



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 (APCD). The program is designed to quantify emissions of toxic air contaminants, the location of these emissions, and the resulting potential public health risk. Based on the potential health risk, the APCD requires facilities to notify communities that might be impacted by a potential health risk above the thresholds established by APCD Rule 1210¹ and/or to implement a risk reduction plan in accordance with APCD Rule 1210¹.

What is a toxic air contaminant?

Toxic air contaminants are chemicals in 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 the purposes of the Air Toxics "Hot Spots" program, toxic air contaminants include approximately 800 listed compounds that have been determined to have potential adverse health impacts. A list of these compounds is included in the tables at the end of APCD Rule 1210¹.

What is a health risk assessment?

A health risk assessment involves estimation of the risk of adverse health effects from exposures to emissions of toxic air contaminants into the air. The estimated risks are not based on actual measured air concentrations of, or actual exposure to, toxic compounds, but instead on computer models that estimate risks based on a variety of conservative assumptions. Each health risk assessment is conducted using procedures developed by the State of California and the APCD and are based on APCD approved emission estimates. Under the Air Toxics "Hot Spots" program health risk assessments are conducted by facilities and subsequently reviewed and approved by the APCD and the California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment (OEHHA). OEHHA is the scientific branch of CalEPA which evaluates the effects of toxic compounds, develops health-protective exposure levels, and develops guidelines on how to evaluate the health risks from toxic air contaminants.

¹https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Rules_and_Regulations/Toxic_Air_Cotaminants/APCD_R1210.pdf

In March of 2015, OEHHA updated the health risk assessment guidelines to reflect advances in the field of risk assessment along with explicit consideration of infants and children ². This updated methodology results in health risk estimates which are approximately 3 times higher than the risks calculated using previous methods. With the new methodology, it is now possible for a facility's calculated risk estimate to be 3 times higher than previously, even if there has been no increase in that facility's operations or emissions.

How accurate is the health risk assessment?

The OEHHA guidelines states³ *“OEHHA has striven to use the best science available in developing these risk assessment guidelines. However, there is a great deal of uncertainty associated with the process of risk assessment. The uncertainty arises from lack of data in many areas necessitating the use of assumptions. The assumptions used in these guidelines are designed to err on the side of health protection in order to avoid underestimation of risk to the public. Sources of uncertainty, which may overestimate or underestimate risk, include: 1) extrapolation of toxicity data in animals to humans, 2) uncertainty in the estimation of emissions, 3) uncertainty in the air dispersion models, and 4) uncertainty in the exposure estimates.”* An example of this is the assumption that residential exposures occur 24 hours per day for 30 years, even though people typically are not at their residences 100 percent of the time for 30 continuous years. However, some factors that may tend to underestimate risk are difficult to evaluate. These include the cumulative (combined) effects of emissions from other nearby facilities and the potential for complex mixtures of toxic air contaminants to create an additional health problem even though their combined reaction with each other could not be evaluated. Additional information is available at <https://oehha.ca.gov/media/downloads/risk-assessment/document/hrsguide2001.pdf>

How are risk assessment results reported?

Risk assessment results are reported as "excess lifetime cancer risk" and/or as "non-cancer hazard index."

Excess lifetime 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 lifetime cancer risk is expressed as the probability of a resident or worker contracting cancer. This estimate assumes that a person resides at the location of maximum residential impact 24 hours per day, 365 days per year with 30 years of exposure, or a person works at the location of maximum occupational impact 8 hours per day, 250 days per year, with 25 years of exposure.

To help put these risks into perspective, consider that the American Cancer Society estimates the total lifetime cancer risk for people living in the United States to be 400,000 in one million⁴. The average risk of contracting cancer from breathing toxic air contaminant exposure in the ambient air in San Diego County ranges from 810 to 860 in one million. This average calculated risk includes the health risk results estimated by the California Air Resources Board (CARB) based on toxic air contaminants samples collected at the El Cajon and Chula Vista air

² <https://oehha.ca.gov/media/downloads/cmr/2015guidancemanual.pdf>, page 1

³ <https://oehha.ca.gov/media/downloads/cmr/2015guidancemanual.pdf>, page 1-5

⁴ <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2020/cancer-facts-and-figures-2020.pdf> page 2

monitoring stations (350 to 400 in one million) and the statewide risk from breathing diesel particulate matter estimated by CARB (460 in one million)⁵.

- **Non-cancer health hazard index** is calculated by dividing the estimated level of exposure to chemicals emitted from a facility to the level of exposure that is not expected to cause any adverse health effects. If the hazard index is less than or equal to one, then the estimated level of exposure is not likely to result in adverse health effects for anyone, including sensitive individuals such as children and the elderly. A hazard index above one indicates that there may be greater potential for adverse health impacts from exposure to the toxic air contaminants of concern.⁶ Under the Hot Spots program, an hazard index is calculated for both acute (short-term) and chronic (long-term) exposures to air toxic contaminants in facility emissions.
- **Cancer burden** estimates the number of potential excess cancer cases within the population that would be exposed to the emissions for a lifetime (70 years). The cancer burden is calculated on the basis of lifetime (70-year) risks (whereas individual cancer risk is based on 30-year residential exposure).⁷

What is being done to reduce toxic air contaminant emissions?

Based on emission between 2011 and 2014, mobile sources, area sources and natural sources are, by far, the largest contributors to the airborne toxic air contaminants in the San Diego County region, with a total of 63 million pounds being emitted annually. Industrial facilities also emit toxic air contaminants in much lower amounts, but industrial sources utilize mobile sources as part of their ongoing operations. In San Diego County toxic air contaminant emissions have been reduced by approximately 25% since 2009 and by 88% since 1989.

Generally, health risks associated with toxic air contaminants are related not only to the quantity of emissions, but also to the contaminants' toxicity, an exposed person's proximity to those emissions, and the duration of that exposure. Thus, it should be noted that toxic air contaminant emissions are not necessarily proportional to health risks as some toxic air contaminants, even in low amounts, can create adverse health effects.

The APCD Board has directed the APCD to implement a regulatory process to amend APCD Rule 1210 (Toxic Air Contaminant Public Health Risks - Public Notification and Risk Reduction). This process will involve industry and community partners to obtain input on and analyze reducing the toxic air pollution significance threshold with the intent of better protecting public health.

⁵ https://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Toxics_Program/2018_THS_%20Rpt.pdf page 8

⁶ <https://oehha.ca.gov/media/downloads/risk-assessment/document/hrsguide2001.pdf>, page 10

⁷ <https://oehha.ca.gov/media/downloads/cmr/2015guidancemanual.pdf>