

8. REGULATIONS AND ADVISORIES

The international, national, and state regulations and guidelines pertaining to 1,2-dichloroethane in air, water, and food are summarized in Table 8-1.

MRLs for inhalation and oral exposure to 1,2-dichloroethane were derived by ATSDR (see Section 2.5 of this toxicological profile). An MRL of 0.6 ppm for chronic-duration inhalation exposure (15–364 days) is based on a NOAEL for liver histopathology in rats (Cheever et al. 1990). An MRL of 0.2 mg/kg/day for intermediate-duration oral exposure (15–364 days) to 1,2-dichloroethane is based on a LOAEL for increased absolute and relative kidney weights in rats (NTP 1991a).

No oral RfD or inhalation RfC toxicity values have been derived for 1,2-dichloroethane by the EPA (IRIS 1999). EPA has determined that 1,2-dichloroethane is a probable human carcinogen (B2 classification) and derived a slope factor (q_1^*) of $0.091 \text{ (mg/kg/day)}^{-1}$ for cancer risk associated with exposure to 1,2-dichloroethane (IRIS 1999). Similarly, the International Agency for Research on Cancer (IARC) has classified 1,2-dichloroethane as a Group 2B carcinogen (possibly carcinogenic to humans) (IARC 1987).

1,2-Dichloroethane is on the list of chemicals appearing in "Toxic Chemicals Subject to Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986" (EPA 1987a).

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Table 8-1. Regulations and Guidelines Applicable to 1,2-Dichloroethane

Agency	Description	Information	References
<u>INTERNATIONAL</u>			
Guidelines:			
IARC	Carcinogenicity classification	Group 2B ^a	IARC 2001
WHO	Inhalation carcinogenic potency (50,000-fold less than the estimated carcinogenic potential)	0.36–2.0 µg/m ³	WHO 2001a
	Drinking water (lifetime cancer risk of 10 ⁻⁵)	30 µg/L	WHO 2001b
<u>NATIONAL</u>			
Regulations and Guidelines:			
a. Air			
ACGIH	TLV–TWA	10 ppm	ACGIH 2000
NIOSH	REL (10-hour TWA)	1 ppm	NIOSH 2001
	STEL	2 ppm	
	IDLH	50 ppm	
	Potential occupational carcinogen		
OSHA	PEL (8-hour TWA)	50 ppm	OSHA 2001b
	PEL (ceiling)	100 ppm	
	PEL (maximum peak above ceiling concentration for an 8-hour shift for a maximum duration of 5 minutes in any 3-hours)	200 ppm	
	PEL (8-hour TWA) for construction industry	50 ppm	
	PEL (8-hour TWA) for shipyard industry	50 ppm	
USC	HAP		USC 2001 42USC7412
b. Water			
EPA	Drinking water standard	5x10 ⁻³ mg/L	EPA 2001g 40CFR141.32

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**Table 8-1. Regulations and Guidelines Applicable to 1,2-Dichloroethane
(continued)**

Agency	Description	Information		References
<u>NATIONAL</u> (cont.)				
EPA	Groundwater monitoring Suggest method PQL	8010	8240	EPA 2001f 40CFR264 Appendix IX
		0.5 µg/L	5 µg/L	
	MCLG	0 mg/L		EPA 2001h 40CFR141.50
	MCL	5x10 ⁻³ mg/L		EPA 2001i 40CFR141.61
	Water pollution—hazardous substance designation			EPA 2001m 40CFR116.4
	Water programs—determination of reportable quantity	100 pounds		EPA 2001n 40CFR117.3
Water quality criteria for human health for consumption of:	Water and organism	0.38 µg/L ^b		EPA 2001a
	Organism only	99 µg/L ^b		
c. Food				
FDA	Bottled water—concentration limit	5x10 ⁻³ mg/L		FDA 2000d 21CFR165.110
	Chemicals used to wash or to assist in the peeling of fruits and vegetables	not to exceed 0.2 ppm		FDA 2000f 21CFR173.315 (a)(3)
	Food additives permitted for direct addition—adjuvants for pesticide use dilutions			FDA 2000b 21CFR172.710
	Food additives permitted in feed and drinking water of animals: Used as a solvent in the extraction processing of animal byproducts for use in animal feeds			FDA 2000e 21CFR573.440
	Maximum quantity of the additive permitted to remain on the extracted byproducts	not to exceed 300 ppm		
	Extracted animal byproduct added as a source of protein to all rations consistent with good feeding practices	not to exceed 13% of the total ration		

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**Table 8-1. Regulations and Guidelines Applicable to 1,2-Dichloroethane
(continued)**

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<u>NATIONAL</u> (cont.)			
FDA	Indirect food additives —adhesives and components of coatings		FDA 2000g 21CFR175.105 (c)(5)
	Indirect food additives —polycarbonate resins		FDA 2000c 21CFR177.1580(b)
	Secondary direct food additive for human consumption	30 ppm	FDA 2000a 21CFR173.230
d. Other			
ACGIH	Carcinogenicity classification	A4 ^c	ACGIH 2000
DOT	Reportable quantity	100 pounds	DOT 2001 49CFR172.101 Appendix A
EPA	Carcinogenicity classification	Group B2 ^d	EPA 2001b
	Cancer slope factor (oral)	9.1x10 ⁻²	IRIS 2001
	Carcinogenic drinking water unit risk	6.7x10 ⁻³ (µg/L) ⁻¹	
	Carcinogenic inhalation unit risk	2.6x10 ⁻⁵ (µg/m ³) ⁻¹	
	Chemical information rules —chemical lists and reporting periods		EPA 2001c 40CFR712.30
	Effective date	08/04/95	
	Reporting date	10/03/95	
	Community Right-to-Know; toxic chemical release reporting —effective date	01/01/87	EPA 2001d 40CFR372.65
	Health and environmental protection standards at uranium and thorium mill tailings—listed constituent		EPA 2001e 40CFR192 Appendix I
	Identification and listing of hazardous waste	U077	EPA 2000 40CFR261.33(f)
	Reportable quantity	100 pounds	EPA 2001j 40CFR302.4
	RfC	not established	IRIS 2001
	RfD	not established	

