

7. REGULATIONS AND ADVISORIES

Table 7-1 summarizes international, national, and state regulations and guidelines on human exposure to 1,1 dichloroethene.

ATSDR has derived an MRL of 0.02 ppm for intermediate-duration inhalation exposure based on a NOAEL of 5 ppm for liver effects in guinea pigs (Prendergast et al. 1967).

ATSDR has derived an MRL of 0.009 mg/kg/day for chronic-duration oral exposure based on a LOAEL of 9 mg/kg/day for liver effects in rats (Quast et al. 1983).

A oral reference dose (RfD) of 0.009 mg/kg/day has been verified by EPA for 1,1-dichloroethene (IRIS 1992). The RfD is based on a LOAEL of 50 ppm of 1,1-dichloroethene in the drinking water for liver effects in rats (Quast et al. 1983). EPA has given 1,1-dichloroethene a Group C weight-of-evidence carcinogenicity classification (probable human carcinogen) (IRIS 1992).

The Clean Water Effluent Guidelines regulate 1,1-dichloroethene for the following industrial point sources: electroplating, organic chemicals production, rubber manufacturing, asbestos product manufacturing, timber products processing, metal finishing, paving and roofing, paint formulating, ink formulating, gum and wood chemicals manufacturing, carbon black manufacturing, coil coating, and electrical and electronic components manufacturing (EPA 1986).

The FDA has limited the amount of 1,1-dichloroethene that can be present in foodwrap to 10 ppm (FDA 1988).

7. REGULATIONS AND ADVISORIES

TABLE 7-1. Regulations and Guidelines Applicable to 1,1-Dichloroethene

Agency	Description	Information	References
<u>INTERNATIONAL</u>			
IARC	Carcinogenic classification	Group 3 ^a	IARC 1987
WHO	Guideline for drinking water	0.3 µg/L	WHO 1984
<u>NATIONAL</u>			
Regulations:			
a. Air:			
OSHA	PEL TWA	1 ppm	OSHA 1989 (29 CFR 1910.1000)
b. Water:			
EPA ODW	MCL in drinking water	0.7 µg/L	EPA 1985c (40 CFR 141)
EPA OWRS	General pretreatment regulations for existing and new sources of pollution waste water; effluent guidelines for point source categories	Yes	EPA 1988d (40 CFR 403); EPA 1987b (40 CFR 414)
	Rayon fibers, other fibers, thermoplastic resins, thermosetting resins, commodity organic chemicals, bulk organic chemicals, specialty organic chemicals:		
	Maximum for 1 day	60 µg/L	
	Maximum for monthly average	22 µg/L	
	Direct discharge point sources that use end-of-pipe biological treatment (effluent limitations BAT and NSPS):		EPA 1987b (40 CFR 414)
	Maximum for one day	25 µg/L	
	Maximum for monthly average	16 µg/L	
	Direct discharge point sources that do not use end-of-pipe biological treatment (BAT effluent limitations and NSPS):		EPA 1987b (40 CFR 414)
	Maximum for one day	60 µg/L	
	Maximum for monthly average	22 µg/L	
FDA	Proposed uses of vinyl chloride polymers: deletion of vinyl chloride-1,1-dichloroethene copolymers from the list of materials that may be used on fruits	Yes	FDA 1986
	Coatings applicable to fresh citrus fruit (minimum required for intended use) on plastic packaging films	25% or less aqueous solution ≤10 ppm	FDA 1977 (21 CFR 1172.210); FDA 1988 (21 CFR 177)
c. Other:			
EPA OERR	Reportable quantity	5000 pounds	EPA 1989 (40 CFR 302.4)
EPA OSW	Designation of hazardous substances	Yes	EPA 1985c (40 CFR 302.4)
	Listing as toxic wastes: discarded commercial chemical products, off-specification species, container residues, and spill residues of 1,1-dichloroethene	Yes	EPA 1980a (40 CFR 261.33)
	Listing as a hazardous waste constituent (Appendix VIII)	Yes	EPA 1991 (40 CFR 261)

7. REGULATIONS AND ADVISORIES

TABLE 7-1. Regulations and Guidelines Applicable to 1,1-Dichloroethene (continued)

