

Memorandum

To : Craig O'Rourke
Facilities Permitting Branch
Region 4
245 W. Broadway, Suite 350
Long Beach, California 90802-4444

Date: 3 December 1992

From : Office of the Science Advisor (OSA)
400 P Street, 4th Floor
P. O. Box 806
Sacramento, CA 95612-0806
Voice: (916)255-2038 Fax: (916) 255-2096

Subject : Long Beach Naval Complex
PCA Code 14615 Site Code 400289-43

Please inform CH2M/Hill, contractors to the Navy for the Long Beach Naval Complex, that Cal/EPA recommends that risk assessment guidance available from USEPA should be followed, supplemented with guidance from Cal/EPA. Below are listed principal and secondary sources of information. We anticipate that principal sources will be followed closely, while the secondary sources may provide for useful additional information. None of these guidance documents specifically addresses requirements for air modelling. If air modelling is performed, guidance should be sought from OSA at that time.

Although this is a RCRA site and some guidance on risk assessment is available in "RCRA Facility Investigation (RFI) Guidance", Volumes I-IV (USEPA, 1989), we prefer that guidance documents intended for CERCLA be followed for this site. This is because the site is large and complex and the guidance for risk assessment under CERCLA is better developed. CERCLA guidance does not conflict with RCRA or Cal/EPA guidance. Also, information from Cal/EPA complements CERCLA guidance rather than RCRA.

A work plan for assessing risks to both human and non-human receptors should be prepared and presented to regulatory agencies prior to initiation of work. We anticipate that the risk assessment for the Long Beach Naval Complex will need to focus on risks to non-human receptors. Little detailed guidance is available for such ecological risk assessment. We have listed the reference material we think would be most useful.

The ecological risk assessment should be planned as a phased effort with the decision criteria which will cause the next phase to be implemented clearly defined. Because some chemical contamination of marine sediments has already been found, we anticipate that paired analyses chemical analyses and bioassays of sediment must be part of the phased effort. Much of the material for an appropriate first phase has already been completed and presented in the facility assessment reports. However, these should be expanded to include the full nature and extent of chemical contamination, the potential non-human receptors on and near the site, and the array of potentially complete exposure pathways. More detailed analysis might be planned for later phases, depending on the determination of relative risk based on the initial characterization.

I. Methods of Human Health Risk Assessment

A. Principal Sources

- a. "Risk Assessment Guidance for Superfund, Volume I -- Human Health Evaluation Manual, Part A", USEPA Office of Solid Waste and Emergency Response, Directive 9285.701A, December 1989.
- b. "Supplemental Guidance for Human Health Multimedia Risk Assessments of Hazardous Waste Sites and Permitted Facilities", California EPA, Department of Toxic Substances Control, Office of Science Advisor, October 1992.

(This document is available from the Office of Science Advisor at a cost of \$50. Telephone 916-255-2007 for ordering information.)

- c. "Risk Assessment Guidance for Superfund, Volume I -- Human Health Evaluation Manual (Part B, Development of Risk-based Remediation Goals)", USEPA, Office of Solid Waste and Emergency Response, Directive 9285.7-01B, March 1991.
- d. "Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish", USEPA Office of Marine and Estuarine Protection and Office of Water Regulations and Standards, EPA 503/8-89/002, September 1989.

B. Secondary Sources

- a. "Guidance for Data Useability in Risk Assessment", USEPA Office of Emergency and Remedial Response, EPA 540/G-90/008, October 1990.
- b. "Exposure Factors Handbook", USEPA Office of Health and Environmental Assessment, EPA/600/8-89/043, July 1989.
- c. "Interim Guidance for Dermal Exposure Assessment", USEPA Office of Research and Development, EPA 600/8-91/011A, March 1991.
- d. "Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors", Office of Solid Waste and Emergency Response, Directive 9285.7-01B, March 1991.

II. Methods of Ecological Risk Assessment

A. Principal Source

"Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual", USEPA Office of Emergency and Remedial Response, EPA/540/1-89/001, March 1989.

