7. REGULATIONS AND ADVISORIES

Because of its potential to cause adverse health effects in exposed people, numerous regulations, and advisories have been established for hexachloroethane by various international, national, and state agencies. Major regulations and advisories pertaining to hexachloroethane are summarized in Table 7-l.

ATSDR has calculated an MRL of 6 ppm for acute inhalation exposure to hexachloroethane based on a NOAEL of 48 ppm from a study in pregnant rats. The critical effect was tremors, which occurred during an 11 -day exposure period at a LOAEL of 260 ppm (Weeks et al. 1979). The intermediate inhalation MRL of 6 ppm was also calculated from a NOAEL of 48 ppm observed in a 6-week study in which tremors were observed in rats exposed intermittently at 260 ppm (Weeks et al. 1979).

An MRL of 1 mg/kg/day has been calculated for acute oral exposure to hexachloroethane based on a NOAEL of 100 mg/kg/day from a study in male rabbits (Weeks et al. 1979). Hepatic necrosis and degeneration were observed in the treated animals at doses of 320 and 1,000 mg/kg/day.

An intermediate-duration MRL of 0.01 mg/kg/day has been calculated for oral exposure to hexachloroethane in the diet based on a NOAEL of 1 mg/kg/day from a study in male and female rats (Gorzinski et al. 1985). Enlargement of the hepatocytes was seen in male rats at doses of 15 and 62 mg/kg/day. Relative liver weights were increased in males and females at the 62 mg/kg/day dose.

EPA has derived a chronic oral RfD of 0.001 mg/kg/day for hexachloroethane (IRIS 1995). This value is based on a NOAEL of 1 mg/kg/day for atrophy and degeneration of the renal tubules in rats exposed for 16 weeks (Gorzinski et al. 1985). The NOAEL was divided by an uncertainty factor of 1,000 to account for interspecies extrapolation, human variability, and the use of a subchronic study. EPA places medium confidence in this RfD (IRIS 1995).

TABLE 7-1. Regulations and Guidelines Applicable to Hexachloroethane

Agency	Description	Information	Reference
INTERNATIONAL			
IARC	Carcinogenic classification	Group 3[a]	IARC 1987
NATIONAL			
Regulations:			
a. Air:			
EPA OAQPS	Hazardous Air Pollutant	Yes	Public Law 101-549 Section 112
	NESHAP for Source Categories: Organic HAPs from Synthetic Organic Chemical Manufacturing Industry (proposed)	Yes	EPA 1992
OSHA	PEL TWA	1 ppm (10 mg/m^3), skin	OSHA 1993 (29 CFR 1910.1000)
b. Water:			
EPA OWRS	General permits under NPDES	Yes	40 CFR 122
	General Pretreatment Regulations for Existing and New Sources of Pollution	Yes	40 CFR 403
	Hazardous substance	Yes	40 CFR 116
	Reportable quantity	100 pounds	40 CFR 117.3
c. Other:			
EPA OERR	Reportable quantity	100 pounds	EPA 1989 (40 CFR 302.4)
EPA OSW	Hazardous Waste Constituent (Appendix VIII)	Yes	EPA 1980b (40 CFR 261)
	Groundwater Monitoring List (Appendix IX)	Yes	EPA 1987b (40 CFR 264)
	Land Disposal Restrictions	Yes	EPA 1990d, 1991b (40 CFR 268)
	Toxicity Characteristic Leaching Procedure Limit	3 mg/L	EPA 1995 (40 CFR 261.24)
	Burning of Hazardous Waste boilers and industrial furnaces-residue concentration limit	3×10^{-2} mg/kg	EPA 1991b
EPA OTS	Toxic Chemical Release Reporting Rule	Yes	EPA 1988b (40 CFR 372)
	Health and Safety Data Reporting Rule	Yes	EPA 1988b (40 CFR 716.120)
Guidelines:			
a. Air:			
ACGIH	TLV TWA	1 ppm (9.7 mg/m^3) A2 - suspect human carcinogen	ACGIH 1993
NIOSH	PEL TWA	1 ppm; occupational carcinogen	NIOSH 1990

TABLE 7-1. Regulations and Guidelines Applicable to Hexachloroethane (*continued*)

Agency	Description	Information	Reference
NATIONAL (Cont.)			
b. Water:			
EPA ODW	Health Advisories		Gordon et al. 1991
	1-day (child)	5 mg/L	
	10-day (child)	5 mg/L	
	Longer term (child)	100 µg/L	
	Longer term (adult)	450 µg/L	
	Lifetime (adult)	1 µg/L	
EPA OWRS	Ambient Water Quality Criteria		EPA 1980a
	Ingesting water and organisms	1.9 µg/L[b]	
	Ingesting organisms only	8.74 µg/L[b]	
c. Other:			
EPA	RfD (oral)	1×10^{-3} mg/kg/day	IRIS 1995
	Carcinogenic classification	Group C[c]	IRIS 1995
	Cancer slope factor (q_1^*)		IRIS 1995
	q_1^* (oral)	1.4×10^{-2} (mg/kg/day)$^{-1}$	
	q_1^* (inhalation)	1.4×10^{-2} (mg/kg/day)$^{-1}$	
NTP	May reasonably be anticipated to be a carcinogen		NTP 1994
STATE			
Regulations and Guidelines:			
a. Air:	Acceptable ambient conditions		NATICH 1995
Connecticut	8-hour	50 µg/m^3	
Kansas	annual	2.5×10^{-1} µg/m^3	
Massachusetts	24-hour	5.3×10^{-1} µg/m^3	
	annual	2.5×10^{-1} µg/m^3	
Nevada	8-hour	2.38 mg/m^3	
North Dakota	8-hour	9.7×10^{-2} µg/m^3	
Oklahoma	24-hour	2.0×10^{2} µg/m^3	
Texas	30-minute	97 µg/m^3	
	annual	10 µg/m^3	
Vermont	annual	2.5×10^{-1} µg/m^3	
Virginia	24-hour	1.6×10^{2} µg/m^3	
b. Water:	Drinking water standards and guidelines		FSTRAC 1990
Kansas		1.9 µg/L	
Minnesota		0.7 µg/L	

[a]Group 3: Not classifiable as to human carcinogenicity
[b]Based on a lifetime incremental cancer risk of 1×10^{-6}
[c]Group C: Possible human carcinogen

ACGIH = American Conference of Governmental Industrial Hygienists; EPA = Environmental Protection Agency; HAP = Hazardous Air Pollutant; IARC = International Agency for Research on Cancer; NESHAP = National Emission Standards for Hazardous Air Pollutants; NIOSH = National Institute for Occupational Safety and Health; NPDES = National Pollutant Discharge Elimination System; NTP = National Toxicology Program; OAQPS = Office of Air Quality Planning and 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; RfD = Reference Dose; TLV = Threshold Limit Value; TWA = Time-Weighted Average