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**Table 8-1. Regulations and Guidelines Applicable to 1,2-Dichloroethane
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Agency	Description	Information	References	
<u>NATIONAL</u> (cont.)				
EPA	Risk specific doses		EPA 2001k 40CFR266 Appendix V	
	Unit risk	2.6×10^{-5} $\mu\text{g/L}$		
	RsD	3.8×10^{-1} $\mu\text{g/L}$		
	TSCA—health and safety data reporting		EPA 2001I 40CFR716.120	
	Effective date	06/01/87		
	Sunset date	06/01/87		
<u>STATE</u>				
Regulations and Guidelines:				
a. Air				
California	Toxic air contaminant		California 2001	
California	REL	95 $\mu\text{g/m}^3$		
Colorado	Fence line air quality criteria for remediation:		Colorado 2000	
		Cancer		0.10 $\mu\text{g/m}^3$
	Noncancer	4.9 $\mu\text{g/m}^3$		
Kansas	Ambient air quality standard	0.8 tons/year	CDC 1999b	
New Jersey	Required use of a MSHA/NIOSH approved supplied-air respirator	\$1 ppm	New Jersey Department of Health 1994	
b. Water				
Alabama	MCL	0.5 mg/L	ADEM 2000	
Alaska	MCL	0.005 mg/L	ADEC 2000	
	Groundwater clean-up level	0.005 mg/L		
Arizona	Drinking water guideline	0.38 $\mu\text{g/L}$	HSDB 2001	
Arkansas	MCL	0.5 mg/L	APCEC 2000	
California	Drinking water standard	0.5 $\mu\text{g/L}$	HSDB 2001	
Connecticut	Notification threshold concentration:		CDEP 2000b	
		Drinking water well		1 $\mu\text{g/L}$
		Groundwater		1 $\mu\text{g/L}$
Florida	Drinking water standard	3 $\mu\text{g/L}$	HSDB 2001	

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Agency	Description	Information	References
<i>STATE (cont.)</i>			
Georgia	Instream concentration	98.6 µg/L	GDNR 2000
Hawaii	MCL	0.005 mg/L	Hawaii Department of Health 1997
Maine	Drinking water guideline	5 µg/L	HSDB 2001
Massachusetts	MCL	0.05 mg/L	FSTRAC 1999a
Minnesota	Drinking water guideline	4 µg/L	HSDB 2001
New Jersey	Drinking water standard	2 µg/L	HSDB 2001
South Dakota	Human health standards contaminant level	5x10 ⁻³ mg/L	FSTRAC 1999b
c. Other			
California	Carcinogenicity classification		California 2001
	Cancer potency factor (oral)	7.0x10 ⁻² mg/kg/day	
	Cancer potency factor (inhalation)	2.2x10 ⁻⁵ (µg/m ³) ⁻¹	
Colorado	Chronic fence line criteria		Colorado 2000
	Cancer	0.1 µg/m ³	
	Noncancer	4.9 µg/m ³	
	Hazardous air pollutant (HAP) list	1.000 fm305 ^e	Colorado 2001
Connecticut	Hazardous waste contaminant level	0.5 mg/L	CDEP 1996

^aGroup 2B: possible human carcinogen

^bThis criterion is based on carcinogenicity of 10⁻⁶ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of 10⁻⁵, move the decimal point in the recommended criterion one place to the right).

^cA4: not classifiable as a human carcinogen

^dGroup B2: not classifiable as a human carcinogen

^efm305: method 305 fraction measure factor

ACGIH = American Conference of Governmental Industrial Hygienists; ADEC = Alaska Department of Environmental Conservation; ADEM = Alabama Department of Environmental Management; APCEC = Arkansas Pollution Control and Ecology Commission; CDC = Center for Disease Control; CDEP = Connecticut Department of Environmental Protection; CFR = Code of Federal Regulations; DOT = Department of Transportation; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; FSTRAC = Federal–State Toxicology Risk Analysis Committee; GDNR = Georgia Department of Natural Resources; HAP = hazardous air pollutant; HSDB = Hazardous Substances Data Bank; IARC = International Agency for Research on Cancer; IDLH = immediately dangerous to life and health; IRIS = Integrated Risk Information System; MCL = maximum contaminant level; MCLG = maximum contaminant level goal; MSHA = Mining Safety and Health Administration; NIOSH = National Institute of Occupational Safety and Health; OSHA = Occupational Safety and Health Administration; PEL = permissible exposure limit; PQL = practical quantity limit; REL = recommended exposure limit; RfC = oral reference concentration; RfD = oral reference dose; RsD = risk specific dose; STEL = short-term exposure limit; TLV = threshold limit value; TSCA = Toxic Substances Control Act; TWA = time-weighted average; USC = United States Code; WHO = World Health Organization