5. TAC EMISSIONS

5.1 INTRODUCTION

Under the Clean Air Act, toxic air contaminants (TACs) are airborne pollutants that may be expected to result in an increase in mortality or serious illness or which may pose a present or potential hazard to human health. TACs are also referred to as toxic air pollutants or hazardous air pollutants.

A wide range of sources, from industrial plants to households emits TACs. Because it is not practical to eliminate all TACs these compounds are regulated through risk management programs. These programs are designed to eliminate, avoid, or minimize the risk of adverse health effects from exposures to TACs.

A substance becomes a regulated TAC after it is identified by the California Air Resources Board's (ARB) California Air Toxics Program or the U.S. Environmental Protection Agency's (EPA) National Air Toxics Assessments, assessed for its potential for human exposure, and evaluated for its health effects on humans. ARB has listed approximately 200 toxic substances, including those identified by EPA, which are identified on the California Air Toxics Program's TAC List.

The California Health and Safety Code provides the District authority to control emissions from stationary sources[1,2] and to develop clean air strategies for other sources (mobile).[3]

5.1.1 HEALTH EFFECTS

TACs can cause long-term health effects such as cancer, birth defects, neurological damage, or genetic damage; or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. Regulating TACs is important not only because of the severity of their health effects, but also because the health effects can occur with exposure to even small amounts of TACs. TACs are not classified as criteria air pollutants (CAPs) and no ambient air quality standards have been established for them. The effects of TACs can be diverse and their health impacts tend to be local rather than regional; consequently uniform standards for these pollutants have not been established.

TACs can be separated into carcinogens and non-carcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur and cancer risk is expressed as excess cancer cases per one million exposed individuals.

[1] California Health and Safety Code Section 41010
[2] California Health and Safety Code Section 40961
[3] California Health and Safety Code Section 40961

Non-carcinogens differ from carcinogens in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed using a Hazard Index (HI), which is the ratio of expected exposure levels to health-acceptable exposure levels. ARB's web page, California Air Toxics Program, provides more detailed information about the history, multi-agency regulation and health effects of TACs.

5.1.2 Concepts in Health Risk

The dose to which receptors are exposed to a TAC is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance(s). Dose is positively correlated with the concentration of a toxic substance, which generally disperses with distance from the emission source under normal meteorological conditions. Dose is also positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for an exposed individual. Thus, the risks estimated for a receptor are higher if a fixed exposure occurs over a longer period. The breathing rate of an exposed individual is also an important factor. For instance, children have higher intake rates on a per kilogram body weight basis and thus receive a higher dose of airborne pollutants.

5.1.3 Trends in Background TAC Levels

The California Almanac of Emissions and Air Quality (Almanac), which is published regularly by ARB, presents the trends of various TAC emissions in California. Currently, the estimated risk from particulate matter emissions from diesel exhaust (diesel PM) is higher than the risk from all other TACs combined, and this TAC poses the most significant risk to California's population. A 2015 study linked California regulations to dramatic declines in cancer risk from exposure to air toxics.

In September 2000, ARB adopted the Diesel Risk Reduction Plan (DRR Plan), which recommends many control measures to reduce the risks associated with diesel PM The DRR plan has been successful in cleaning up existing engines through engine retrofit emission control devices; the adoption stringent standards for new diesel engines; lowered sulfur content of diesel fuel; and implementation of advanced technology emission control devices on diesel engines. ARB estimates that emissions of DPM in 2035 will be less than half those in 2010, even with increasing VMT.[4] In addition to the DRRP, many of the Air Toxic Control Measures that have been promulgated by ARB specifically address diesel PM emissions from a range of sources, including portable engines, cargo handling equipment used at ports, transport refrigeration units, and idling by commercial vehicles and school buses.

[4] http://www.arb.ca.gov/research/diesel/diesel-health.htm

It is important to note these TAC reductions in the context of well-planned mixed-use urban areas. In response to nonattainment conditions with respect to criteria air pollutants (CAP), specifically ozone, land uses within California are being developed with an increased emphasis on planning principles that reduce vehicle miles traveled (VMT) along with energy and water consumption (e.g., smart growth, transit-oriented design). With the passage of Assembly Bill 32 and the associated greenhouse gas (GHG) emissions reduction goals, the implementation of such principles will play an increasingly important role with regards to land use planning as California will need to more efficiently (e.g., less VMT per household) accommodate population and job growth. Though this type of planning proves to effectively reduce regional CAP emissions and GHGs, inherent to the design, receptors are placed in closer proximity to localized sources of pollution (e.g., freeways, rail). Thus, the future TAC reductions discussed above will play an important role in addressing this matter.

