



Cancer and Air Pollution

Air pollution has been around for a long time. In 1952 thousands were killed in England during a severe smog incident. At that time, I doubt many thought that smog could cause cancer. Now we know certain types of air pollution is carcinogenic (causes cancer). In 1987, AB-2588, titled the Air Toxics “Hot Spots” Information and Assessment Act of 1987 became law. The Eastern Kern Air Pollution Control District (District) has been mandated to assess toxic air contaminant emissions within our jurisdiction through the AB-2588 program. The spirit of the law is to determine toxic emissions from subject facilities and create an Emissions Inventory, assess the health risk from each facility to the community at large, compile the information and present a report of the toxic emissions in the District to the community. The District has completed these activities since 1990. The most recent AB-2588 Air Toxic Report can be found at the District’s website, www.kernair.org; hover over the “Information” tab and click on the “Reports” link.

Over the past few years technology has changed, community involvement has changed, and several incidents have occurred that prompted passage of new laws. New air monitoring devices such as Purple Air Monitors and personal air monitors have been developed. Many new air monitors utilize the internet to give hourly and “immediate” air quality data.



The Exide Technologies battery recycling facility in Vernon California, gained national attention after toxic emissions were determined to be emitting from their facility. Exide paid \$869,000 in penalties since 1999. Most were assessed in the last two years after public outcry over revelations that the facility's arsenic emissions posed an increased cancer risk to 110,000 residents. Community action groups in Northern California have focused on Richmond and East Oakland to make sure both cities have the resources needed to reduce pollution. Richmond, California is known for the Chevron Richmond Refinery that emits various carcinogens to the atmosphere. Oakland, California is home to the Port of Oakland which emits particulate matter and various fumes from the diesel trucks and ships that transport material to and from the location. Both cities have low-income (disadvantaged) communities. In response to public outcry and community action groups, California Legislature passed AB-617 Community Air Protection Program, in July 2017.

AB-617 is a complex regulation with several components, including: funding, Air District requirements, community requirements, California Air Resources Board requirements, and many other conditions. A couple of things to note in the regulation is the deployment of the Community Air Monitoring System and Fence-line Monitoring System.



The Community Air Monitoring System is an advanced monitoring network that measures and records air pollution concentration in communities with high exposure burdens, also near sensitive receptor locations and in disadvantaged communities. These monitors may be useful in estimating associated pollutant exposures and health risks over time.

The Fence-line Monitoring System is air monitoring equipment that measures and records air pollution concentration at, or adjacent to, a stationary source that may be useful in estimating emissions from that source. With the invention of new air monitoring equipment, many new systems will be deployed in the upcoming years that will measure air pollution throughout the community.

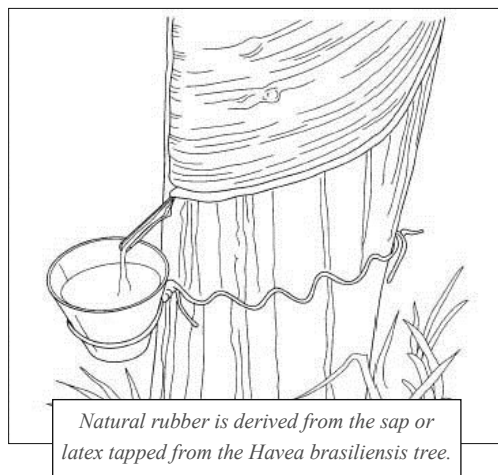
With a better air pollution network, we can pinpoint and reduce air pollution at the source, including carcinogenic emissions. Less carcinogenic emissions will result in less cancer.

Less cancer is good for everyone.

By: Glen Stephens

Pollutant of the Quarter : Rubber Cement

Adhesives have been used by humans for a very long time. For example: ancient carvings show thin pieces of veneer glued to a wooden plank, fibers in ancient fabric were joined together with flour paste, and gold leaf was bonded to paper with egg white.



Rubber cement is a liquid that contains rubber dissolved in a solvent, such as hexane or heptane, and is used as an adhesive. Rubber in its natural form comes from the *Hevea brasiliensis* tree originally found in Brazil. The most common name for this tree is the Rubber Tree. For centuries the Rubber Tree has been used to produce solid rubber. A hole in the tree is opened to allow raw latex to flow to the opening where it is collected. Collected latex forms a lump that can be treated with heat to produce a solid.

High speed mixers equipped with sharp blades pulverize solid rubber into a size similar to sawdust. After the pulverization process the rubber is added to solvent, where it is dissolved. When the rubber cement is spread on a surface, such as paper, the solvent evaporates leaving the surfaces connected by the thin film of remaining rubber. The connection remains flexible, and does not dry to be brittle like some other types of adhesives. This flexibility is what makes it the preferred adhesive for certain applications. A bond made with rubber cement can be pulled apart without damaging the material that has been bonded.

Rubber cement may contain 70-90% heptane or hexane. It is flammable and should be handled with care. It should be used with adequate ventilation. The properties and performance of the rubber cement are determined by the type and amount of ingredients. More recent formulations of rubber cement include solvents with less volatile organic compounds. Rubber cement is shipped with a material safety data sheet (MSDS) that outlines proper handling procedures since the ingredients are hazardous and flammable. The solvents in rubber cement are Volatile Organic Compounds (VOC), and are subject to regulation under the 1990 Clean Air Act Amendments. The Eastern Kern Air Pollution Control District does not have any major sources of Rubber Cement production or use. The State of California sets standards for consumer products.

