

## APPENDIX G. Preparing a Health Risk Assessment for Land Use Projects

To determine the impact of TACs for CEQA purposes, health risk assessments should be prepared. As stated above, common sources of toxic emissions include:

- Freeways and High Traffic Volume Roads,
- Goods Distribution Centers,
- Rail Yards,
- Refineries,
- Chrome Platers,
- Dry Cleaners using Perchloroethylene, and
- Gasoline Dispensing Facilities.

There are two types of projects which may require a health risk assessment be conducted. The first known as Type A, or new sources, is a project that can cause an adverse health impact on people already living or working nearby. CEQA Guideline Section 15126.2(a) requires environmental impacts to be identified for a Type A project. The second is known as Type B, such as new residential development project, which will be located in an area that can cause adverse health impacts to those residents. Recently, the California Supreme Court ruled that lead agencies are not required by CEQA to analyze the impact of the existing environmental conditions on a project's future users, as a Type B project. **It is the lead agency's discretion to determine whether a Type B project shall be required to prepare a health risk assessment.** The following discussion assumes that a potential health impact is recognized and a health risk assessment may be considered by the lead agency.



Type A (new source)



Type B (new receptor)

### When should a risk assessment be prepared?

There are four steps to determine if a risk assessment should be prepared for a project. The first step is to determine if a project is subject to CEQA. Second step – Determine if toxic substances will be emitted. Third step – Screening Assessment. Fourth step – Refined Assessment.

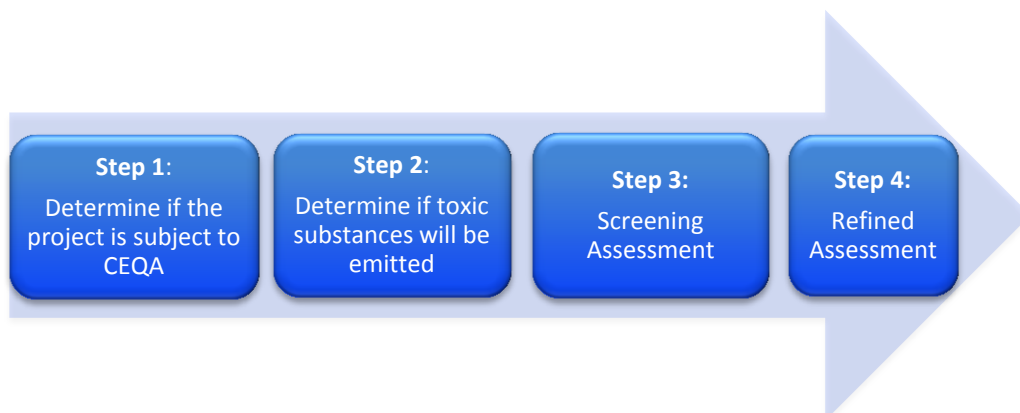


Figure 1: Recommended Steps to determine if a Health Risk Assessment is needed for a project

### Step 1 –Exempt Projects

- Statutorily exempt, for example:
  - Ministerial projects, such as issuance of building permits, or approval of final subdivision maps.
  - Issuance, modification, amendment, or renewal of Title V air quality permits.
- Categorically exempt, for example:
  - Actions by regulatory agencies for protection of the environment.
  - Cogeneration projects at existing facilities.
- ✓ See Section 4.0, Table 1 of the [CAPCOA Guidelines](#) for additional information.

### Step 2 –Toxics Emitted

- Identify sources
  - Nearly all combustion processes, and mobile sources
  - CARB Toxic Emission Inventory
  - EPA Toxic Release Inventory
- Identify toxic substances
  - [CARB Toxic Air Contaminant Identification List](#)
  - [EPA List of Air Toxics](#)
- Many EPA, CARB, and district resources are available to indicate whether toxic substances will be released from a project

### Step 3 –Screening Tools

Various tools can be used to determine if a significant risk may result from project:

- Prioritization or other spreadsheet calculations
- SCREEN3 modeling
- CARB's 2005 AQ & LU Handbook

### Step 4 –Refined Assessment

If a significant risk may result from the project, refined modeling should be conducted to quantify the potential risks. The following are the recommended models based on the types of sources.



- Stationary Sources
  - AERMOD
  - ISCST3
- Road Vehicle Emissions
  - CAL3QHCR
  - AERMOD
  - ISCST3
- ✓ See [Attachment 1 of the CAPCOA Guidelines](#) (*Technical Modeling and Risk Assessment Guidance*) for additional information.

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## What to do with results?

Recommended levels of significance:

<p>Type A (new source)</p> 	<p>&gt;10 per million cancer risk &gt;1 Hazard Index</p>
<p>Type B (new receptor)</p> 	<p>&gt;Contact the District for project specific guidance</p>

## Mitigation Measures

CEQA Guidelines Section 15364 requires all “Feasible” Measures must be applied within a reasonable period of time which accounts for economic, environmental, legal, social, and technological factors.

Emission reductions created by accelerating the implementation of Air Toxic Control Measures (ATCMs), or by expanding the applicability of ATCMs can be considered mitigation measures, if they are enforceable.

### *Project Placement*

Project Placement is an effective way to mitigate risks. For Type A, emission  sources may be located further from receptors. For  Type B, receptors may be located further from emission sources.

### *Quantifiable & Unquantifiable*

Mitigation measures can be quantifiable or unquantifiable. For example, a verified diesel particulate filter is a quantifiable measure. The planting of trees and shrubs along roadways; however, is an unquantifiable measure. Unquantifiable measures are based on limited data/studies indicating emissions may be reduced, but information is insufficient to quantify the reductions at this time.