5.2 ANALYSIS EXPECTATIONS

The District recommends that CEQA documents analyze potential impacts resulting from exposure of sensitive receptors to high doses of TACs and associated health risk for the circumstances/situations described below. Lead Agencies shall make a concerted effort to obtain detailed project-specific information in order to accurately disclose all potential TAC-related impacts. However, the District recognizes that the level of detail in which this information is available may vary at the time the impact analysis is performed.

These analyses shall include the following:

Construction TACs:

- A discussion of type of construction activities that would occur and the TAC emission sources associated with those activities. This may include the number and types of equipment anticipated to be used during construction. Detailed guidance about construction-generated TACs is provided in section 5.3.1, Construction Activity;
- A significance determination about construction-generated TAC emissions, without mitigation; and
- A discussion of feasible mitigation necessary to reduce construction-generated TACs and whether the reduction is sufficient to reduce impacts to a less-than-significant level.

Operational TACs:

- A discussion of whether the project would locate any permitted or non-permitted sources of TACs in close proximity to existing or future planned receptors;

- If qualitative methodologies for analyzing TAC impacts are not sufficient, a quantitative health risk assessment (HRA) that discloses health risk levels at affected receptors may be necessary. The HRA shall be conducted in consultation with the District and in accordance with acceptable guidance such as that provided by the California Air Pollution Control Officers Association;
- A significance determination about exposure to TACs from project operations without mitigation; and
- A discussion of feasible mitigation necessary to reduce TAC exposure resulting from project operations and whether the reduction would be sufficient to reduce the impact to a less-than-significant level.

More detailed guidance for analyzing TAC impacts is provided below.

5.3 METHODOLOGIES

Methodologies for assessing impacts resulting from diesel PM and airborne asbestos emissions generated by short-term construction activity are discussed below, followed by methodologies for assessing operational TAC emissions.

5.3.1 Construction Activity

Construction activity can result in emissions of particulate matter from diesel exhaust (diesel PM), airborne asbestos resulting from the demolition of asbestos-containing materials, and, in some areas of Sacramento County, earth disturbance activity can result in the release of naturally occurring asbestos (NOA) to the air. These TACs are addressed separately below.

DIESEL PM EXHAUST

The use of off-road heavy-duty diesel equipment for site grading and excavation, paving, and other construction activities results in the generation of diesel PM emissions, which was identified as a TAC by ARB in 1998.

The District has not established a quantitative threshold of significance for construction-related TAC emissions. Therefore, the District recommends that lead agencies address this issue on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and its proximity to off-site receptors.

The impact discussion shall disclose the following about the construction activity associated with each project.

- Types of off-site receptors and their proximity to construction activity;
- Duration of construction period;
- Quantity and types of diesel-powered equipment;

- Number of hours equipment would be operated each day;
- Location of equipment staging area;
- Predominant wind direction; and
- Amount of on-site diesel-generated PM exhaust if mass emission levels from construction activity are estimated.

The District recognizes that detailed information about a project's construction activities may not be known at the time of writing the impact analysis. In this case, the District recommends the use of conservative estimates for the parameters including the number and type of construction equipment used, the hours of operation, and the distance from equipment to the nearest off-site receptors.

Demolition or Renovation of Regulated Asbestos Containing Materials

Demolition or renovation of existing buildings and structures would be subject to District Rule 902 (Asbestos). District Rule 902 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of regulated asbestos containing material (RACM) generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires lead agencies, building owners, and their contractors to notify the District of any regulated renovation or demolition activity. This notification includes specific requirements for surveying, removal, location, work methods, and disposal of RACM. Projects that comply with Rule 902 would ensure that RACM would be disposed of appropriately and safely, minimizing the release of airborne asbestos emissions. Therefore, demolition activity would not result in a significant impact to air quality.

Because District Rule 902 is in place, no further analysis about the demolition of RACM is needed in a CEQA document. However, the District does recommend that CEQA documents acknowledge and discuss District Rule 902 to support the public's understanding of this issue.

Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) was identified as a TAC in 1986 by ARB. NOA is located in many parts of California and is commonly associated with ultramafic rocks, according the California Department of Geology's special publication titled *Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California*. Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Ultramafic rocks form in high-temperature environments well below the surface of the earth. By the time they are exposed at the surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of

metamorphic rock called serpentinite. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in the bodies of these rocks or along their boundaries, according to a report published in 2000 by the California Geological Survey (formerly the California Division of Mines and Geology) titled *A General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos*.

For individuals living in areas of NOA, there are many potential pathways for airborne exposure. Exposures to soil dust containing asbestos can occur under a variety of scenarios, including children playing in the dirt, dust raised from unpaved roads and driveways covered with crushed serpentine, grading and earth disturbance associated with construction activity, quarrying, gardening, and other human activities. For homes built on asbestos outcroppings, asbestos can be tracked into the home and can also enter as fibers suspended in the air. Once such fibers are indoors, they can be entrained into the air by normal household activities, such as vacuuming (as many respirable fibers will simply pass through vacuum cleaner bags).

