



**FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT**  

---

**ENGINEERING DEPARTMENT**

**MANUAL OF OPERATIONS – TOXICS HEALTH RISK ASSESSMENT**

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

## TABLE OF CONTENTS

1.0	PURPOSE:	3
2.0	APPLICABILITY:	3
2.1	Permitting	3
2.2	AB 2588 Program Compliance	3
3.0	DEFINITIONS:	3
3.1	Cancer Risk	3
3.2	Hazardous Air Pollutant	3
3.3	Health Hazard Index (HHI)	3
3.4	Modification	3
3.5	Risk Assessment	3
3.6	Specific Findings Report	3
3.7	Stationary Source	4
3.8	Toxic Air Contaminant	4
3.9	Toxic Best Available Control Technology (T-BACT)	4
4.0	GUIDANCE, SOFTWARE, AND PROTOCOLS:	4
4.1	Prioritization Guidance	4
4.2	Health Risk Assessments Guidance	4
4.3	Elements of a Health Risk Assessment	5
4.4	Recommended Health Risk Assessment Software	5
4.5	Health Data	5
4.6	Meteorological Data	5
4.7	Air Dispersion Modeling	5
5.0	RISK ASSESSMENT EVALUATION CRITERIA:	6
5.1	Prioritization	6
5.2	Screening Risk Assessment	6
5.3	Refined Risk Assessment	6
5.4	General Risk Assessment Criteria	7
5.5	AB 2588 Air Toxics "Hot Spots" Program	8
6.0	REFERENCES:	8

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

## 1.0 PURPOSE:

The purpose of this document is to provide guidelines for permitting sources of toxic air contaminants based on the quantitative effects of contaminant toxicity. These guidelines may also be used to implement the prioritization and risk assessment provisions of the AB 2588 Air Toxics "Hot Spots" *Emission Inventory Criteria and Guidelines Report*. These guidelines are in large part composed of procedures outlined in the Office of Environmental Health Hazard Assessment (OEHHA) "Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments (February 2015) and the California Air Resources Board (CARB) and California Air Pollution Control Officers Association (CAPCOA) "Risk Management Guidance for Stationary Sources of Air Toxics" (July 2015).

## 2.0 APPLICABILITY:

- 2.1 Permitting: These guidelines apply to new facilities and existing facilities undergoing a modification which results in the increased potential to emit air pollutants, including sources subject to Section 112(g) of the federal Clean Air Act.
- 2.2 AB 2588 Program Compliance: These guidelines also apply to facilities, performing prioritization and risk assessments in compliance with the AB 2588 program.

## 3.0 DEFINITIONS:

Unless otherwise defined below, the terms used in this guidance are the same as defined in Rule 10.1 – New Source Review

- 3.1 Cancer Risk: An estimate of the potential increased cancer risk for a given pollutant resulting from the emissions unit.
- 3.2 Hazardous Air Pollutant: Any air pollutant listed pursuant to section 112(b) of the CAA.
- 3.3 Health Hazard Index (HHI): The ratio of the estimated ambient concentration of a substance to the acceptable reference exposure level (REL).
- 3.4 Modification: For sources subject to Section 112(g), modification is as defined in 40 CFR 63.41; otherwise, as defined in Rule 10.1.
- 3.5 Risk Assessment: The numerical evaluation of potential risk from a permitted facility, considering both cancer and non-cancer effects from all toxic pollutants emitted. Calculations are performed using published cancer potency values and non-cancer reference exposure levels on a per pollutant basis.
- 3.6 Specific Findings Report: If required by these guidelines, the specific findings report gives the necessary information to base a final permitting decision. The

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

report will be included in the permit analysis supporting the final permitting decision. Considerations which should be addressed in the report include:

- 3.6.1 The consequences of the application approval or denial (specifically, is there an adverse impact to the safety and/or health of the public); and,
  - 3.6.2 Source compliance with an Airborne Toxic Control Measure (ATCM) or MACT Standard; and,
  - 3.6.3 The costs of mitigation; and,
  - 3.6.4 The degree of uncertainty in the risk assessment; and,
  - 3.6.5 The project's benefit to the public.
- 3.7 Stationary Source: For sources subject to Section 112(g), stationary source is as defined in 40 CFR 63.41; otherwise, as defined in Rule 10.1.
- 3.8 Toxic Air Contaminant: Substance included in lists prepared by the California Air Resources Board pursuant to Section 44321 of the California Health and Safety Code that has an OEHHA approved health risk value.
- 3.9 Toxic Best Available Control Technology (T-BACT): The most stringent emissions limitation or control technique for hazardous air pollutants and toxic air contaminants which:
- 3.9.1 Has been achieved in practice for such emissions unit category or class of sources; or
  - 3.9.2 Is contained in any federal standard promulgated pursuant to the federal Clean Air Act Section 111 (NSPS) or Section 112 (MACT) for such emissions unit category or class.
  - 3.9.3 Is any other emissions limitation or control technique, including process and equipment changes of basic and control equipment, found by the APCO to be technologically feasible for such emissions unit category or class of sources.

