

CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding HCH 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 HCH.

Table 7-1. Regulations and Guidelines Applicable to Hexachlorocyclohexane (HCH)

Agency	Description	Information	Reference
Air			
EPA	RfC	Not evaluated	IRIS 1987a , IRIS 1987b , IRIS 1987c , IRIS 1987d , IRIS 1987f
WHO	Air quality guidelines	No data	WHO 2010
Water & Food			
EPA	Drinking water standards and health advisories		EPA 2018a
	γ-HCH		
	1-Day health advisory (10-kg child)	1 mg/L	
	10-Day health advisory (10-kg child)	1 mg/L	
	DWEL	0.2 mg/L	
	National primary drinking water regulations		EPA 2009
	γ-HCH		
	MCL and MCLG	0.0002 mg/L	
	RfD		
	β-HCH	0.00006 mg/kg/day	EPA 2006c
	γ-HCH	3x10 ⁻⁴ mg/kg/day	IRIS 1987c
WHO	Drinking water quality guidelines		WHO 2022
	γ-HCH		
	Guideline value	0.002 mg/L	
	ADI	0–0.005 mg/kg body weight	
FDA	Substances added to food ^a	Not listed	FDA 2023
	Allowable level in bottled water		FDA 2017
	γ-HCH	0.0002 mg/L	

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Agency	Description	Information	Reference
Cancer			
HHS	Carcinogenicity classification γ-HCH, technical HCH and other HCH isomers	Reasonably anticipated to be human carcinogens	NTP 2021
EPA	Carcinogenicity classification α-HCH β-HCH γ-HCH δ-HCH Technical HCH	Group B2 ^b Group C ^c Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential Group D ^d Group B2 ^b	IRIS 1987a IRIS 1987b EPA 2002 IRIS 1987d IRIS 1987f
	Inhalation unit risk α-HCH β-HCH Technical HCH	1.8x10 ⁻³ per µg/m ³ 5.3x10 ⁻⁴ per µg/m ³ 5.1x10 ⁻⁴ per µg/m ³	IRIS 1987a IRIS 1987b IRIS 1987f
	Oral slope factor α-HCH β-HCH Technical HCH	6.3 per mg/kg/day 1.8 per mg/kg/day 1.8 per mg/kg/day	IRIS 1987a IRIS 1987b IRIS 1987f
IARC	Carcinogenicity classification γ-HCH HCH	Group 1 ^e Group 2B ^f	IARC 2018 IARC 1987
Occupational			
OSHA	PEL (8-hour TWA) for general industry, shipyards, and construction γ-HCH	0.5 mg/m ³ ^g	OSHA 2021a , OSHA 2021b , OSHA 2021c
NIOSH	REL (up to 10-hour TWA) γ-HCH IDLH γ-HCH	0.5 mg/m ³ ^g 50 mg/m ³	NIOSH 2019 NIOSH 1994
Emergency Criteria			
EPA	AEGLs-air	No data	EPA 2018b

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Agency	Description	Information	Reference
DOE	PACs-air		DOE 2016
	γ-HCH		
	TEEL-1 ^h	9.1 mg/m ³	
	TEEL-2 ^h	100 mg/m ³	
	TEEL-3 ^h	1,000 mg/m ³	

^aThe Substances Added to Food inventory replaces EAFUS and contains the following types of ingredients: food and color additives listed in FDA regulations, flavoring substances evaluated by FEMA or JECFA, GRAS substances listed in FDA regulations, substances approved for specific uses in food prior to September 6, 1958, substances that are listed in FDA regulations as prohibited from use in food, delisted color additives, and some substances "no longer FEMA GRAS."

^bGroup B2: probable human carcinogen.

^cGroup C: possible human carcinogen.

^dGroup D: not classifiable as to human carcinogenicity.

^eGroup 1: carcinogenic to humans.

^fGroup 2B: possibly carcinogenic to humans.

^gSkin notation.

^hDefinitions of PAC terminology are available from DOE (2022).

ADI = acceptable daily intake; AEGL = acute exposure guideline levels; DOE = Department of Energy; DWEL = drinking water equivalent level; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; FAO = Food and Agriculture Organization; FDA = Food and Drug Administration; FEMA = Flavor and Extract Manufacturers Association of the United States; GRAS = generally recognized as safe; HHS = Department of Health and Human Services; IARC = International Agency for Research on Cancer; IDLH = immediately dangerous to life or health; IRIS = Integrated Risk Information System; JECFA = Joint FAO/WHO Expert Committee on Food Additives; MCL = maximum contaminant level; MCLG = maximum contaminant level goal; 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; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TEEL = temporary emergency exposure limit; TWA = time-weighted average; WHO = World Health Organization