer, dope, herb, and hooch refers to the psychoactive drug resulting from the cannabis plant. These along with other names have been used for years, however, in recent times, the name cannabis has become the preferred name for the psychoactive drug. According to some experts, the name cannabis is said to be more neutral when trying to disassociate the drug with illegal use. The name cannabis comes from the scientific name given to the plant genus itself: *cannabis* from the family of *cannabaceae* plants. The cannabis plant genus refers to a group of three plants with psychoactive properties; *cannabis sativa*, *cannabis indica*, and *cannabis ruderalis*. Modern cannabis usually comes from a hybrid of these plants. The main active chemical in modern cannabis is delta-9 tetrahydrocannabinol also known as THC. THC is only one of over 400 known compounds in the cannabis plant. These compounds can be broken down to terpenoids, cannabinoids, flavonoids, and omega fatty acids. Terpenoids are responsible for the aroma in cannabis and in most flowering plants. Cannabinoids on the other hand are compounds unique to cannabis, which include THC and cannabidiol (CBD). THC is the main psychoactive compound and is the main factor that results in the “high” that most people associate with the drug. CBD on the other hand is a non-psychoactive cannabinoid, meaning it will not get you “high”, but is often used to help reduce inflammation and ease pain. In the wild, feral cannabis contains roughly similar amounts of THC and CBD. However, modern breeding techniques and cultivation practices, yield cannabis plants with substantially higher ratios of THC to CBD. We will talk about breeding practices in the next edition of Desert Breeze (cannabis cultivation). In the early days, however, cannabis was not primarily used for its THC content or recreational use but rather for medicinal and ceremonial purposes.

The origins of Cannabis are unclear but the use of cannabis can be dated back to ancient cultures in China, India, and Egypt as early as 2,900 BC. Most ancient cultures used the plant as herbal medicine rather than for recreational purposes. For example, according to researchers, the ancient Egyptians are believed to have used cannabis to treat glaucoma as well as general inflammation, while ancient Indian cultures used it to cure fever and encourage sleep. In America however, cannabis was first introduced by early colonists in the “hemp” variety which is a non-psychoactive strain of the *cannabis sativa* plant. We will cover this topic in our next article (cannabis cultivation). In the early days, colonists used hemp to manufacture various textiles including clothing, rope and woven paper. Additionally, in the United States, marijuana was not widely used for recreational purposes until the early 1900s when it was first introduced from Mexico. Marijuana was outlawed in 29 states by 1931, and was then listed as a schedule 1 drug along with heroin, LSD, ecstasy, etc. in 1970. In 1996, California became the first state to legalize marijuana for medicinal use by people with severe or chronic illnesses. Currently, 29 states and the U.S. territories of Guam and Puerto Rico allow the use of cannabis for limited medical purpose. As of June 2019, eleven states including California and Washington, D.C., have legalized marijuana for recreational use. However, commercial activities including cultivation and manufacturing can be prohibited by local governments. Additionally, Cannabis use and its related activities remain illegal under U.S. federal law and cannabis is still considered a schedule 1 drug by the U.S. Drug Enforcement Administration (DEA). Closer to home, Cannabis activities including cultivation, manufacturing, and distribution have recently been authorized by the local government in California City. As we will explain in this and future series of Desert Breeze articles, cannabis activities including cultivation and oil extraction emit odors, and regulated air pollutants, all of which cause a significant concern for our district.

Continued on next page.

In August 2018 California City became the first incorporated city within Kern County to approve the commercial cultivation, manufacturing, and retail of cannabis. As mentioned before, cannabis plants during cultivation release natural hydrocarbons called terpenes. Terpenes are classified as Volatile Organic Compounds (VOCs), which contribute to air pollution via ozone formation. VOCs are known as ozone precursors which means VOCs react with Nitrogen Oxides (NOx) to form ground level or “bad” ozone in the presence of sunlight. In addition, the extraction of cannabis oils during the manufacturing process often involves the use of solvents, which are also made up of VOCs and can be leaked into the atmosphere. Additionally, the strong odors associated with cannabis cultivation and manufacturing operations can negatively affect the surrounding community and cause a public

nuisance. Thus, local City ordinance requires owners/operators to install odor control systems to prevent offsite odors and public complaints. Therefore, the District is tasked with ensuring control equipment is adequately designed with best available technology. Furthermore, cannabis operations often require the use of stationary fossil fueled piston engines which are established sources of air contaminants and extensively regulated by local, state, and federal statutes. Therefore, all cannabis cultivation, manufacturing, and piston engine operations are required to maintain a Permit to Operate issued by the District. In our next article on cannabis cultivation, we’ll discuss the cultivation process including plant varieties or “strains”, emission/ odors associated with cultivation and best pollution mitigation practices for such.

By: Miguel Sandoval

INDIAN WELLS VALLEY SECOND PM10 MAINTENANCE PLAN

In 1985, the U.S. Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standards (NAAQS) to replace the total suspended particulates (TSP) standard with a PM₁₀ limit of 150 micrograms per cubic meter (ug/m³) averaged over 24-hours. PM₁₀ are particles with an aerodynamic diameter of ten microns or less. PM₁₀ is a regulated air pollutant because it can be inhaled deep into the respiratory system and induces many negative health effects. See *Desert Breeze Volume 4 Issue 4 (December 2016)* for a complete PM10 article.

In 1990, the U.S. EPA designated the Searles Valley Planning Area “Moderate” nonattainment for the PM₁₀ NAAQS. At that time, the Planning Area included sections of the following three air districts: Eastern Kern APCD (Indian Wells Valley), Great Basin Unified APCD (Coso Junction), and Mojave Desert AQMD (Trona). In 2001, the U.S. EPA divided the Planning Area into three separate subareas, delineated by the three air districts. Eastern Kern’s portion of the Searles Valley Planning Area is comprised of approximately 566 square miles of the southern half of the Indian Wells Valley (IWV), located within Kern County.

On May 7, 2003, the U.S. EPA approved the District’s first *IWV PM10 Attainment Demonstration, Maintenance Plan, and Re-designation Request*, and the IWV was re-

designated from Moderate nonattainment to Attainment (published 68 FR 24368). The first IWV maintenance plan showed actual emissions for 1990 through 1994, and forecast emissions for 1997, 2001 and 2013. The plan projected that PM₁₀ emissions would decline and then remain constant through 2013; this proved to be true. There were no exceedances, and PM₁₀ emissions even remained relatively flat through 2018.

Section 175A(d) of the Federal Clean Air Act (FCAA) requires the District to prepare and submit a second PM₁₀ maintenance plan. The second plan must demonstrate continued maintenance of the PM₁₀ NAAQS for at least ten additional years following the first ten-year period. The District has prepared a second maintenance plan that uses 2017 as the Base Year, with the second maintenance period ending in 2025. Forecast air modeling shows continued maintenance of the PM₁₀ NAAQS well beyond 2025.

The District held a public workshop to present, discuss, and receive comments on the second IWV PM₁₀ maintenance plan on December 3, 2019, at the Kerr McGee Center, in the Fossil Falls Room located: 100 W. California Ave., in Ridgecrest, CA. The District anticipates Board approval of the second maintenance plan at the May 2020, Board Meeting.

By: Jeremiah Cravens

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Board of Directors usually meet once every two months starting in January at the Tehachapi Police Department Community Room.

Air Pollution Control Officer

Glen E. Stephens, P.E.

Hearing Board Members

William Deaver
Doris Lora
Chris Ellis
Charles Arbaut
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For news updates and other information, please visit the Eastern Kern APCD website at www.kernair.org

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