People exposed to low levels of asbestos may be at elevated risk (e.g., above background rates) of lung cancer and mesothelioma. The risk is proportional to the cumulative inhaled dose (quantity of fibers), and also increases with time since first exposure. Although there are a number of factors that influence the disease-causing potency of any given asbestos (such as fiber length and width, fiber type, and fiber chemistry), all forms are carcinogens.

At the request of SMAQMD, the California Geological Survey (formerly the California Division of Mines and Geology) prepared a report called the *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California.* The map in this report displays "areas moderately likely to contain NOA." Although geologic conditions are more likely for asbestos formation in particular areas identified by the map, the presence thereof is not certain.

Using the detailed map at the end of this report, a lead agency shall discuss whether a proposed project would be located in "areas moderately likely to contain NOA." If a project would not involve earth-disturbing construction activity in one of these areas or would not locate receptors in one of these areas then it can be assumed that the project would not have the potential to expose people to airborne asbestos particles. If a project would be located in an area moderately likely to contain NOA, then the impact shall be considered potentially significant.

5.3.2 Siting New Operational TAC Sources

Siting Permitted TAC Sources

The siting of new stationary sources of TACs is subject to the rules under District Regulation 2, Permits. Each new stationary source is evaluated to determine whether it has the potential to emit TACs. The District assesses the impact from TACs based on its guidance document, *Supplemental Risk Assessment Guidelines*

for New and Modified Sources, as well as guidance documents from the Office of Environmental Health Hazard Assessment (OEHHA), ARB and the California Air Pollution Control Officers Association. The District requires emission controls, similar to Best Available Control Technology (BACT), called Toxic Best Available Control Technology (T-BACT) for certain sources.

In addition to T-BACT requirements, permits for equipment that may emit TACs may also contain conditions required by the National Emission Standards for Hazardous Air Pollutants (NESHAPs) and Air Toxic Control Measures (ATCMs) promulgated by the EPA and ARB, respectively. In short, a new stationary source of TACs would not receive the authority to construct or permit to operate if it would result in:

- A cancer risk greater than 10.0 in one million at any off-site receptor; and/or
- An off-site ground-level concentration of non-carcinogenic TACs generated from the project that would result in a Hazard Index greater than 1.0 (unless approved by OEHHA).

These permitting requirements are identical to the District's thresholds of significance for TACs generated by stationary sources. Therefore, lead agencies can determine that a new stationary source of TACs that attains the authority to construct and permit to operate from the District would not exceed the District's applicable TAC thresholds of significance.

Siting Land Uses that Include Non-Permitted TAC Sources

Some land use development projects, such as a truck distribution center or a commercial venue, could result in a high volume of TAC-generating activity in a relatively small or defined area. For instance, a discount superstore may receive approximately 5 deliveries each day from semi-tractor trailers at its loading dock. The potential impact of TAC emissions from a project of this type and size could be assessed qualitatively based on the level of truck activity, the proximity to nearby off-site receptors, and the predominant wind direction. However, a truck distribution center that has multiple loading docks, generates a high number of trips by diesel trucks, and/or includes diesel-powered "yard trucks" that only operate on the site would likely require a full HRA to disclose the potential health impacts. These types of HRAs should be performed according to the guidance provided by the California Air Pollution Control Officers Association.

5.3.3 Siting New Sensitive Receptors

The California Supreme Court decision in the case of *California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369* clarified that lead agencies are not required by CEQA to analyze the impact of the existing environmental conditions on a project's future users or residents unless

the project will exacerbate the existing environmental hazards or conditions.[5] This limits the CEQA analysis of existing TAC source impacts on a proposed project's new receptors. It is important to note that CEQA does require analysis of existing environmental conditions in specific situations, such as airports and schools. Consult the State CEQA Statutes and Guidelines for more information.

While not a CEQA impact, the District maintains that siting new receptors where they will be exposed to an existing TAC source is an important public health issue and recommends that these situations be analyzed, health risks disclosed, and measures implemented to reduce risks through the lead agency's planning process.

For projects that would site receptors in close proximity to existing permitting and non-permitted sources of TACs, the District is in the process of developing guidance to assist lead agencies outside of CEQA review.

For projects that would site receptors in close proximity to major roadways, lead agencies shall use the District's *Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways (Protocol)*. The Protocol includes guidance for TAC analysis, disclosure and exposure reduction best practices.

5.4 MITIGATION

Mitigation strategies for reducing diesel PM exhaust emitted by off-road construction equipment, on-road engines, and measures for controlling NOA during construction are discussed separately below.

