



THE CITY OF SAN DIEGO
REPORT TO THE CITY COUNCIL

DATE ISSUED: April 6, 2010 REPORT NO. 10-045

ATTENTION: Natural Resources and Culture Committee
Agenda of April 14, 2010

SUBJECT: Miramar Landfill Public Noticing of Chronic Health Risk

SUMMARY:

In accordance with State of California Air Toxic Hot Spots Information and Assessments Act, the Environmental Services Department performed a Health Risk Assessment of the Miramar Landfill emissions in 2005 and the results require that nearby businesses be notified of a possible chronic non-cancer health risk if exposed long term to these emissions.

BACKGROUND:

The San Diego Air Pollution Control District (APCD) is the local lead agency for enforcing the 1987 State Air Toxics Hot Spots Information and Assessments Act, AB 2588. In March 2008, the APCD sent a notice to the Environmental Services Department (ESD) requiring that a Health Risk Assessment (HRA) of the Miramar Landfill be performed based on calendar year 2005 emissions. The HRA performed in accordance with AB 2588 used Miramar Landfill's 2005 emissions inventory together with established modeling parameters, including site specific weather data, to model air emissions to estimate possible health effects from both acute and long term exposure to these emissions. ESD used the services of consultants to perform the modeling and submitted the results to the APCD.

DISCUSSION:

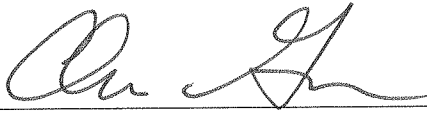
The HRA is based on estimated levels of pollutants in the community, not on actual measurements of pollutant concentrations. Computer models are then used to estimate the risk of adverse health effects including excess cancer risk and non-cancer health effects. While the results did not show any excess acute or cancer risk, the HRA did estimate that employees of certain off-site businesses working outside in the exact same location for 8 hours per day, 5 days per week, and 49 weeks per year for 40 years could face some increased non-cancer risk.

The HRA results identified vehicles traveling on paved and unpaved haul roads at Miramar Landfill for causing fugitive dust containing arsenic and silica to be disbursed into the air. Arsenic and crystalline silica are naturally occurring minerals found at elevated levels in soil all

over San Diego County. Concentrations and exposure durations from the model predict that chronic health risks exist for outdoor offsite workers near the landfill site. The highest estimated chronic health risks target the respiratory and nervous systems. The health risks are further described in the public noticing draft attached. In response to these results, the APCD is requiring ESD to notify 469 businesses in the vicinity of the landfill of this chronic health risk. See map within the power point presentation for the business notification area (outlined in blue) which includes a portion of City Council Districts 1, 6 & 7.

Also described in the public noticing are the measures ESD has taken to reduce emissions from haul roads. Further, ESD has performed laboratory sampling of the landfill haul roads and found that actual levels of arsenic and silica are lower than APCD's model's assumptions. It is ESD's intention to prepare a revised HRA based on 2009 emissions and laboratory testing that will more accurately estimate any potential public health risks from the Miramar Landfill. This will take approximately one year and ESD will reappear before this committee with the results of the revised HRA.

FISCAL CONSIDERATIONS: Funds supporting these activities are from Refuse Disposal Enterprise Funds.



Chris Gonaver
Environmental Services Director



David Jarrell
Deputy Chief of Public Works

- Attachments:
1. Public Noticing



Air Pollution Control Board

Greg Cox	District 1
Dianne Jacob	District 2
Pam Slater-Price	District 3
Ron Roberts	District 4
Bill Horn	District 5

March 2010

Dear Business Owner:

This notice is being sent to inform you of possible exposures to toxic air pollutants.

State law requires that facilities and other sources of air pollution study possible public health effects from their emissions. A facility in your area has done such a study (called a health risk assessment). The results indicate that you may be exposed to toxic air pollutants from that facility.

The City of San Diego's Miramar Landfill accepts approximately 1.1 million tons of municipal solid waste each year, and is the City of San Diego's only active landfill. The facility releases contaminants (air pollutants) to the atmosphere that are considered toxic by the State of California. The top two air pollutants that contribute to the health risk are arsenic and crystalline silica. These pollutants are generated through fugitive dust resulting from truck travel on paved and unpaved haul roads within the landfill site. Arsenic and crystalline silica are naturally occurring minerals found at elevated levels in soil all over San Diego County.

