[Note: The pre-existing regulation text is set forth below in normal type. The proposed amendments are shown in underline to indicate additions and ~~strikethrough~~ to indicate deletions. The square brackets "[ ]" are used to indicate minor adjustments to text (e.g., page numbers and adoption dates) that will be updated upon adoption of the proposed amendments.]

APPENDIX F

CRITERIA AND PROTOCOL FOR INPUTS FOR RISK ASSESSMENT USING SCREENING AIR DISPERSION MODELING

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APPENDIX F

Criteria and Protocol Ffor Inputs for Risk Assessment Using Screening Air Dispersion Modeling

(A) The emissions must represent all listed substances emitted from the facility. Emission estimates must be health-protective and approved by the district, and the assessment must take into account both the highest actual emissions and the facility's potential to emit, including use of the highest levels enforceable under the facility's permit(s), if the process(es) are subject to permits.

(B) Source characterization for the facility for air dispersion modeling (including but not limited to stack parameters, choice of volume or area source configurations, building downwash, raincaps, position of release point(s) within the facility) must be health protective. The most health-protective characterization which applies to the actual conditions at the facility must be chosen for the modeling analysis.

(C) Facilities may choose to conduct comprehensive, site-specific air dispersion modeling, or may propose to utilize simpler but more health protective screening tools, as a screening assessment approach. Facilities shall consult with the district to determine the specific tools and assessment approach appropriate for the factors that affect the potential public health impacts from their facility. To the extent feasible, health protective tools must consider worst-case meteorological conditions and the most health-protective parameters applicable to the facility. The rural or urban dispersion coefficients should represent the worst case which is applicable to the actual facility site.

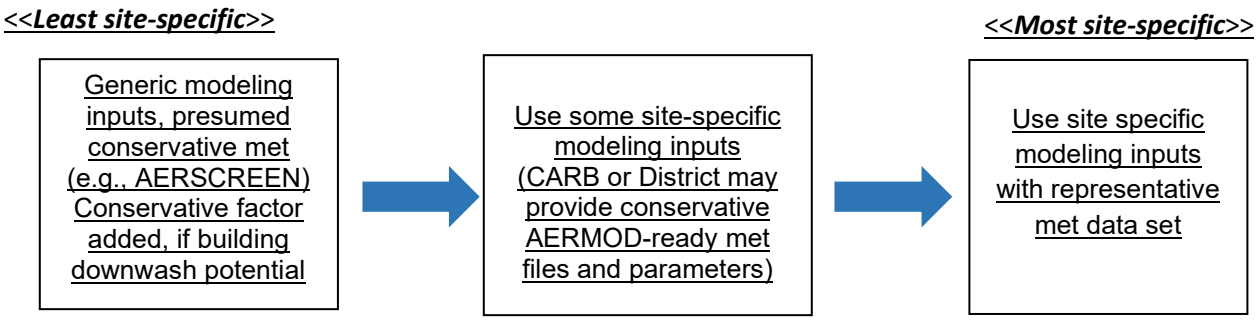
The following subsections provide guidance for a series of stepwise screening approaches, which span generic (less site-specific) to more representative (site-specific) inputs and methods.

~~Air dispersion modeling must use worst-case meteorological conditions and the most health-protective parameters applicable to the facility. Generic, default meteorological data, not site-specific data, should be used. A matrix representing all possible combinations of wind speed and stability classes should be used. The combination which results in the worst-case concentration should be selected. Ambient air temperature and mixing height must represent worst-case conditions. The rural or urban dispersion coefficients should represent the worst case which is applicable to the actual facility site. Some acceptable meteorological conditions are the "full meteorology" option in the U.S. Environmental Protection Agency (U.S. EPA) SCREEN3 (96043) model, February 1996, which is incorporated by reference herein.~~

(1) Stepwise Screening Assessment Using Air Dispersion Modeling Approaches. Figure F-1 provides a series of stepwise screening approaches, beginning with generic (less site-specific but more health protective) inputs and methods, to using some site-specific inputs, to using representative (site-specific) inputs. If a facility cannot screen out under the “low-level” provisions in Section IV.A. using the more generic inputs and methods, the next, more site-specific approaches may be considered. The facility operator shall consult with the district to determine which approach provides a reasonable worst-case screening assessment.