B. Secondary Sources

- a. The Role of BTAGs in Ecological Assessment. U.S. EPA ECO Update, Volume 1, Number 1, Publication 9345.0-05I.
- b. Ecological Assessment of Superfund Sites: An Overview. U.S. EPA ECO Update, Volume 1, Number 2, Publication 9345.0-05I.
- c. Developing a Work Scope for Ecological Assessments. U.S. EPA ECO Update, Volume 1, Number 4, Publication 9345.0-05I.
- d. Briefing the BTAG: Initial Description of Setting, History, and Ecology of a Site. U.S. EPA ECO Update, Volume 1, Number 5, Publication 9345.0-05I.
- e. Synthesis of Methods to Predict Bioaccumulation of Sediment Pollutants. U.S. EPA Pacific Ecosystems Branch, Newport, Oregon. September, 1992. ERL-N Contribution No. N232.

III. Toxicity Values for Specific Chemicals

A. Principal Sources

- a. "California Cancer Potency Factors", California EPA, Standards and Criteria Workgroup, June 1992 (attached).
- b. "Integrated Risk Information System", USEPA on-line data base.
- c. The Potential for Biological Effects of Sediment-sorbed Contaminants Tested in the National Status and Trends Program. March, 1990. NOAA Technical Memorandum NOS OMA 52.
- b. California Enclosed Bays and Estuaries Plan. Water Quality Control Plan for Enclosed Bays and Estuaries of California. California Water Resources Control Board, April 1991, 91-13 WQ.
- c. USEPA Ambient Water Quality Criteria (chemical-specific document).
- d. US Fish and Wildlife Service Contaminant Hazard Review Series (Biological Report 85(1.xx)). Ronald Eisler, USFWS Patuxent Wildlife Research Center, Laurel, Maryland.
- e. USEPA AQUIRE data system. EPA Duluth, Minnesota.

B. Secondary Sources

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- a. "Health Effects Assessment Summary Tables, Annual FY 1992", USEPA Office of Solid Waste and Emergency Response and Office of Research and Development, Office of Emergency and Remedial Response Directive 9200.6-303 (92-1), NTIS No. PB92-921199, March 1992.
- b. "Health Effects Assessment Summary Tables, Annual FY 1991", USEPA Office of Solid Waste and Emergency Response and Office of Research and Development, Office of Emergency and Remedial Response Directive 9200.6-303 (91-1), NTIS No. PB91-921199, January 1991.

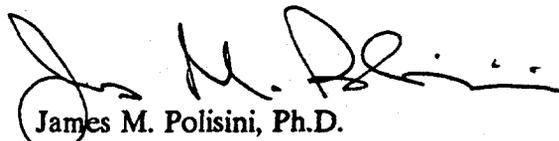
IV. Toxicity Testing

- a. Testing protocols from the Puget Sound Estuary Program, especially: Interim Final Recommended Guidelines for Conducting Laboratory Bioassays on Puget Sound Sediments.
- b. Guidance Manual: Bedded Sediment Bioaccumulation Tests. USEPA Pacific Ecosystems Branch, Newport, Oregon. EPA/600/x-89/302.
- c. Species-specific ASTM testing protocols. (Consult Dr. Polisini for specific protocols required.)
- d. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. USEPA. EPA/600/4-90-027.

If you or CH2M/Hill have any questions about this list of references, please call me. We look forward to seeing their outline on 17 December in Santa Ana.



John P. Christopher, Ph.D., D.A.B.T.
Staff Toxicologist
Health and Ecological Risk Section (HERS)



James M. Polisini, Ph.D.
Associate Toxicologist, HERS
(916) 255-2043

cc: Dr. J. A. Parker

Attachment



MEMORANDUM

To: Cal/EPA Departments, Boards, and Offices
From: Standards and Criteria Work Group
Date: June 18, 1992
Subject: California Cancer Potency Factors

The attached list is a compilation of cancer potency factors developed or approved by the Office of Environmental Health Hazard Assessment (OEHHA), the Department of Toxic Substances Control (DTSC), and the Department of Pesticide Regulation (DPR) of the California Environmental Protection Agency. These cancer potency factors have been used as a basis for regulatory actions such as the establishment of Maximum Contaminants Levels for drinking water, identification of Toxic Air Contaminants, and the setting of No Significant Risk Levels for purposes of the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). The numbers on this list are use in a variety of risk assessment scenarios, including but not limited to, risk assessments conducted for CERCLA/RCRA programs and risk assessments conducted for the Air Toxics Hot Spots Information and Assessment Program.