Measures that reduce health risk exposure from TACs generated by new permitted stationary sources are determined through the District's permitting process in compliance with federal, state and District regulations. Measures to reduce health risk exposure from TACs generated by new non-permitted sources will be determined on a project by project basis by the lead agency in consultation with the District.

5.4.1 DIESEL PM EXHAUST FROM CONSTRUCTION EQUIPMENT

Implementation of the District's Basic Construction Emission Control Practices would result in the reduction of diesel PM exhaust emissions in addition to CAP emissions, particularly the measures to minimize engine idling time and maintain construction equipment in proper working condition and according to manufacturer's specifications. This is also true for the Enhanced Exhaust Control Practices for off-road construction equipment, which reduce particulate exhaust emissions by 45% and regulate the opacity of exhaust from all off-road diesel powered equipment. The District's basic and enhanced mitigation measures are discussed in further detail in Chapter 3, Construction-Generated Criteria Air Pollutant and Precursor Emissions.

[5] *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal. 4th 369

In addition, the District provides the following non-comprehensive list of measures to reduce exposure of sensitive receptors to diesel PM exhaust emissions associated with construction activity.

- Install diesel particulate filters or implement other ARB-verified diesel emission control strategies on construction equipment to further reduce diesel PM emissions beyond the 45% reduction required by the District's Enhanced Exhaust Control Practices;
- Use equipment during times when receptors are not present (e.g., when school is not in session or during non-school hours; or when office buildings are unoccupied);
- Establish staging areas for the construction equipment that are as distant as possible from off-site receptors;
- Establish an electricity supply to the construction site and use electric powered equipment instead of diesel-powered equipment or generators, where feasible;
- Use haul trucks with on-road engines instead of off-road engines even for on-site hauling;
- Equip nearby buildings with appropriate filtration systems at all mechanical air intake points to the building to reduce the levels of diesel PM that enter the buildings; and/or
- Temporarily relocate receptors during construction activity.

Lead agencies shall consider the applicability and feasibility of each measure on a project by project basis. The District also encourages lead agencies to develop additional measures.

5.4.2 Diesel PM Exhaust from On-Road Equipment

In some instances diesel PM can be controlled at the source by implementing emission control technologies. ARB's Diesel Certification Program maintains a list of ARB-verified diesel emission control strategies for reducing diesel PM from on-road and off-road engines (e.g., diesel particulate filters). Lead agencies may implement mitigation that requires the use of these strategies. For example, a lead agency may require that ARB-verified diesel emission control strategies be implemented by the operator of a proposed truck yard that would be located near existing or future planned receptors.

5.4.3 Control Measures for Naturally Occurring Asbestos

The District recommends the following mitigation measure for projects that would be located in "areas moderately likely to contain NOA" identified by the California Geological Survey's report, titled *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California*.

- A site investigation shall be performed to determine whether and where NOA is present in the soil and rock on the project site and/or areas that would be disturbed by the project. The site investigation shall include the collection of soil and rock samples (3 per acre) by a California Registered geologist. If the site investigation determines that NOA is not present on the project site then the project applicant shall submit a Geologic Exemption as allowed under Title 17, Section 93105, Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining (Asbestos ATCM). If the site investigation determines that NOA is present on the project site, then the project applicant shall submit an Asbestos Dust Mitigation Plan including but not limited to control measures required by the Asbestos ATCM for approval by the District. The project applicant shall submit the plan to the District for review and approval before beginning any ground disturbance activity. District approval of the plan must be received before ground disturbance occurs in any "areas moderately likely to contain NOA," as determined by the map in California Geological Survey's report titled *Relative Likelihood for the Presence of Naturally Occurring Asbestos in Eastern Sacramento County, California*. Upon approval of the Asbestos Dust Mitigation Plan by the District, the applicant shall ensure that construction contractors implement the terms of the plan throughout the construction period. This measure shall be fully funded by the project applicant.

Implementation of the above mitigation measure would reduce impacts associated with generation of fugitive dust that potentially contains NOA. If the site investigation determines that NOA is present on the project site, then implementation of a District-approved dust mitigation plan would reduce impacts related to construction in serpentinite soils. Implementation of these measures would reduce the potentially significant impact associated with exposure to NOA during construction to a less-than-significant level.

If NOA is located on the surface of the project site then mitigation may be necessary to reduce the risk of generating airborne asbestos from some operational activities such as recreational activities on baseball diamonds and dirt running tracks or residents overturning soil for gardening purposes. In order to reduce exposure to airborne asbestos emissions in these types of situations, lead agencies shall consider mitigation that requires all surface soil containing NOA to be replaced with clean soil or capping these surfaces with another material (e.g., cinder or rubber).