

**AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO**

**AIR TOXICS "HOT SPOTS" PROGRAM
PRIORITIZATION PROCEDURES**

October 1997

These prioritization procedures have been developed by the San Diego Air Pollution Control District to satisfy requirements of The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB2588). This is the second revision to the District's prioritization procedures. Previous versions were adopted in 1990 and 1992.

WHAT IS THE AIR TOXICS "HOT SPOTS" PROGRAM?

The California Air Toxics "Hot Spots" Information and Assessment Act (AB2588) was enacted by the Legislature in 1987 to address public concern over the release of toxic air contaminants into the atmosphere. The law requires facilities that emit toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emission sources, location of resulting "hot spots," notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public.

Implementation of the "Hot Spots" Program consists of several distinct elements: toxic emission inventory plans, toxic emission inventory reports, facility prioritizations, health risk assessments, public notification, and risk reduction. The San Diego County Air Pollution Control District is the implementing agency for approximately 1,800 San Diego facilities required to comply with the law.

WHAT DOES THE LAW REQUIRE IN REGARD TO THE PRIORITIZATION OF FACILITIES?

The law requires air districts to prioritize and then categorize all facilities for purposes of health risk assessment into high, intermediate and low priority categories. The District takes into consideration potency, toxicity, quantity of emissions, the proximity of the facility to potential receptors and any other factor that the District finds may indicate that a facility poses a potential risk to receptors.

WHAT IS THE PURPOSE OF FACILITY PRIORITIZATION?

The purpose of facility prioritization is to identify facilities that warrant a detailed evaluation of facility risk through preparation of a site specific health risk assessment. Prioritization procedures consider the magnitude of toxic air contaminant emissions from the facilities, the toxicity of those emissions and the proximity of potential receptors but do not consider the dilution characteristics of the specific facility's exhaust stacks, or the expected health risks posed by the emissions.

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These latter factors, as well as more detailed evaluation of possible public health effects, are considered in a site specific health risk assessment, if required, based on a facility's prioritization score. The potential risk that a facility poses to the public is based on the results of an approved health risk assessment. Requiring a facility to prepare a health risk assessment does not mean that the facility poses a significant risk to public health, only that its emissions and their possible impacts warrant a more detailed evaluation.

WHAT ARE THE DISTRICT'S GOALS FOR THE PRIORITIZATION PROCEDURES?

- The procedures should be simple.
- The procedures should be applicable to all facilities.
- The procedures should be easily understood by the public.
- The procedures should be designed with inherent conservatism to ensure that high impact facilities will not be excluded.
- The procedures should be consistent with state guidelines.
- The procedures should be revised as necessary to reflect new developments in risk assessment methodology.

HOW DO THESE PRIORITIZATION PROCEDURES DIFFER FROM PREVIOUS VERSIONS OF THE PROCEDURES?

The District's first prioritization procedures were prepared in 1990. These procedures were adopted from the Air Toxics "Hot Spots" Program Facility Prioritization Guidelines (July 1990) prepared by the AB2588 Risk Assessment Committee of the California Air Pollution Control Officers Association (CAPCOA). This committee was comprised of representatives from local air pollution control districts, the Air Resources Board (ARB), and the Department of Health Services (now Office of Environmental Health Hazard Assessment (OEHHA)). Several consultation meetings were held by the committee to solicit input on the basic prioritization guidelines from the public and affected facilities.

In 1992, the District revised the 1990 procedures by increasing the carcinogenic compound prioritization score that would require a health risk assessment from 10 to 100. This change was based on analysis of the results of previously prepared health risk assessments which indicated that it was unlikely that facilities with a carcinogenic compound prioritization score under 100 (based on the procedures in place at that time) would trigger public notification requirements now specified in District Rule 1210.

This newest version of the prioritization procedures incorporates a receptor proximity adjustment factor. The receptor proximity adjustment factor decreases prioritization scores (and potentially priority) for facilities that do not have receptors in close proximity to the facility. These facilities typically have less potential for significant toxic impacts due to the additional dispersion afforded by the greater source-to-receptor distances. Additionally, under the proposed procedures two

separate non-cancer prioritization scores will be calculated instead of a single composite (chronic and acute) score. These revisions are being proposed to make the District's procedures consistent with the procedures of the majority of the other air districts in California.

WHAT METHODOLOGY WILL THE DISTRICT USE TO CALCULATE PRIORITIZATION SCORES ?

The magnitude of emissions, each compound's corresponding potency, and the proximity to potential receptors will be used to calculate prioritization scores. Three scores will be calculated for each facility where appropriate; one score for carcinogenic compounds, one score for chronic non-carcinogenic compounds and one score for acute non-carcinogenic compounds.