The health risk assessment for the Miramar Landfill estimates that people who work in the area could face some increased risk of developing a chronic illness due to emissions from the landfill. The estimated increased risk could range from zero to a chronic health hazard index of 2.06. The higher risk estimate is for a hypothetical person exposed while working outside over an assumed 40-year duration.

The risk assessment study is intended to overestimate risks for the public so that decisions will be more likely to protect children and individuals more sensitive to toxic air pollutants. However, the study does not include exposures to toxic air pollutants for which there are no established health effects values, nor the combined health effects from other nearby air pollution sources. These sources can include motor vehicles, paints, solvents, other industries, and household products.

The Air Pollution Control District has determined that the estimated chronic health risks from these emissions are above risk reduction levels and the Miramar Landfill will be required to reduce its emissions under this program. The Miramar Landfill has already voluntarily implemented a number of measures to reduce the emissions from the facility's operations.

Enclosed is more detailed information about the Miramar Landfill study and the Air Toxics "Hot Spots" program. If you would like more information, please complete and return the enclosed survey card. If you would like to attend a public meeting about this notification, please indicate this on the card.

For answers to your questions, please call the District's Public Information Office at (858) 586-2707 or the City of San Diego at (858) 573-1208.

Sincerely,

ROSA MARIA S. ABREU, Assistant Director
Air Pollution Control District

Enclosures

RMA:AD:sg

10124 Old Grove Road, San Diego, California 92131-1649 • (858) 586-2600
FAX (858) 586-2601 • Smoking Vehicle Hotline 1-800-28-SMOKE • www.sdapcd.org

**PUBLIC NOTIFICATION OF PUBLIC HEALTH RISKS
UNDER THE AIR TOXICS "HOT SPOTS" PROGRAM**

Note: Businesses should distribute this notice to employees or post it in an area where it can be viewed.

Why this notice:

A limited number of businesses in your area are receiving this notice because the City of San Diego's Miramar Landfill releases chemicals (air pollutants) to the atmosphere that are considered toxic by the State of California. Under a state law called the Air Toxics "Hot Spots" Information and Assessment Act of 1987, facilities that emit toxic air pollutants are required to study possible health effects from their emissions.

The City of San Diego has prepared a report evaluating possible health effects resulting from estimated public exposures to the toxic air pollutants emitted from the Miramar Landfill. This report is called a public health risk assessment (HRA) and is available at the Air Pollution Control District for review.

This health risk assessment is based on estimated levels of these pollutants in the community, not on actual measurements of pollutant concentrations. Emissions of pollutants from the Miramar Landfill were estimated for 2005 based on conservative default emission factors. Computer models approved by the State were then used to estimate the concentrations of these pollutants in the air. The procedures used are designed to overstate potential pollutant levels to prevent public health risks from being underestimated. Therefore, your actual exposure to these contaminants may be less than the health risk assessment predicts.

What chemicals are emitted by the Miramar Landfill?

The chemicals that the Miramar Landfill emitted in 2005, which contribute to chronic health risk include:

Arsenic (13.7 lbs/yr), and
Crystalline Silica, (67,991 lbs/yr).

Arsenic and crystalline silica are naturally occurring minerals found at elevated levels in soil all over San Diego County. These emissions are generated at the Miramar Landfill through fugitive dust resulting from travel on paved and unpaved haul roads within the landfill site. Haul truck activity occurs at the Miramar Landfill during the landfill's regular business hours, Monday through Friday from 7:00 AM to 4:30 PM and Saturday and Sunday from 7:30 AM to 4:30 PM. Emissions from truck travel on unpaved haul roads are often significantly reduced through the periodic watering of the haul roads. Since 2005, the City of San Diego has implemented voluntary measures to reduce emissions from travel on haul roads within the Miramar Landfill. These measures include:

- Periodic watering of haul roads;
- Ceasing quarrying of native rock and soils;
- Limiting the speed of waste disposal trucks on the haul roads;
- Reducing the lengths of un-paved roads; and
- Reducing truck traffic trips.