The impetus for compiling this list grew from efforts to promote consistency in risk assessment across the state and efforts to streamline regulatory requirements in the State of California. The Standards and Criteria Work Group (SCWG), originally convened by OEHHA and DTSC while part of the Department of Health Services, has been working towards increased consistency in risk assessment in the various state programs. This list is one of the products of the SCWG. The list provides information on chemicals which may come up for some regulatory review in a specified program of a department within the California Environmental Protection Agency (Cal/EPA). It is hoped that this list will reduce duplication of effort on the part of State agencies who must review the same chemicals for varied programs.

The sources of the potency values, written in the right hand column next to the number, are OEHHA's Reproductive and Cancer Hazard Assessment Section (RCHAS), the Air Toxicology and Epidemiology Section (ATES), and the Pesticide and Environmental Toxicology Section (PETS) and DPR's Medical Toxicology Branch (MTB). RCHAS generates cancer potency factors for OEHHA's

implementation of Proposition 65. ATEs develops unit risk factors for use in the Toxic Air Contaminant program and the Air Toxics Hot Spots Information and Assessment program of the Air Resources Board. PETS develops cancer potency factors for use in setting Maximum Contaminant Level by the Department of Health Services' Office of Drinking Water. MTB develops cancer potency factors for use in DPR's Birth Defect Prevention Program. The majority of these potency values has undergone peer review and in many cases rigorous regulatory review. For more information on a specific potency value, please contact the appropriate program listed.

This list will be revised semiannually as more cancer potency factors are generated. It is planned, in the near future, to prepare an attachment to this list that will give a specific reference to the documentation for the value and the regulatory citation for the standard based on the value. In addition, basic information on the data and some assumptions used to develop the specific values listed will be given to assist interested parties in determining the correct use of these cancer potency factors.

For more information contact Dr. David Siegel, of OEHHA's Hazardous Waste Toxicology Section, at (916) 322-5624.

California Environmental Protection Agency Criteria for Carcinogens

This list of cancer potency factors was compiled by the Standards and Criteria Work Group (SCWG), which is composed of staff from the Office of Environmental Health Hazard Assessment (OEHHA), the Department of Toxic Substances Control (DTSC), and the Department of Pesticide Regulation (DPR) of the California Environmental Protection Agency. These cancer potency factors have been used as a basis for regulatory actions or standards. The listed numbers are used in a variety of risk assessment scenarios, including but not limited to, risk assessments conducted for CERCLA/RCRA programs and risk assessments conducted for the Air Toxics Hot Spots Information and Assessment Program.

This list will be revised semiannually as more cancer potency factors are generated. It is planned, in the near future, to prepare an attachment to this list that will give a specific reference to the documentation for the value and the regulatory citation for the standard based on the value. In addition, basic information on the data and some assumptions used to develop the specific values listed will be given to assist interested parties in determining the correct use of these cancer potency factors.

Chemical-Carcinogens	Inhalation (mg/kg • day) ⁻¹	Source	Oral (mg/kg • day) ⁻¹	Source
Acetaldehyde	7.7 E-03	RCHAS (510) 540-2084	7.7 E-03	RCHAS (510) 540-2084
Acrylamide	4.5 E+00	RCHAS (510) 540-2084	4.5 E+00	RCHAS (510) 540-2084
Acrylonitrile	1.0 E+00	RCHAS (510) 540-2084	1.0 E+00	RCHAS (510) 540-2084
Aflatoxin B1	4.6 E+01	RCHAS (510) 540-2084	4.6 E+01	RCHAS (510) 540-2084
Aldrin	1.7 E+01	RCHAS (510) 540-2084	1.7 E+01	RCHAS (510) 540-2084
Allyl chloride	2.1 E-02	RCHAS (510) 540-2084	2.1 E-02	RCHAS (510) 540-2084