A) Calculation of Facility Total Score for Carcinogenic Compounds

The emission rate of listed compound would by itself be inadequate for prioritizing facilities because the toxicities vary substantially from compound to compound. A more appropriate method incorporates the total facility emission rate for each AB2588 listed carcinogen, its unit risk value, a receptor proximity adjustment factor and a normalization factor as demonstrated in the following equation:

$$TS_{\text{cancer}} = \sum^c (E_c) (P_c) (RP) (1700)$$

where,

TS_{cancer}	=	total score, sum of scores for all compounds for which a unit risk value is available
c	=	specific carcinogenic compound
E_c	=	facility-wide emissions of substance c , (lbs/yr)
P_c	=	unit risk factor for substance c , $(\mu\text{g}/\text{m}^3)^{-1}$
RP	=	receptor proximity adjustment factor
1700	=	normalization factor

B) Calculation of Acute and Chronic Non-Cancer Scores

Non-cancer prioritization scores are calculated using data for all substances which have either acute or chronic reference exposure levels (RELs). Separate prioritization scores will be calculated for both chronic and acute non-cancer compounds according to the following equations:

$$TS_{\text{chronic}} = \sum^{tc} (E_{tc}/P_{tc}) (RP) (150)$$

$$TS_{\text{acute}} = \sum^{ta} (E_{ta}/P_{ta}) (RP) (1500)$$

where,

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TS_{chronic}	=	total score, sum of scores for all substances with chronic RELs
TS_{acute}	=	total score, sum of scores for all substances with acute RELs
tc	=	toxic compound with a chronic REL
ta	=	toxic compound with an acute REL
E_{tc}	=	annual average hourly facility-wide emissions of tc , (lbs/hr)
E_{ta}	=	maximum hourly facility-wide emissions of ta , (lbs/hr)
P_{tc}	=	REL of substance tc , ($\mu\text{g}/\text{m}^3$)
P_{ta}	=	REL of substance ta , ($\mu\text{g}/\text{m}^3$)
RP	=	receptor proximity adjustment factor
150	=	normalization factor
1500	=	normalization factor

Unit risk factors and reference exposure levels to be used in these calculations (cancer and non-cancer) were developed by the OEHHA and listed in the CAPCOA Air Toxics "Hot Spots" Program Risk Assessment Guidelines, October 1993, or listed in any health risk assessment guidelines adopted by OEHHA pursuant to Division 26, Part 6, Chapter 6 of the California Health and Safety Code, that replaces all or part of the CAPCOA Air Toxics "Hot Spots" Program Risk Assessment Guidelines, October, 1993. Normalization factors are used to put the scores for carcinogenic effects and non-carcinogenic effects on a more convenient scale for evaluation.

For facilities with source-receptor distances greater than 50 meters the receptor proximity adjustment factor may be calculated as follows:

$$RP = 2500/D^2$$

where,

D = source to receptor distance, (meters)

Source to receptor distance (D) is determined using either of the two optional definitions specified below.

1) the minimum distance between any source and any facility property line added to the minimum distance from any facility property line to any receptor,

or

2) the minimum source-receptor distance from any source to any receptor.

The District may request that facilities supply documentation supporting the data used to determine the receptor proximity factor.

A receptor is a physical location where toxic air emissions from a source could impact an individual. The term receptor, as used in the calculation of cancer and chronic prioritization scores, is defined as a residence, business, school, daycare center, hospital, hotel, government facility, retirement home, or any other location where extended public access is possible. When calculating acute prioritization scores the definition above is expanded to also include any location where short-term (one-hour) public access is possible. This typically entails determination of two receptor proximity factors; one for calculation of cancer and chronic prioritization scores and one for calculation of the acute prioritization score.

HOW WILL FACILITIES BE CATEGORIZED?

Facility prioritization scores will be reviewed individually. Each facility is placed in either Category A (high priority), B (intermediate priority) or C (low priority) based upon their total score and thresholds given in Tables 1 and 2.

TABLE 1
Evaluation of Facility Total Scores for Carcinogenic Compounds

Facility Score	Facility Designation (Priority)
$TS \geq 100$	Category A
$1 \leq TS < 100$	Category B
$TS < 1$	Category C

TABLE 2
Evaluation of Facility Total Scores for Non-Carcinogenic Compounds

Facility Score	Facility Designation (Priority)
$TS \geq 10$	Category A
$1 \leq TS < 10$	Category B
$TS < 1$	Category C

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These thresholds are based on conservative air dispersion scenarios which use the ISCST and PTPLU dispersion models to estimate worst-case concentrations. Assumptions include an emission rate of one pound per hour, stack heights ranging from 1 to 100 meters, stack and ambient temperature equal to 293° Kelvin, low flow rate of 0.03 cubic meters per second, conservative meteorology, flat terrain, urban dispersion algorithms, and a minimum receptor proximity of 50 meters.

WHO WILL HAVE TO DO RISK ASSESSMENTS?

If any of the three prioritization scores for a facility equals or exceeds the threshold designated by the District for the Category A rating, the facility will be subject to risk assessment requirements.

Category B facilities may be subject to health risk assessment requirements based on a review of additional factors which may indicate potential for adverse health impacts. These factors include:

- proximity of sensitive receptors near the facility
- receptor proximity less than 50 meters
- elevated receptors or complex terrain
- frequency of nuisance complaints
- potential for public health impacts through noninhalation exposure pathways

The District may also perform a screening health risk assessment prior to making a determination concerning the need for further analysis using refined risk assessment techniques.

Category C facilities will not be required to perform health risk assessments.

MAY A FACILITY AVOID BEING RANKED BY AGREEING TO PERFORM A HEALTH RISK ASSESSMENT BEFORE THE PRIORITIZATION DEADLINE?

Facilities stipulating they will comply with the AB2588 risk assessment requirements will be placed in Category A. The District will not calculate total scores for these facilities.

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