



Investigations and Air Sampling in Mecca, CA

Status Report - March 31, 2011

South Coast Air Quality Management District

To: Interested Parties

From: Barry Wallerstein, D. Env, Executive Officer

Since mid-December 2010, the South Coast Air Quality Management District (AQMD) has responded to numerous odor complaints received from local schools, local community services facilities and nearby neighborhoods regarding various odors present in the community of Mecca. In response, the AQMD initiated a series of investigations and air monitoring activities. The AQMD has identified Western Environmental, Inc. and their co-owned adjacent facility, Waste Reduction Technologies, as the primary source of the odors. To date, there have been no elevated levels of toxic pollutants detected in the community. However, there are still known health impacts resulting from exposure to strong and objectionable odors, and the AQMD takes these health impacts seriously. What follows is a summary of the results of the AQMD's activities as well as planned future actions. The AQMD is committed to working with the United States Environmental Protection Agency (EPA), the Cabazon Band of Mission Indians, facility operators, and local public health officials to eliminate these odors and ensure the safety and health of the Mecca community.

ODOR INVESTIGATIONS

To date, AQMD has received and responded to over 140 complaints from local residents, teachers and staff who have detected the odors in their community and at their school sites. AQMD field staff has independently detected odors in the community. The following map provides the locations of the public complaints along with the locations of industrial facilities in the area. Please note that a single complainant location identified on the map most likely represents multiple complaints received over time from one single address. The most objectionable foul odors have been described as a petroleum-type odor, rotten egg odor, burnt motor oil, raw sewage/human waste-type odor, and woody-type odor. In response, AQMD has investigated those complaints by:

- Dispatching inspectors to the community to interview complainants and, whenever possible, confirming the odor(s) with the complainant,
- Participating in interagency investigations into the odor complaints with EPA and Riverside Environmental Health and the Riverside County Fire Department,
- Tracking odors to possible sources,

- Inspecting various businesses operating in the area to assure compliance with AQMD rules, state laws and federal regulations,
- Conducting tours of facilities operating in AQMD jurisdiction and on nearby tribal lands,
- Performing routine odor surveillance activities in the community of Mecca, and;
- Providing handheld sampling devices to staff at the Saul Martinez Elementary School to be used when odors are detected on the school grounds and in classrooms.

AQMD field staff conducted inspections at sources operating within the Mecca community and determined that those facilities not operating on tribal lands are in compliance with AQMD Rules and Regulations with the exception of one facility with a change-of-ownership issue. As a result of AQMD's ongoing investigation into the foul objectionable odors impacting Mecca schools and residents, facilities operating on the Cabazon Band of Mission Indian tribal lands; specifically Western Environmental, Inc. and the co-owned and operated adjacent Waste Reduction Technologies, were determined to be the source.

Western Environmental, Inc. is a contaminated soil recovery and recycling facility that accepts and processes petroleum and pesticide contaminated soils as well as soil containing lead and other heavy metals. They also accept, for on-site treatment, liquid oil/water waste, drilling muds and other petroleum containing liquid waste materials from various operations. Also operated at this location is Waste Reduction Technologies, a co-composting operation which accepts and processes building materials, green/agricultural waste, bio-solids from sewage treatment facilities and, until recently, soy-whey waste products.

Although there now appears to be other possible odor-related operations at these two sites, EPA and AQMD initially determined the specific source of the foul odors to be two specific activities; an oil/water separation pond located at Western Environmental, Inc. and a soy-whey/bio-solids open-air mixing operation at Waste Reduction Technologies. Since brought to the attention of the Cabazon Band of Mission Indians, Tribal Affairs and Tribal Council members, Western Environmental, Inc., has eliminated the oil/water separation pond and replaced it with on-site storage tanks where the liquid materials are separated and treated. Waste Reduction Technologies has temporarily suspended accepting additional soy-whey products until processing of the remaining materials is completed and other alternatives can be evaluated. Other contributing odor sources recently identified by AQMD staff include an elevated, in-ground pond where drilling muds from various industrial processes are processed and an open storage/treatment area consisting of 55 gallon drums of waste materials received from cosmetics and pharmaceutical manufacturers.