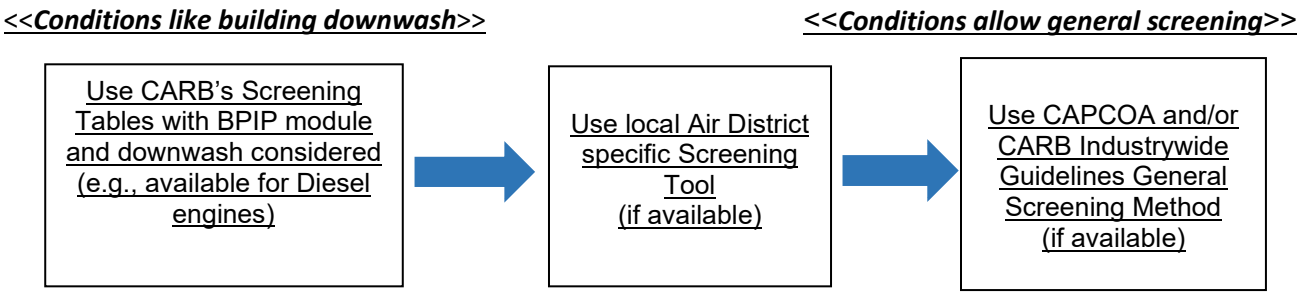
The facility operator must incorporate the effect of building downwash if there are buildings within the zone of influence of the source. The zone of influence occurs where the downwind distance between the stack and a building is less than five times the width or height of the structure, whichever is less (also known as 5L); or where the upwind distance between the stack and a building is less than two times the width or height of the structure, whichever is less (also known as 2L). Where downwash must be considered, the facility must include buildings in the zone of influence, and set the appropriate BPIP module switch to incorporate building downwash effects, or alternatively apply a conservative downwash factor of 100 to the modeled concentration.

Figure F-1. Stepwise Screening Using Air Dispersion Modeling Approaches



(2) Stepwise Screening Assessment Using Screening Tables or Other Screening Tools. Figure F-2 provides a series of stepwise screening approaches, using CARB conservative screening tables, air district screening tools, or industrywide screening methods, as available for the source type. If a facility cannot screen out under the "low-level" provisions in Section IV.A. using conservative screening tables, the other applicable methods can be considered. The facility operator shall consult with the district to determine which approach provides a reasonable worst-case screening assessment.

Figure F-2. Stepwise Screening Using Screening Tables or Other Screening Tools



(D) In all cases, ~~T~~the most appropriate computer models must be used, including the most recent version, with all the correct switches (including but not limited to switches for downwash, rural vs. urban, and complex vs. flat terrain). The district must approve switches used in the model and ensure that the most health-conservative estimates of dose are obtained. ~~Some acceptable models are the U.S. EPA SCREEN3 (96043) model, February 1996, the U.S. EPA ISC3 (95250) model, September 1995, and~~

~~AERMOD, November 2005, which are incorporated by reference herein.~~ Some acceptable modeling tools include the U.S. EPA AERMOD (19191) modeling system, August 2019, which also includes the AERSCREEN (16216) model, December 2016, and BPIPPRIM (19191) model, November 2019, for building downwash, all of which are incorporated by reference in Appendix G. Some appropriate, conservative AERMOD-ready meteorology files and parameters are available at https://www.arb.ca.gov/resources/documents/harp-aermod-meteorological-files.

(E) Other procedures must use methods in HARP or available guidelines as follows:

(1) The potential health impact must be calculated for the point of maximum impact (PMI) or maximum off-site concentration.