## 4.0 GUIDANCE, SOFTWARE, AND PROTOCOLS:

- 4.1 Prioritization Guidance: FRAQMD Policy 2.12.1 – Facility Prioritization and Risk Assessment Thresholds, FRAQMD Manual of Operations – Facility Prioritization, and CAPCOA Air Toxic “Hot Spots” Program Facility Prioritization Guidelines (August 2016).
- 4.2 Health Risk Assessments Guidance: OEHHA “Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments” (February 2015). Per this guidance, the District will accept the following refinements:

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

4.2.1 Fraction of Time at Home: If no school is within the 1 in one million isopleths, the following factors may be used:

Age Range	Fraction of Time at Residence
3rd Trimester and 0 to 2 years of age	0.851
2 to less than 16 years	0.721
16 to 30 or 70 years	0.73

4.2.2 Spatial Averaging: When evaluating maximum residential exposure, spatial averaging with a 20 meter by 20 meter grid may be used.

4.3 Elements of a Health Risk Assessment: The following elements shall be included:

4.3.1 Estimated residential maximum cancer risk (MCR) for 30 year exposure

4.3.2 Estimated maximum non-cancer Chronic Health Hazard Index (HHI)

4.3.3 Estimated maximum non-cancer Acute HHI

4.3.4 Risk estimates shall be calculated for the Point of Maximum Impact, the maximum exposed residence, and, if applicable, maximum exposed offsite worker.

4.3.5 Cancer and non-cancer risk shall include inhalation and multi-pathway non-inhalation risk, if applicable.

4.3.6 Estimate of cancer burden using a 70 year exposure duration

4.3.7 Cancer and acute and/or chronic risk isopleths if the cancer risk or HHI exceeds the permitting threshold.

4.4 Recommended Health Risk Assessment Software: The latest version of the California Air Resources Board Health Risk Assessment Program (HARP2). All modeling and data needed to calculate the risk shall be provided to the District.

4.5 Health Data: Risk assessment shall use the cancer potency values and non-cancer reference exposure levels identified in the most recently published data available in ARB's *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*.

4.6 Meteorological Data: If site specific meteorological data is not available, the data from the most representative of the Yuba County Airport or Beale Air Force Base Weather Stations.

4.7 Air Dispersion Modeling: AERSCREEN may be used to obtain estimates of the worst case 1 hour concentrations for a single source which may be converted to worst case 8-hour, 24-hour and annual concentrations. AERMOD (version 15181 or later) must be used for all refined air dispersion modeling.

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

## 5.0 RISK ASSESSMENT EVALUATION CRITERIA:

- 5.1 Prioritization: Each facility subject to these guidelines for air quality permitting will be prioritized by the District in accordance with the procedures found in FRAQMD's Manual of Operations – Facility Prioritization and the CAPCOA Air Toxic "Hot Spots" Program Facility Prioritization Guidelines (August 2016).
  - 5.1.1 A facility will be exempt from further review under these guidelines if it is prioritized as "low" or if prioritization is not required as per the CAPCOA Air Toxic "Hot Spots" Program Facility Prioritization Guidelines (August 2016).
  - 5.1.2 Any facility prioritized as "intermediate" will not be required to conduct further review under these guidelines; however, the APCO reserves the right to conduct further evaluation.
  - 5.1.3 Any facility prioritized as "high" will be required to conduct a screening health risk assessment as described in 5.2. or a refined risk assessment as described in 5.3. If a risk assessment is required and not included in the application packet or subsequent documents, the District may conduct the risk assessment as part of the engineering evaluation process.
  