The AQMD will continue its investigation to determine the nature and extent of the odor problems in the community and the effectiveness of the remedial actions taken by Western Environmental and Waste Reduction Technologies. The AQMD also will coordinate its efforts with local, state and federal regulatory agencies to ensure that all necessary and appropriate law enforcement action is taken to protect the public health. If odor problems persist, impacted residents are urged to contact the AQMD at 1-800-CUT-SMOG (1-800-288-7664). For Spanish speaking community members, please call 1-800-876-3666.

Locations of Monitoring Sites and Complainants Near Tribal Lands City of Mecca, California



AIR MONITORING

The AQMD has conducted several different types of air monitoring activities in response to the odor problems in Mecca. One type of sampling is intended to measure *long-term* exposure to certain toxic pollutants that may increase risk of chronic diseases such as cancer or respiratory illnesses. Samples for this purpose are collected in the community over 24-hours and multiple samples are collected over multiple days to approximate long-term exposure to pollutants.

Another type of sampling is conducted in response to short-term events such as fleeting odors. These instantaneous “*grab*” samples can be collected manually by AQMD staff, by community members, or by automatic equipment, in order to get a snapshot of toxic pollutant levels at the time of an event. AQMD has provided *grab* sampling devices to both Saul Martinez Elementary School and Riverside County Environmental Health staff to use when foul odors are detected at the school site or in the community. Pollutant levels measured in this way can be compared to short-term exposure limits set by public health agencies. Short-term exposures, also known as acute exposures, to toxic pollutants or foul odors can lead to immediate health impacts, but the impacts are generally not permanent with quick recovery times.

A third type of sampling occurs at the *source* of suspected toxic pollutant releases. This occurs very near, sometimes within feet or inches, of a suspected source. While communities are not exposed to these often higher levels of pollutants, the results of such sampling provide a source “signature” or “fingerprint” which can be compared to measurements made in the community to determine potential impacts of that and other suspected sources.

Many of the above sample types are brought back to the laboratory at AQMD for analysis. In many cases, the analysis is unable to detect elevated levels of toxic pollutants or other odorous chemicals even during very strong and objectionable odor events. The human nose is often much more sensitive to certain mixtures of pollutants than our laboratory instruments. Even though the samples may not show levels of toxic pollutants at or near short-term health standards, there are still known health impacts resulting from exposure to strong and objectionable odors. These include nausea, vomiting, headaches, and cold or flu-like symptoms. The AQMD takes these health impacts seriously and is committed to reducing exposure to odors.

Results of these air sampling activities in the Mecca area are provided below.

Long-Term Samples

In order to approximate potential long-term exposure to toxic pollutants in the Mecca area, samplers were deployed at four sites for the collection of 24-hour samples. These daily samples were taken for up to 2-weeks at each site. While long-term exposure estimates are typically done over a year or more, two weeks of daily samples during a period of known odor events can provide a good conservative estimate of longer-term exposure. The previous map shows the four sampling locations: the College of the Desert campus, the Head Start Preschool facility on Lincoln Street; Mecca Elementary School; and Saul Martinez Elementary School. Additional samples were taken at a fifth location 13 miles to the northwest in Indio in order to determine background levels of pollution for the larger area.

The following table gives the average levels of the measured pollutants over the entire sampling period at each site. For comparison, the range of each pollutant typically found in urban air is provided.