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Chemical-Carcinogens	Inhalation (mg/kg·day)⁻¹	Source	Oral (mg/kg·day)⁻¹	Source
Aniline	5.7 E-03	RCHAS (510) 540-2084	5.7 E-03	RCHAS (510) 540-2084
Arsenic, Inorganic	1.2 E+01	ATES (510) 540-3324	Pending	PETS (510) 540-3063
Asbestos (100 PCM fibers/m³)⁻¹	1.9 E-04	ATES (510) 540-3324		
Azobenzene	1.1 E-03	RCHAS (510) 540-2084	1.1 E-03	RCHAS (510) 540-2084
Benzene	1.0 E-01	ATES (510) 540-3324	1.0 E-01	ATES (510) 540-3324
Benzidine	5.0 E+02	RCHAS (510) 540-2084	5.0 E+02	RCHAS (510) 540-2084
Benzo(a)pyrene (BaP)	1.2 E+01	RCHAS (510) 540-2084	1.2 E+01	RCHAS (510) 540-2084
Benzyl chloride	1.7 E-01	RCHAS (510) 540-2084	1.7 E-01	RCHAS (510) 540-2084
Beryllium oxide	7.0 E+00	RCHAS (510) 540-2084	7.0 E+00	RCHAS (510) 540-2084
Beryllium sulfate	3.0 E+03	RCHAS (510) 540-2084	3.0 E+03	RCHAS (510) 540-2084
Bis(2-chloroethyl) ether	2.5 E+00	RCHAS (510) 540-2084	2.5 E+00	RCHAS (510) 540-2084
Bis(chloromethyl) ether	4.6 E+01	RCHAS (510) 540-2084	4.6 E+01	RCHAS (510) 540-2084
Bromodichloromethane	1.3 E-01	RCHAS (510) 540-2084	1.3 E-01	RCHAS (510) 540-2084
1,3-Butadiene	1.8 E+00	RCHAS (510) 540-2084	1.8 E+00	RCHAS (510) 540-2084
Butylated hydroxyanisole	2.0 E-04	RCHAS (510) 540-2084	2.0 E-04	RCHAS (510) 540-2084
Cadmium	1.5 E+01	ATES (510) 540-3324		
Carbon tetrachloride (CCl₄)	1.5 E-01	ATES (510) 540-3324	1.5 E-01	ATES (510) 540-3324

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Chemical-Carcinogens	Inhalation (mg/kg • day) ⁻¹	Source	Oral (mg/kg • day) ⁻¹	Source
Chlordane	1.2 E+00 ²	PETS (510) 540-3063	1.2 E+00 ²	PETS (510) 540-3063
Chloroform	1.9 E-02 ²	ATES (510) 540-3324	3.1 E-02 ²	PETS (510) 540-3063
Chromium, hexavalent (Chromium VI)	5.1 E+02	ATES (510) 540-3324	4.2 E-01 ⁴	RCHAS (510) 540-2084
Coke oven emissions	2.2 E+00 ¹	RCHAS (510) 540-2084		⁵
DDD	2.4 E-01	RCHAS (510) 540-2084	2.4 E-01	RCHAS (510) 540-2084
DDE	3.4 E-01	RCHAS (510) 540-2084	3.4 E-01	RCHAS (510) 540-2084
DDT	3.4 E-01	RCHAS (510) 540-2084	3.4 E-01	RCHAS (510) 540-2084
Dibromochloro- propane (DBCP)	7.0 E+00	PETS (510) 540-3063	7.0 E+00	PETS (510) 540-3063
Dibromoethane (Ethylene dibromide, EDB)	2.5 E-01	ATES (510) 540-3324	3.6 E+00	PETS (510) 540-3063
1,4-Dichlorobenzene	4.0 E-02	PETS (510) 540-3063	4.0 E-02	PETS (510) 540-3063
3,3'-Dichlorobenzidine	1.2 E+00	RCHAS (510) 540-2084	1.2 E+00	RCHAS (510) 540-2084
1,2-Dichloroethane	7.0 E-02	RCHAS (510) 540-2084	7.0 E-02	RCHAS (510) 540-2084
1,2-Dichloropropane	6.3 E-02	PETS (510) 540-3063	6.3 E-02	PETS (510) 540-3063
1,3-Dichloropropene (Telone)	4.3 E-02 ³	MTB (916) 654-1285	1.8 E-01	PETS (510) 540-3063
Dichlorvos (DDVP)	2.9 E-01 ¹	RCHAS (510) 540-2084	4.1 E-01 ^{2,3} Proposed	MTB (916) 654-1285
Dieldrin	1.6 E+01	RCHAS (510) 540-2084	1.6 E+01	RCHAS (510) 540-2084
Diethylhexyl phthalate	8.4 E-03	PETS (510) 540-3063	8.4 E-03	PETS (510) 540-3063