- 5.2 Screening Risk Assessment: As a preliminary evaluation tool, a screening risk assessment may be used in place of a refined risk assessment.
  - 5.2.1 Screening risk assessments will use health conservative modeling and source parameters for determining concentrations.
  - 5.2.2 Screening tools developed for industry-wide source categories (such as auto body shops, dry cleaners, diesel engines) may be used upon approval of the APCO.
  - 5.2.3 Compliance with an ATCM or NESHAP may be used as a screening risk assessment tool.
  - 5.2.4 Other screening tools or evaluations using conservative and health protective assumptions may be used upon approval of the APCO.
  - 5.2.5 A project shall be exempt from further permitting review under these guidelines if it meets the following criteria:
    - 5.2.5.1 The cancer risk associated with the facility does not exceed ten (10) theoretical lifetime increased incidence of cancer per million population; and,
    - 5.2.5.2 The acute Health Hazard Index (HHI) is less than one (1); and,
    - 5.2.5.3 The chronic Health Hazard Index (HHI) is less than one (1); or,
    - 5.2.5.4 The project is subject to and complies with an ATCM or NESHAP, as determined by the APCO.
  
- 5.3 Refined Risk Assessment: The refined health risk assessment should be a complete stand-alone document using source and dispersion inputs. The assessment should contain all of the following: an executive summary which includes a description of

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

the facility and impact area; a map of the impact area; and a summary of the potential cancer risk, acute health effects, and chronic non-cancer health effects.

- 5.3.1 Each facility subject to a refined health risk assessment shall consider both cancer and non-cancer affects.
  - 5.3.2 A project shall satisfy the permitting requirements of these guidelines if it meets the following criteria:
    - 5.3.2.1 The cancer risk associated with the facility does not exceed ten (10) theoretical lifetime increased incidence of cancer per million population; and,
    - 5.3.2.2 The acute Health Hazard Index (HHI) is less than one (1); and,
    - 5.3.2.3 The chronic Health Hazard Index (HHI) is less than one (1); or,
    - 5.3.2.4 The project is subject to and complies with an ATCM or NESHAP, as determined by the APCO.
  - 5.3.3 T-BACT shall be required if the risk results in a potential cancer risk of greater than or equal to 10 incidence of increased cancer per million population or an acute or chronic HHI of greater than or equal to 1.
  - 5.3.4 After completing a specific findings report, the APCO may approve the proposed facility modification based on specific findings if the cancer risk is within the action range of 10 to 100 in a million, or the acute or chronic HHI is between 1 and 10.
  - 5.3.5 The APCO shall not approve the proposed facility modification if the cancer risk is greater than or equal to 100 in a million, or the acute or chronic HHI is greater than 10.
  - 5.3.5 The APCO may determine to deny a permit where risk assessment demonstrates risks below the significant permitting thresholds and shall prepare a specific findings report to document the reasons for the denial.
- 5.4 General Risk Assessment Criteria: Health risk assessments are to be conducted in accordance with the OEHHA Risk Assessment Guidance Manual (Feb 2015).
- 5.4.1 Health Risk Assessments shall include all toxic air contaminants emitted.
  - 5.4.2 Emission calculations shall be based on the potential to emit and reflective of proposed operations. All emission calculations must be verified and approved by the District.
  - 5.4.3 Source characterization and modeling parameters shall accurately reflect the proposed operational and physical characteristics of the source.
  - 5.4.4 If the APCO determines an emissions unit or project health risk assessment is not an adequate characterization of the proposed and existing potential risk from a facility, the APCO may require a revised evaluation to include the cumulative effects of the existing and proposed emissions units to ensure the permitting of the new or modified emissions unit or project is will not cause a significant toxic impact to the public.

# FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

- 5.5 AB 2588 Air Toxics "Hot Spots" Program: The guidelines of Section 5.2 may also be used to implement the screening risk assessment provisions of the Air Toxics "Hot Spots" Program.

## 6.0 REFERENCES:

- 6.1 California Air Pollution Control Officers Association (CAPCOA) "*Air Toxics 'Hot Spots' Program Facility Risk Prioritization Guidelines*" (August 2016)
- 6.2 Feather River Air Quality Management District Policy 2.11.1 – Facility Prioritization and Risk Assessment Thresholds
- 6.3 Feather River Air Quality Management District Manual of Operations – Facility Prioritization
- 6.4 Office of Environmental Health Hazard Assessment (OEHHA) "*Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments*" (February 2015)
- 6.5 (CARB) and California Air Pollution Control Officers Association (CAPCOA) "*Risk Management Guidance for Stationary Sources of Air Toxics*" (July 2015).
- 6.6 California Air Resources Board *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (July 3, 2014)
- 6.7 California Air Resources Board "*Emission Inventory Criteria and Guidelines for the Air Toxics 'Hot Spots' Program*" (September 2007)