Newer formulations of rubber cement include less VOCs, and may include Acetone or Ammonia. *By: Brenton Smith*

Trash Burning

All garbage releases toxic chemicals when burned. Even paper.



"Bernie the Burn Barrel" and related materials developed by the Western Lake Superior Sanitary District with support from the EPA's Great Lakes National Program Office.

With temperatures dropping and the holidays kicking into high gear, many of us will be looking to keep warm and also find a way to quickly dispose of our latest collection of packaging that has accumulated in our homes. You may be tempted to put some boxes or wrapping paper into the fireplace, or build a bonfire to get rid of your Christmas tree; be aware, setting fire to paper, plastics, wood, and other waste material releases a host of hazardous air emissions. Burning trash generates oxides of nitrogen (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and particulate matter smaller than 2.5 microns in diameter (PM_{2.5}). NO_x and VOC are precursors to ground-level ozone which, along with PM_{2.5}, can irritate the eyes and throat, cause airway inflammation, and exacerbate existing lung conditions. Burning your trash may also release substances known as "Toxic Air Contaminants", (TAC) for which there is no established safe exposure level, into the air. These TAC can include mercury, lead, chromium, arsenic, polycyclic aromatic hydrocarbons (PAH),

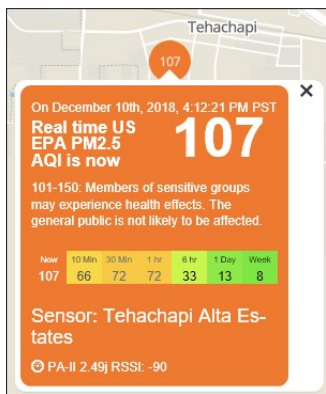
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Purple Air Monitors

PurpleAir provides an air quality monitoring solution for home enthusiasts. For approximately \$229, you can purchase a PurpleAir PA-II to install outside your home and connect via WiFi to begin monitoring your local air particulate matter (PM) concentration. If WiFi is unavailable, the PurpleAir PA-II-SD includes a built-in 16 GB micro SD card that stores two years of monitoring data.

The PurpleAir PA-II uses a fan to draw air past a laser, causing reflections from particles in the air. Particle reflections are counted in six sizes between 0.3 microns (μm) and $10\mu\text{m}$ in diameter. Particles are then counted in one-second intervals to estimated total mass for $\text{PM}_{1.0}$, $\text{PM}_{2.5}$ and PM_{10} . Finally, readings are uploaded to the “cloud” about every 80 seconds where they are stored for download and displayed on the PurpleAir map.

The PurpleAir Map displays points using the Environmental Protection Agency (EPA) Air Quality Index (AQI) scale. The AQI allows comparison for different pollutants with an easy to visualize color scheme. The scale goes from green (good air) to yellow, orange, red, purple, and finally maroon (hazardous air). There are also graphs that give further information on different counts, relative weights, and sizes of particles in the air.



In 2017, the South Coast Air Quality Management District (SCAQMD) performed accuracy tests on three PurpleAir PA-II air monitors. The tests were designed to check PA-II’s ability to generate precise measurements of PM concentration at low, medium, and high pollutant levels. The monitors were evaluated under nine combinations of temperature and humidity. Overall, the three PurpleAir PA-II showed moderate to good accuracy for a concentration range between 0 to $250\text{-}\mu\text{g}/\text{m}^3$, compared to the reference instrument for $\text{PM}_{1.0}$, $\text{PM}_{2.5}$, and PM_{10} .

The PurpleAir, Air Quality map can be located on their website, www.purpleair.com.

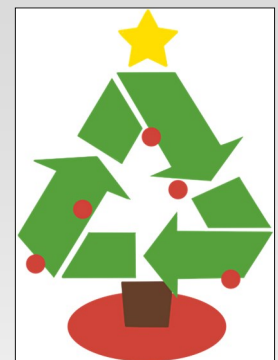
By: Jeremiah Cravens



hexachlorobenzene (HCB), and dioxins. Plus, **it is illegal.**

Lead, mercury, hexavalent chromium, and arsenic are metals that may be found in the ash produced by burning trash, and exposure to these metals can result in a host of significant health problems that include: impaired mental function, abdominal pain, numbness in limbs, and some cancers. PAH exposure has been linked to cancers of the skin, lungs, bladder, liver, and stomach, as well as cardiovascular diseases. HCB, once used as a fungicide, can have detrimental effects on the liver, kidneys, skin, and immune system if a person is frequently exposed. Dioxins are a group of highly toxic, long-lasting organic pollutants that are produced by combusting materials containing carbon and chlorine, such as polyvinyl chloride [PVC, chemical formula $(\text{C}_2\text{H}_3\text{Cl})_n$]. Dioxins are known to cause immune system damage, reproductive or developmental problems, and are also categorized as a “likely human carcinogen” by the EPA.

Eastern Kern APCD and the California Air Resources Board have rules & regulations prohibiting the outdoor burning of trash. District Rule 416 (Open Burning) prohibits the burning of refuse or other material in an open outdoor fire within the boundaries of the District. Instead of burning your trash, make use of waste collection and disposal infrastructure already in place, including curbside pick-up, recycling centers, hazardous waste collection facilities, and Kern County landfills. If you believe burning your trash is your only feasible disposal option, contact the District or your local Kern County Fire station for more information.



By: Sam Johnson

Board of Directors

Don Parris, Chairman (Councilman, California City)
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Eddie Thomas (Vice Mayor, Ridgecrest)
Mick Gleason (KC 1st District Supervisor)

The 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
Dr. Wallace Kleck
Chris Ellis
Charles Arbaut



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

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