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Chemical-Carcinogens	Inhalation (mg/kg • day) ⁻¹	Source	Oral (mg/kg • day) ⁻¹	Source
2,4-Dinitrotoluene	3.1 E-01 ¹	RCHAS (510) 540-2084	3.1 E-01 ¹	RCHAS (510) 540-2084
1,4-Dioxane	2.7 E-02	RCHAS (510) 540-2084	2.7 E-02	RCHAS (510) 540-2084
Epichlorohydrin	8.0 E-02	RCHAS (510) 540-2084	8.0 E-02	RCHAS (510) 540-2084
Ethylene oxide	3.1 E-01	RCHAS (510) 540-2084	3.1 E-01	RCHAS (510) 540-2084
Formaldehyde	1.8 E-02 ²	ATES (510) 540-3324	1.8 E-02 ²	ATES (510) 540-3324
Furmecyclox	3.0 E-02 ¹	RCHAS (510) 540-2084	3.0 E-02 ¹	RCHAS (510) 540-2084
Heptachlor	5.7 E+00 ²	PETS (510) 540-3063	5.7 E+00 ²	PETS (510) 540-3063
Heptachlor epoxide	1.3 E+01 ²	PETS (510) 540-3063	1.3 E+01 ²	PETS (510) 540-3063
Hexachlorobenzene	1.8 E+00	RCHAS (510) 540-2084	1.8 E+00	RCHAS (510) 540-2084
Hexachlorocyclo- hexane (Tech. grade)	4.0 E+00 ¹	RCHAS (510) 540-2084	4.0 E+00 ¹	RCHAS (510) 540-2084
2,3,7,8-Hexachloro- dibenzo-p-dioxin	3.3 E+03 Proposed	RCHAS (510) 540-2084	3.3 E+03 Proposed	RCHAS (510) 540-2084
Hydrazine	1.7 E+01 ¹	RCHAS (510) 540-2084	1.7 E+01 ¹	RCHAS (510) 540-2084
Hydrazine sulfate	3.0 E+00 ¹	RCHAS (510) 540-2084	3.0 E+00 ¹	RCHAS (510) 540-2084
Lindane (gamma-BHC)	1.1 E+00 ¹	RCHAS (510) 540-2084	1.1 E+00 ¹	RCHAS (510) 540-2084
4,4'-Methylene bis (N,N'-dimethyl)aniline	4.6 E-02 ¹	RCHAS (510) 540-2084	4.6 E-02 ¹	RCHAS (510) 540-2084
Methylene chloride	3.5 E-03	ATES (510) 540-3324	1.4 E-02 ¹	RCHAS (510) 540-2084
Nickel and Nickel compounds	9.1 E-01	ATES (510) 540-3324		⁵

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Chemical-Carcinogens	Inhalation (mg/kg • day)⁻¹	Source	Oral (mg/kg • day)⁻¹	Source
Nickel subsulfide	1.7 E+00 ¹	RCHAS (510) 540-2084	1.7 E+00 ¹	RCHAS (510) 540-2084
N-Nitrosodi-n-butylamine	1.1 E+01	RCHAS (510) 540-2084	1.1 E+01	RCHAS (510) 540-2084
N-Nitrosodilethanolamine	2.8 E+00 ¹	RCHAS (510) 540-2084	2.8 E+00 ¹	RCHAS (510) 540-2084
N-Nitrosodilethylamine	3.6 E+01	RCHAS (510) 540-2084	3.6 E+01	RCHAS (510) 540-2084
N-Nitrosodimethylamine	1.6 E+01	RCHAS (510) 540-2084	1.6 E+01	RCHAS (510) 540-2084
N-Nitrosodiphenylamine	9.0 E-03 ¹	RCHAS (510) 540-2084	9.0 E-03 ¹	RCHAS (510) 540-2084
N-Nitrosodi-n-propylamine	7.0 E+00	RCHAS (510) 540-2084	7.0 E+00	RCHAS (510) 540-2084
N-Nitroso-N-ethylurea	2.7 E+01	RCHAS (510) 540-2084	2.7 E+01	RCHAS (510) 540-2084
N-Nitroso-N-methyl-ethylamine	2.2 E+01	RCHAS (510) 540-2084	2.2 E+01	RCHAS (510) 540-2084
N-Nitroso-N-methylurea	1.2 E+02	RCHAS (510) 540-2084	1.2 E+02	RCHAS (510) 540-2084
N-Nitrosopyrrolidine	2.1 E+00	RCHAS (510) 540-2084	2.1 E+00	RCHAS (510) 540-2084
Pentachlorophenol (PCP)	1.8 E-02 ⁶	RCHAS (510) 540-2084	1.8 E-02 ⁶	RCHAS (510) 540-2084
Polybrominated biphenyls	3.0 E+01	RCHAS (510) 540-2084	3.0 E+01	RCHAS (510) 540-2084
Polychlorinated biphenyls	7.7 E+00 ¹	RCHAS (510) 540-2084	7.7 E+00 ¹	RCHAS (510) 540-2084
2,3,7,8-Tetrachlorodi-benzo-p-dioxin and related compounds (TCDD)	1.3 E+05	ATES (510) 540-3324	1.3 E+05	ATES (510) 540-3324
Tetrachloroethylene (PCE, PERC)	5.1 E-02 ¹	RCHAS (510) 540-2084	5.1 E-02 ¹	RCHAS (510) 540-2084
Toxaphene	1.2 E+00	RCHAS (510) 540-2084	1.2 E+00	RCHAS (510) 540-2084