(2) The potential non-cancer acute inhalation total hazard index (H.I.) must be calculated for all substances for each toxicological endpoint.

(3) The potential non-cancer chronic inhalation hazard index (H.I.) must be calculated for all substances for each toxicological endpoint.

(4) The potential non-cancer chronic non-inhalation (ingestion and dermal exposure) hazard index (H.I.) must be calculated for all applicable substances for each toxicological endpoint.

(5) The non-cancer chronic inhalation and non-inhalation hazard indices (H.I.s) must be added for each toxicological endpoint to determine the total hazard index (total H.I.) for each endpoint.

(6) The total potential carcinogenic impact from inhalation exposure and non-inhalation exposure pathways (where applicable for the substance) must be calculated. At a minimum, multipathway exposure must include the inhalation, soil ingestion, and dermal exposure, and mother's milk pathways; exposure through food ingestion including vegetables/fruits, meat, milk, and fish, and exposure through consumption of contaminated surface water should be included if those pathways exist at a specific site.

(7) Health effects values used for cancer and non-cancer health effects are subject to the approval by the Office of Environmental Health Hazard Assessment (OEHHA). Health effects values used for cancer risk assessment and non-cancer health effects are those available in ~~the California Environmental Protection Agency (Cal/EPA), Standards and Criteria Working Group document entitled "California Cancer Factors: Update", 1994, available through the Office of Environmental Health Hazard Assessment, and incorporated by reference herein. Some health effects values for assessing non-cancer health impacts are available in the OEHHA "Air Toxics 'Hot Spots' Risk Assessment Guidelines, October 2003,", including the use of health values from the Consolidated Table of OEHHA / ARB approved risk assessment health values (April 2005)~~the OEHHA “Technical Support Document for Cancer Potency Factors”, June 2009, located at: https://oehha.ca.gov/air/crnr/technical-support-document-cancer-potency-factors-2009, including an updated Appendix A: “Appendix A: Hot Spots Unit Risk and

Cancer Potency Values", updated May 2019, located at: https://oehha.ca.gov/media/CPFs042909.pdf; and the OEHHA "Acute, 8-hour, and Chronic Reference Exposure Level (REL) Summary", November 2019, located at: https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary; and the OEHHA "p-Chloro-α, α, α-trifluorotoluene (p-Chlorobenzotrifluoride, PCBTF) Cancer Inhalation Unit Risk Factor Technical Support Document", Aug 2020, https://oehha.ca.gov/media/downloads/crnr/pcbtfiur080720.pdf; and the OEHHA "Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments, February 2015", located at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf; Consolidated Table of OEHHA / ARB Approved Risk Assessment Health Values (September 2019), located at: https://www.arb.ca.gov/sites/default/files/classic/toxics/healthval/contable.pdf; and CARB's HotSpots Analysis and Reporting Program (HARP), which includes the Air Dispersion Modeling and Risk Tool (ADRM), version 19121 - May 1, 2019, located at: https://www.arb.ca.gov/sites/default/files/classic/toxics/harp/software2/harp2admrt19121.zip), all of which are incorporated by reference in Appendix G~~herein~~.

(8) Screening health risk assessment tables that are consistent with OEHHA Risk Assessment methodologies may be used at district discretion. Some examples are provided here: ~~http://www.arb.ca.gov/ab2588/ab2588.htm~~ https://ww2.arb.ca.gov/hot-spots-stationary-diesel-engine-screening-risk-assessment-tables. In order to use the tables, the configuration of the diesel engine(s) must ~~reflect~~ be representative of what was used in the modeling analysis, including the requirement that the diesel engine have a vertical stack with no restrictions such as a rain cap.

(9) At district discretion, population-wide impact assessment may be required for facilities for screening purposes.

(10~~9~~) Any other assumptions, if needed, must be consistent with the procedures approved by OEHHA for preparing health risk assessments.

(F) Stochastic modeling exercises are not acceptable as screening level risk assessment.