Since the health risk assessment is designed to overstate potential pollutant levels and emissions are based on calendar year 2005 data, these voluntary emission reduction measures were not

factored into the health risk assessment. Actual emissions may be lower than those estimated in CY 2005 due to the conservatism in the calculation methodologies and all the new emission reduction measures.

What are the potential health effects?

The health risk assessment for the Miramar Landfill estimates that workers in the area could face some increased risk of developing chronic illness due to emissions from the Miramar Landfill. Long-term exposure to high levels of arsenic can cause throat, skin, and lung irritation, as well as circulatory and peripheral nervous disorders. Long-term exposure to high levels of crystalline silica can cause the formation of scar tissue in the lungs, or silicosis. A reference exposure level for these pollutants has been established by the California Environmental Protection Agency. This reference exposure level and the estimated pollutant concentrations are related to determine a chronic health risk. The chronic health risk includes several safety factors and assumes a person is exposed continuously while at work outside for 8 hours a day, 5 days per week, and 49 weeks per year for 40 years.

The risk assessment study is intended to overestimate risks for the public so that decisions will be more likely to protect children and individuals more sensitive to toxic air pollutants. However, the study does not include exposure to toxic air pollutants for which there are no established health effects values, nor the cumulative health effects from other nearby air pollution sources. These sources can include motor vehicles, paints, solvents, other industries, and household products.

How serious is this risk?

Chronic risk is based on the health impact on a single organ in the body from toxic air contaminants for long-term exposure. Chronic risk is calculated as a fraction for each organ and toxic air contaminant combination. These fractions or hazard indices are the maximum acceptable public exposure level to a toxic air contaminant. The acceptable exposure level is generally the level at (or below) which no adverse health impacts are expected. The sum of these hazard indices is called the total hazard index and is an indication of the likelihood of experiencing chronic (non cancer) health effects. A total hazard index of less than one (1.0) is not likely to result in adverse health effects including sensitive individuals.

The Miramar landfill HRA estimated a chronic hazard index of 2.06 at the maximum exposed worker receptor. However many factors included in the HRA tend to overestimate the actual chronic hazard index. The factors include the following:

- **Emission estimates** were based on best available data and conventional methods used to conservatively estimate emissions. Uncertainty in emission estimates stems from the availability of source specific emissions data. Due to lack of source specific data, the soil composition used to determine the arsenic and silica emissions are based on SDAPCD representative haul road samples. These representative haul road samples are aimed on the side of conservatism and likely to overestimate the actual emissions at the haul roads.
- **Air Dispersion Models** approved by the EPA, such as the one used in this risk assessment within the HARP model, tend to overpredict concentrations rather than underpredict them. For example, while the settling of particulate matter such as silica is assumed, it is not factored into the model's downwind calculations. This leads to double counting and overprediction of concentrations.
- **Exposure Assessments** provide another layer of conservatism to the HRA. A worker exposure period assumes that the worker will be located in the exact same outside

location for 8 hours per day, 5 days per week, and 49 weeks per year for 40 years. Working less than those hours inside will reduce your exposure significantly.

The City of San Diego recently performed laboratory sampling and testing of soil samples collected from Miramar landfill haul roads. This sampling protocol and testing was not officially approved nor witnessed by the Air Pollution Control District. Results of this sampling indicate arsenic and silica concentrations were lower than the Air Pollution Control District's default haul road emission factors which were used in the approved HRA. Therefore, actual health risks due to arsenic and silica may be lower than the reported modeled risks. Sampling and testing for other toxic air contaminants from the haul roads were not conducted.

What are the City of San Diego and the District doing about this risk?

Since 2005, Miramar Landfill has voluntarily implemented measures to reduce their emissions. These measures include periodic watering of haul roads, ceasing quarrying of native rock and soils, reducing the lengths of un-paved roads, and reducing truck traffic trips. You will receive this notice every two years until the Miramar Landfill's estimated health risk drops below the District chronic risk threshold. In addition, the District will re-study Miramar Landfill emissions every four years, and each time any new or modified equipment that emits toxic air pollutants is proposed.

What can I do about these health risks?

If you would like more information or would like to attend a public meeting about this issue, please complete the enclosed post card and mail it back to the District. You can call the District's Public Information Office at (858) 586-2707 or the City of San Diego at (858) 573-1208 if you have questions, want to discuss this notice, or have comments or requests for either the District or the facility.