	Mecca Elementary School	Saul Martinez Elementary School	Head Start Preschool	College of the Desert	Indio	Typical Urban Air
Dates Sampled	Feb 19 – Mar 3 2011	Feb 18 – Mar 4 2011	Mar 1 – Mar 4 2011	Feb 18 – Mar 4 2011	Feb 18 – Mar 4 2011	
<u>Compound</u>	<u>Concentration (ppb)</u>	<u>Concentration (ppb)</u>	<u>Concentration (ppb)</u>	<u>Concentration (ppb)</u>	<u>Concentration (ppb)</u>	<u>Range (ppb)</u>
1,3-butadiene	ND	ND	ND	ND	ND	< 0.2
acrolein*	0.4	0.2	0.3	0.3	0.1	0.1-0.4
MTBE	ND	ND	ND	ND	ND	< 0.1
benzene	0.2	0.2	0.2	0.1	0.2	0.3-1.3
toluene	0.3	0.2	0.4	1.4	0.4	0.8-4.1
ethylbenzene	0.1	0.1	0.1	0.1	ND	0.1-0.5
m,p-xylenes	0.2	0.2	0.2	0.1	0.2	0.3-1.5
o-xylene	0.1	0.1	0.1	0.1	ND	0.1-0.6
styrene	ND	ND	ND	ND	ND	< 0.2
hexane	0.2	ND	0.8	0.2	0	0.2-1.0
hexene	0.1	ND	0.1	0.1	ND	<0.1
*The sampling and analysis method for acrolein is currently under review by AQMD and U.S. EPA. Acrolein levels are considered unverified.						
Notes: ND = Not Detected (levels are below the lowest level detectable by the laboratory instrument). Levels of all measured halogenated compounds (those containing chlorine, bromine or fluorine atoms) were all ND. Levels of other non-toxic hydrocarbon compounds such as ethylene, acetylene, ethane, propylene, propane, butanes, butene, pentane, heptane, octane, nonane, decane, undecane, dodecane were detected but were all below or within the typical urban air ranges.						

A sample was collected on March 4, 2011 at Mecca Elementary School but it was determined to be contaminated by the propane generator situated on the sampling trailer. All compounds listed above are below or within the typical urban range. Therefore, over this period of sampling, there was no increased long-term risk due to toxic air pollutants at these sampling locations above what one would typically expect in southern California.

Other than the compounds listed above, certain days at certain locations showed elevated levels of acetonitrile and acetaldehyde. Although the sampling and analysis methods deployed are best available, the methods are known to produce uncertain results. AQMD is continuing to investigate

in order to validate or invalidate these preliminary findings.

As stated above, *long-term* sampling is not the ideal method for detecting pollutants associated with short-term odor events. Elevated levels of any pollutant that occurs over time periods less than an hour will be combined with cleaner air in these samplers over the rest of the day, thus diluting the pollutant and making it difficult to detect any increases. The *grab* samples described below are designed to better assess such short-term odor events.

Grab Samples

In order to assess toxic pollutant exposure during short-term odor events, instantaneous *grab* samples were taken at several locations at times when AQMD or Saul Martinez Elementary School staff was experiencing strong odors. In some cases, air samples are collected and returned to the AQMD laboratory for analysis. In other cases, portable equipment can be used to get some approximate readings within minutes at the site. As stated above, even if strong odors exist, it is possible that the samples will not show elevated levels of air toxic pollutants since the human nose is often more sensitive than current measurement technology.

At 12:15 P.M. on January 11, 2011, a *grab* sample was taken for sulfur compounds (typically a rotten egg smell) during an odor event at Saul Martinez Elementary School. Six other *grab* samples were taken for sulfur compounds on six different days between January 14 and March 10, 2011 at Saul Martinez Elementary School. These samples were also taken during times when strong odors were being observed. In all six cases, the total sulfur compound levels were below the lowest amount detectable by the instrument (3 ppb). The California odor nuisance standard for hydrogen sulfide, a component of odor-causing sulfur compounds, is 30 ppb, but such sulfur compounds cause odors at levels much less than that.

Another *grab* sample taken by portable equipment was taken on February 25, 2011 at the corner of Gene Wilmas Drive and 62nd Street, Mecca. The portable equipment only provides rough estimates. No toxic species were detected, but some non-toxic hydrocarbons such as octane and nonane were detected above typical urban levels.

Source Samples

Several *source* samples were taken on the property of Western Environmental, Inc. either next to or immediately downwind of operations suspected of being sources of odors. These types of instantaneous samples do not and are not intended to measure community exposure. They serve as a "signature" or "fingerprint" to potentially track pollutants observed in the community to their specific source. Concentrations of pollutants measured in this manner are much higher than community levels since the pollutants and/or odors are diluted and dispersed by the time they might reach public areas.