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Chemical-Carcinogens	Inhalation (mg/kg·day) ⁻¹	Source	Oral (mg/kg·day) ⁻¹	Source
Trichloroethylene (TCE)	1.0 E-02	ATES (510) 540-3324	1.5 E-02 Proposed	RCHAS (510) 540-2084
2,4,6-Trichlorophenol	7.0 E-02	RCHAS (510) 540-2084	7.0 E-02	RCHAS (510) 540-2084
Urethane (Ethyl carbamate)	1.0 E+00	RCHAS (510) 540-2084	1.0 E+00	RCHAS (510) 540-2084
Vinyl chloride	2.7 E-01	ATES (510) 540-3324	2.7 E-01	ATES (510) 540-3324

1 : This value was used as the basis of the No Significant Risk Level that was adopted in Title 22, California Code of Regulations, Section 12711, for purposes of the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). It is based on a U.S. EPA risk assessment. RCHAS staff will provide background information on the value.

2 : For purposes of Proposition 65, another cancer potency value, that is the basis of the No Significant Risk Level currently in regulation, may be used. These values are listed below and can be used for both inhalation and oral exposure routes unless otherwise noted. Please see footnote 1 which also applies to these values.

Chlordane	1.3 E+00
Chloroform	8.1 E-02
Dichlorvos (DDVP)	2.9 E-01
Formaldehyde	4.6 E-02
Heptachlor	4.5 E+00
Heptachlor epoxide	9.1 E+00

3 : In the derivation of this value, an animal-to-human scaling factor of body weight to the 0.75 power was used. For most of the other values listed in the table a scaling factor of body weight to the 0.67 power was used to account for body surface area scaling. The actual difference in the calculated potency that these two methods produce is not large. However, there is an ongoing program in the California Environmental Protection Agency to develop a consistent methodology.

4 : The oral potency slope for chromium VI was developed by the Standards and Criteria Work Group based on the need by several programs for this criteria. This value has not yet been used as the basis for a regulatory standard.

5 : Not applicable or not available. There is no potency value listed either because it is not an appropriate route of exposure for the chemical to pose a carcinogenic risk or because a potency value has not been derived by a

state program. If a potency value is needed, check the U.S. Environmental Protection Agency's Integrated Risk Information System (IRIS) or their Health Effects Assessment Summary Tables.

6 : This value was used as the basis of the No Significant Risk Level that was adopted in Title 22, California Code of Regulations, Section 12711, for purposes of Proposition 65. It is based on a risk assessment by the Human and Ecological Risk Section of the Department of Toxic Substances Control. RCHAS staff will provide background information on the value. In the derivation of this value, the compound was considered equally potent in animals and humans; doses were considered equivalent on a mg/kg weight basis across species without any additional animal-to-human scaling factor adjustment. Please see footnote 3.

ATES: Air Toxicology and Epidemiology Section, Office of Environmental Health Hazard Assessment (OEHHA)

MTB: Medical Toxicology Branch, Department of Pesticide Regulations

PETS: Pesticide and Environmental Toxicology Section, OEHHA

RCHAS: Reproductive and Cancer Hazard Assessment Section, OEHHA

PCM: Phase Contrast Microscopy

Proposed: Proposed values have been peer reviewed and/or accepted, but no regulatory action has been taken on the standard they support.