Agency	Description	Information	References
<u>NATIONAL</u> (cont.)			
EPA OTS	Toxic Chemical Release Reporting; Community Right-to-Know; (proposed rule)	Yes	EPA 1987c
Guidelines:			
a. Air:			
ACGIH	TLV TWA	5 ppm	ACGIH 1986
	STEL	20 ppm	
NIOSH	REL TWA	C _a ; lowest feasible concentration	NIOSH 1992
b. Water:			
EPA ODW	MCLG	0.007 mg/L	EPA 1985c (40 CFR 141)
	Health Advisories		EPA 1987a
	1 day	2.0 mg/L	
	10 days	1.0 mg/L	
	Longer Term		EPA 1987a
	Adult	3.5 mg/L	
	Child	1.0 mg/L	
	Lifetime	0.007 mg/L	
EPA OWRS	Ambient water quality criteria for protection of human health:		EPA 1980b
	Ingesting water and organisms:		
	10 ⁻⁴	3.3 µg/L	
	10 ⁻⁵	0.33 µg/L	
	10 ⁻⁶	0.033 µg/L	
	Ingesting organisms only:		
	10 ⁻⁴	185 µg/L	
	10 ⁻⁵	18.5 µg/L	
	10 ⁻⁶	1.85 µg/L	
NAS	SNARL (chronic)	100 µg/L	NAS 1983
c. Other:			
EPA	RfD (oral)	0.009 mg/kg/day	IRIS 1992
	Carcinogen classification	Group C ^b	IRIS 1992
	q ₁ * (oral)	0.6 (mg/kg/day) ⁻¹	
	Inhalation unit risk	5×10 ⁻⁵ (µg/m ³) ⁻¹	
<u>STATE</u>			
Regulations and Guidelines:			
a. Air:			
	Acceptable ambient air concentrations		NATICH 1993
Arizona	(24-hour average)	110 µg/m ³	
Connecticut	(8-hour average)	400 µg/m ³	
Indiana	(8-hour average)	100 µg/m ³	
Kansas	(annual average)	0.02 µg/m ³	
Louisiana	(annual average)	200 µg/m ³	
Maine		0.0	
Maryland		0.0	
Massachusetts	(24-hour average)	1.08 µg/m ³	
Nevada	(8-hour average)	0.476 µg/m ³	

7. REGULATIONS AND ADVISORIES

TABLE 7-1. Regulations and Guidelines Applicable to 1,1-Dichloroethene (continued)

Agency	Description	Information	References
<u>STATE</u> (cont.)			
New York	(1-year average)	66.7 $\mu\text{g}/\text{m}^3$	
North Carolina	(24-hour average)	0.12 mg/m^3	
North Dakota	(8-hour average)	0.2 mg/m^3	
Oklahoma	(24-hour average)	198 $\mu\text{g}/\text{m}^3$	
Pennsylvania	(1-year average)	24 $\mu\text{g}/\text{m}^3$	
Texas	(1-year average)	4 $\mu\text{g}/\text{m}^3$	
Virginia	(24-hour average)	330 $\mu\text{g}/\text{m}^3$	
Washington	(24-hour average)	66.6 $\mu\text{g}/\text{m}^3$	
b. Water:	Drinking water quality standards		FSTRAC 1990
Alabama		7 $\mu\text{g}/\text{L}$	
Arizona		7 $\mu\text{g}/\text{L}$	
California		6 $\mu\text{g}/\text{L}$	
Connecticut		6 $\mu\text{g}/\text{L}$	
Maine		6 $\mu\text{g}/\text{L}$	
Massachusetts		7 $\mu\text{g}/\text{L}$	
Minnesota		6 $\mu\text{g}/\text{L}$	
New Jersey		2 $\mu\text{g}/\text{L}$	
Rhode Island		7 $\mu\text{g}/\text{L}$	
Vermont		6 $\mu\text{g}/\text{L}$	

^aGroup 3: Not classifiable as to human carcinogenicity

^bGroup C: Possible human carcinogen

ACGIH = American Conference of Governmental Industrial Hygienists; BAT = Best Available Technology; C_a = Potential Occupational Carcinogen; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; IARC = International Agency for Research on Cancer; MCL = Maximum Contaminant Level; MCLG = Maximum Contaminant Level Goal; NAS = National Academy of Sciences; NIOSH = National Institute for Occupational Safety and Health; NSPS = New Source Performance Standards; ODW = Office of Drinking Water; OERR = Office of Emergency and Remedial Response; OSHA = Occupational Safety and Health Administration; OSW = Office of Solid Waste; OTS = Office of Toxic Substances; OWRS = Office of Water Regulations and Standards; PEL = Permissible Exposure Limit; REL = Recommended Exposure Level; RfD = Reference Dose; SNARL = Suggested No-Adverse Effect Level; STEL = Short-term Exposure Limit; TLV = Threshold Limit Value; TWA = Time-Weighted Average; WHO = World Health Organization