You can also contact the Miramar Landfill to discuss how and when it has reduced and will further reduce its emissions of toxic air pollutants. Many facilities have already taken voluntary steps to reduce their emissions of toxic air pollutants as a result of this program.

Besides the emissions from the Miramar Landfill, there are many other sources of toxic air pollutants, including motor vehicles, paints, solvents, household products and other industries. Federal, state and local programs are reducing emissions from these sources, but you can help by reducing your driving by carpooling, combining errands, and keeping your car tuned and maintained, and by reducing use of paints and products containing solvents.

Where can I review the health risk assessment for the Miramar Landfill?

Health risk assessments are available for public review at the District's offices located at 10124 Old Grove Road, San Diego. Please call (858) 586-2707 to make an appointment

Air Toxics "Hot Spots" Program Fact Sheet

What is the Air Toxics "Hot Spots" Program?

The Air Toxics "Hot Spots" Information and Assessment Act is a state law requiring facilities to report emissions of toxic air contaminants to the Air Pollution Control District. The program is designed to quantify the amounts of potentially hazardous air pollutants released, the location of the release, the concentration to which the public is exposed, and the resulting potential public health risk. Based on an examination of these reports, the District may then require specific facilities to prepare a public health risk assessment to describe the possible health effects of exposure to toxic air contaminants.

What is a toxic air contaminant?

Toxic air contaminants are gases, liquids, or particles which are emitted into the atmosphere that may cause adverse health effects. Adverse health effects can range from relatively mild temporary conditions such as minor eye or throat irritation, shortness of breath or headaches, to permanent and serious conditions such as cancer, birth defects, or damage to lungs, nerves, the liver, the heart, or other organs. For purposes of the Air Toxics "Hot Spots" program, toxic air contaminants are approximately 800 listed compounds that have been determined to have potential adverse health impacts.

What is a health risk assessment?

A health risk assessment is a report that estimates the possibility of adverse health effects from emissions of toxic compounds to the air. Public health risk estimates are not based on actual measured air concentrations of toxic compounds. Instead, computer models are used to estimate risk. Each assessment is prepared using procedures developed by the State of California and the Air Pollution Control District and based on approved emission estimates. Risk assessments are reviewed and approved by the District and the California Environmental Protection (EPA) Office of Environmental Health Hazard Assessment.

How accurate is the health risk assessment?

By their nature, health risk assessments cannot be completely accurate. Scientists do not have enough information on actual public exposure and on how toxic contaminants affect people. When information is missing or uncertain, risk analysts make assumptions that tend to overestimate the potential risk. This provides a margin of safety in the protection of human health. An example of this is the assumption that residential exposures occur 24 hours per day for 70 years, even though people typically are not at their residences 100 percent of the time for 70 continuous years. However, some factors that may tend to underestimate risk are difficult to evaluate. These include the cumulative effect of emissions from other nearby facilities and the potential for complex mixtures of toxic air contaminants to create an additional health problem by their combined reaction to each other.

How are adverse health effects expressed?

Adverse health effects are reported as "excess lifetime cancer risk", or as a "total hazard index".

Excess cancer risk is the maximum estimated increased risk of contracting cancer (above normal background levels) caused by chronic exposure to a chemical suspected of being a human or animal carcinogen. Excess cancer risk is expressed as the probability of a person contracting cancer over a lifetime of exposure to chemical emissions. To calculate this, the health risk assessment follows a conservative formula which defines lifetime exposure as 24 hours per day, everyday for 70 years.

Non cancer risk is based on the health impact on a single organ in the body from toxic air contaminants for acute (short) and chronic (long-term) exposure which are calculated as fractions. These fractions or hazard indices are the maximum acceptable public exposure level to a toxic air contaminant. The acceptable exposure level is generally the level at (or below) which no adverse health impacts are expected. The sum of these hazard indices is called the total hazard index and is an indication of the likelihood of experiencing chronic or acute (non cancer) health effects. A total hazard index of less than one (1.0) is not likely to result in adverse health effects including sensitive individuals. With a total hazard index above one, there is a greater potential that adverse health impacts may result.