CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding chlordane in air, water, and other media are summarized in Table 7-1. This table is not an exhaustive list, and current regulations should be verified by the appropriate regulatory agency.

ATSDR develops MRLs, which are substance-specific guidelines intended to serve as screening levels by ATSDR health assessors and other responders to identify contaminants and potential health effects that may be of concern at hazardous waste sites. See Section 1.3 and Appendix A for detailed information on the MRLs for chlordane.

Table 7-1. Regulations and Guidelines Applicable to Chlordane

Agency	Description	Information	Reference
	Air		
EPA	RfC	$7x10^{-4}$ mg/m^3 [a]	IRIS 2002
WHO	Air quality guidelines	No data	WHO 2010
	Water & Food		
EPA	Drinking water health advisories		EPA 2012
	1-Day (10-kg child)	0.06 mg/L	
	10-Day (10-kg child)	0.06 mg/L	
	DWEL	0.02 mg/L	
	Life-time	0.004 mg/L	
	mg/L at 10^{-4} cancer risk	0.01	
	National primary drinking water regulations		EPA 2009
	MCL	0.002 mg/L[b]	
	PHG	Zero	
	RfD	$5x10^{-4}$ mg/kg-day[c]	IRIS 2002
WHO	Drinking water quality guidelines		WHO 2017
	Guideline value	0.0002 mg/L (0.2 µg/L)[d,e]	
	PTDI	0.5 µg/kg body weight[f]	
FDA	EAFUS	No data	FDA 2013
	Allowable level in bottled water	0.002 mg/L	FDA 2016
	Cancer		
ACGIH	Carcinogenicity classification	A3[g,h]	ACGIH 2001, 2016
HHS	Carcinogenicity classification	No data	NTP 2016
EPA	Carcinogenicity classification	B2[i,j]	IRIS 2002
IARC	Carcinogenicity classification	Group 2B[k,l]	IARC 2001

Table 7-1. Regulations and Guidelines Applicable to Chlordane

Agency	Description	Information	Reference
	Occupational		
ACGIH	TLV	0.5 mg/m^3 [m]	ACGIH 2016
OSHA	PEL (8-hour TWA) for general industry, shipyards and construction	0.5 mg/m^3 [m]	OSHA 2016a, 2016b, 2016c
NIOSH	REL (up to 10-hour TWA)	0.5 mg/m^3 [m,n]	NIOSH 2016
	IDLH	100 mg/m^3 [n,o]	NIOSH 2014
	Emergency Criteria		
EPA	AEGLs-air	No data	EPA 2016
AIHA	ERPGs	No data	AIHA 2015
DOE	PACs-air		DOE 2016a
	PAC-1[p]	4.5 mg/m^3	
	PAC-2[p]	50 mg/m^3	
	PAC-3[p]	500 mg/m^3	

[a]Based on hepatic effects in a rat subchronic inhalation study.
[b]Potential health effects from long-term exposure above the MCL: liver or nervous system problems; increased risk of cancer.
[c]Based on hepatic necrosis effects in a mouse 104-week oral study.
[d]Guideline value derivation based on allocation to water (1% of PTDI), weight (60 kg adult), and consumption (2L/day).
[e]Chlordane is listed under the Stockholm Convention on Persistent Organic Pollutants, so monitoring may occur in addition to that required by drinking water guidelines.
[f]Based on a NOAEL of 50 µg/kg-body weight/day for increased liver weights, serum bilirubin levels, and incidence of hepatocellular swelling, derived from a long-term dietary study in rats, and using an uncertainty factor of 100 (10 each for interspecies and intraspecies variation).
[g]A3: confirmed animal carcinogen with unknown relevance to humans.
[h]Based on liver cancer reported in mice fed chlordane in their diets.
[i]B2: probable human carcinogen.
[j]Based on sufficient evidence of carcinogenicity in animals.
[k]Group2B: possibly carcinogenic to humans.
[l]Based on inadequate evidence in humans and sufficient evidence in experimental animals for the carcinogenicity of chlordane.
[m]Skin notation: refers to the potential significant contribution to the overall exposure by the cutaneous route.
[n]Potential occupational carcinogen.
[o]Based on acute oral toxicity data in humans and animals.
[p]Definitions of PAC terminology are available from the U.S. Department of Energy (DOE 2016a).

ACGIH = American Conference of Governmental Industrial Hygienists; AEGL = acute exposure guideline levels; AIHA = American Industrial Hygiene Association; DOE = Department of Energy; DWEL = drinking water equivalent level; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; ERPG = emergency response planning guidelines; FDA = Food and Drug Administration; HHS = Department of Health and Human Services; IARC = International Agency for Research on Cancer; IDLH = immediately dangerous to life or health concentrations; IRIS = Integrated Risk Information System; MCL = maximum contaminant level; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PAC = Protective Action Criteria; PEL = permissible exposure limit; PHG = public health goal; PTDI = provisional tolerable daily intake; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TLV = threshold limit values; TWA = time-weighted average; WHO = World Health Organization