On January 11, 2011, a *source* sample was collected immediately downwind of the oil/water separation ponds at Western Environmental, Inc. Of the toxic species detected, all were below typical urban air levels except for benzene (2.8 ppb) which was over ten times higher than typical urban air levels. Since this was a *source* sample, it is expected that these levels would be significantly lower by the time this toxic pollutant reached public areas. The level of 2.8 ppb is still well below any short-term exposure limit established by public health and worker safety agencies. Other non-toxic, but potentially odor-causing chemicals were also detected in this sample at levels above those typically observed for urban air. These hydrocarbons such as ethylene, acetylene, propane, propylene, hexane, hexene, heptane, and decane are expected emissions from oil-related

processes. Hexene in particular was detected at significantly elevated levels (10 ppb).

Also on January 11, 2011, two samples were collected next to the oil/water separation ponds to be analyzed for sulfur compounds. Similar to the sample taken at Saul Martinez Elementary School on that same day, no sulfur compounds were detected. The California odor nuisance standard for hydrogen sulfide, a component of odor-causing sulfur compounds, is 30 ppb, but such sulfur compounds cause odors at levels much less than that.

On February 9, 2011, a sample of the material from the soy whey pond at Western Environmental, Inc. was collected in jar, and the air space in the jar was tested to determine the types of emissions that might be expected from this process. Identified chemicals included dimethyl disulfide and dimethyl trisulfide. While neither of these or any of the other chemicals detected in this sample are considered air toxics, these two sulfur compounds can cause strong odors.

On February 25, 2011, several *source* samples were taken by portable equipment on Western Environmental Inc. property. Two samples were taken next to the oil/water separation pond; one area of the pond had wet material in it and the other area of the pond was dry. The portable equipment is used to identify pollutants and provide upper limits on their concentrations. It cannot always provide specific concentrations at low levels. The wet-area pond sample detected levels of toxic pollutants such as xylenes, toluene, and ethyl benzene at levels below 100ppb, and carbon disulfide at levels below 1000 ppb, which are all below any short-term health limits. It also detected elevated levels of other non-toxic hydrocarbons. The dry-area pond sample showed similar results with possibly higher levels of xylenes. Another sample taken at the soy whey pond at Western Environmental detected xylenes below 100 ppb along with other non-toxic hydrocarbons. Since this was a *source* sample, it is expected that all of these detected levels at the source would be significantly lower by the time these toxic pollutant reached public areas.

Other Air Monitoring Activities

The sampling methods described above are design to detect pollutants that are in gas form. Another form of pollution is tiny, particles in the air known as particulate matter. These particles are too small to see with the naked eye, but can be inhaled into the body and can have serious health effects. To investigate airborne particles as well as a concern about mold in the Mecca area, glass plates were deployed for one week at the five monitoring locations described above. Particles in the air will deposit on these plates, which are then brought back to the AQMD laboratory and observed under a microscope.

While the amount of particles and mold spores on the plates, and thus, in the air were typical for Southern California, three of the plates contained very small wood or plant fibers that are not typically seen to this extent. The highest amounts of this particle type were found at Head Start Preschool and Mecca Elementary School, the two sites closest to tribal land. Waste Reduction Technologies along with Colmac Energy Inc., both of which receive wood waste, are potential sources of these particles. AQMD plans to conduct more sophisticated particle sampling in the coming weeks to further investigate this finding.

FUTURE ACTIONS

Equipment to collect *grab* samples either manually or automatically continues to be deployed in the Mecca area. Since our field staff has detected strong odors in the community, we know that such odors exist even if our equipment is not able to detect unusual amounts in the air. In addition, EPA has conducted air monitoring and collected approximately 80 soil samples. The federal Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste and certain other non-hazardous solid wastes on tribal lands. If the analyses of the soil samples indicate violations of federal requirements under RCRA, the EPA has the authority to take enforcement action.

AQMD is committed to working cooperatively with EPA, Riverside County Environmental Health, Western Environmental, Inc., Waste Reductions Technologies, local officials and the Cabazon Band of Mission Indians to seek elimination of odors in the community. Further, AQMD will continue to respond to air quality complaints, work with other agencies to provide technical support, and collect and analyze samples and provide the results of our efforts to the community of Mecca. AQMD is planning a town hall meeting in the coming weeks to present the results described in this report, any available results from the EPA analyses, and answer any additional questions the community may have.

To report an air quality problem, you are encouraged to call the AQMD's toll-free number at 1-800-CUT-SMOG (1-800-288-7664). For Spanish speaking community members, please call 1-800-876-3666.