### *Mitigation Monitoring*

The lead agency may need to require mitigation monitoring for the life of the project (CEQA Public Resources Code 21081.6). Examples of mitigation monitoring include:

- Vegetative barrier maintenance
- Diesel particulate filters maintenance
- Indoor air filtration systems maintenance

### *Public Participation Guidance*

Public participation can be critical. Early community discussions can reduce the potential for disagreements or challenges that can delay or stop projects, even when a project can meet risk thresholds.

- ✓ For additional information see [CARB's 2005 AQ & Land Use Handbook](#)

**Misc. Policy Issues**

The CAPCOA Guidelines also includes discussion on these issues. Such policy issues include:

Smart Growth	<ul style="list-style-type: none"> <li>Sometimes infill (smart growth) results in residences being located in areas near existing sources of toxic emissions. An example includes residential units placed next to freeways or industrial sources.</li> </ul>
Less than Lifetime Cancer Risk Exposures	<ul style="list-style-type: none"> <li>Inappropriate and appropriate risk calculations based on less than lifetime exposures.</li> <li>For example, for residential receptors, an exposure period of 9 years with average residence ignores 50% of the population.</li> <li>OEHHA "Hot Spots" Program Guidance:</li> <li>Residential receptors -70 years</li> <li>Worker receptors -40 years</li> <li>Child exposure – 9 years (Contact District prior to using this factor, as new OEHHA Guidelines will account for the greater exposures to infants and children)</li> </ul>
Mitigating Roadway Toxics	<ul style="list-style-type: none"> <li>Potential conflicts can occur when existing zoning allows houses adjacent to freeways regardless of risks.</li> </ul>
Existing Background Risks	<ul style="list-style-type: none"> <li>Contact local air district</li> </ul>
Inappropriate Discounting of Risks	<ul style="list-style-type: none"> <li>CAPCOA Guidelines are made available in order to minimize inappropriate risk assessment methodologies designed to downplay health impacts.</li> </ul>
Misleading Comparison of Cancer Risks	<ul style="list-style-type: none"> <li>Contact local air district</li> </ul>
Experts Disagree	<ul style="list-style-type: none"> <li>Section 15151 of the CEQA Guidelines states that disagreement among experts "does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts."</li> </ul>

**Modeling and Risk Assessment Preparation Guidance Section**

There are three basic procedures used to calculate risk. They include cancer risks, the chronic hazard index, and acute hazard index.

- Cancer Risk Calculation
- Acute and Chronic Hazard Index

**Recommended Steps to Prepare a Risk Assessment**

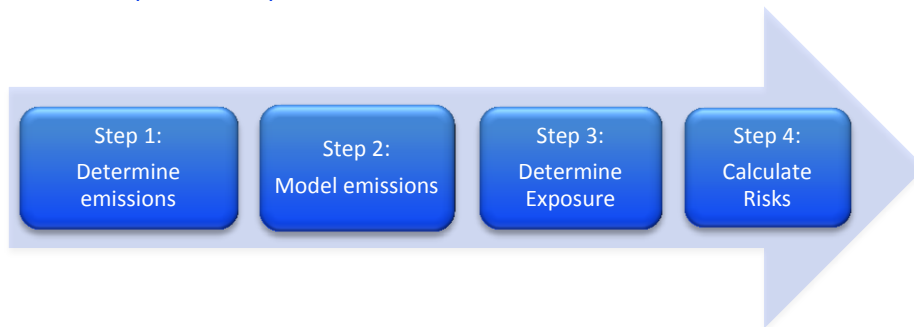


Figure 2: Recommended Steps to prepare a Risk Assessment when it is needed for a project

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### ***Step 1: Determining Emissions***

Emissions will be determined by the types of sources and its associated emission factors.

Types of Sources:

#### Point Sources:

- Traditional stacks
- Single idling diesel truck

#### Area Sources:

- Truck Stops
- Construction Projects
- Quarries
- Evaporation ponds

#### Volume Sources:

- Roads and Railways
- Gasoline Dispensing Facilities
- Dry Cleaners
- Buildings with one open side

Emission factors:

#### Stationary Sources

- Emissions Factors (AP-42 and other sources)
- CARB Toxic Emission Inventory
- EPA Toxic Release Inventory

#### Mobile Onsite Sources

- CARB Off-Road Model
- CARB In-Use Off-Road Diesel Vehicle Emission Reporting database

#### Roadway Vehicles

- Caltrans Traffic Counts
- EMFAC Emissions Model

### ***Step 2: Model Emissions***

The modeling analysis includes the calculation of source emissions, application of models, preparation of model inputs, identification of geographical information, identification of locations for sources and receptors, preparation of meteorological data, and verification of output information. The CAPCOA Health Risk Assessment Guidance document provides a detailed discussion regarding the modeling analysis in its Attachment 1.

To streamline the modeling process, the District requires the modeling protocols to be submitted by the applicant or consultant for review before commencement of actual modeling runs.

### ***Step 3: Determine Exposures (dose)***

Exposure assessment determines the extent of human exposure including the identification of types of toxic substances and related health impact pathways and the calculation of exposure does. Dose can be determined for each Exposure Pathway (inhalation, dermal (skin) absorption, and ingestion).

- ✓ CAPCOA Guidelines defer to [OEHHA](#) procedures.

**Step 4: Calculate Risk**

For substances involving only the inhalation pathway, risks can be calculated based on the exposure concentration of an air pollutant, breathing rate, exposure frequency, exposure duration, and averaged lifetime. For substances involving multiple pathways, risks can be calculated using CARB's HARP program.

When disclosing and mitigating for health risk impacts, all health risk must be disclosed. Furthermore, all possible mitigation measures and the degree of proposed mitigation implementation must be identified.

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