

CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding 2,4-D 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 2,4-D.

Table 7-1. Regulations and Guidelines Applicable to 2,4-D

Agency	Description	Information	Reference
Air			
EPA	RfC	No data	IRIS 2002
WHO	Air quality guidelines	Not listed	WHO 2010
Water & Food			
EPA	Drinking water standards and health advisories		EPA 2018
	1-Day health advisory (10-kg child)	1 mg/L	
	10-Day health advisory (10-kg child)	0.3 mg/L	
	DWEL	0.2 mg/L	
	Lifetime health advisory	No data	
	10 ⁻⁴ Cancer risk	No data	
	National primary drinking water regulations		EPA 2009
	MCL	0.07 mg/L	
	PHG	0.07 mg/L	
	OPP's RfD	0.21 mg/kg/day	EPA 2017
WHO	Drinking water quality guidelines		WHO 2017
	Guideline value	0.03 mg/L ^a	
	ADI	0–0.01 mg/kg body weight ^b	
FDA	Substances added to food	Not listed ^c	FDA 2018
	Allowable level in bottled water	0.07 mg/L	FDA 2017
Cancer			
HHS	Carcinogenicity classification	No data	NTP 2016
EPA	Carcinogenicity classification	Group D ^d	EPA 2005a
IARC	Carcinogenicity classification	Group 2B ^e	IARC 2018

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Table 7-1. Regulations and Guidelines Applicable to 2,4-D

Agency	Description	Information	Reference
Occupational			
OSHA	PEL (8-hour TWA) for general industry, construction, and shipyards	10 mg/m ³	OSHA 2018a , OSHA 2018b , OSHA 2018c
NIOSH	REL (up to 10-hour TWA)	10 mg/m ³	NIOSH 2016
	IDLH	100 mg/m ³	NIOSH 1994
Emergency Criteria			
EPA	AEGLs-air	No data	EPA 2016b
DOE	PACs-air		DOE 2018b
	PAC-1 ^f	30 mg/m ³	
	PAC-2 ^f	94 mg/m ³	
	PAC-3 ^f	500 mg/m ³	

^aApplies to free acid.

^bFor the sum of 2,4-D and its salts and esters.

^cThe Substances Added to Food inventory (formerly EAFUS) contains food additives 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 foods prior to September 6, 1958, substances that are listed in FDA regulations as prohibited from use in food or as delisted color additives, and some substances "no longer FEMA GRAS."

^dGroup D: not classifiable as to human carcinogenicity.

^eGroup 2B: possibly carcinogenic to humans

^fDefinitions of PAC terminology are available from U.S. Department of Energy ([DOE 2018a](#)).

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; FDA = Food and Drug Administration; FEMA = Flavor and Extract Manufacturers Association; 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 Expert Committee on Food Additives; LOAEL = lowest-observed-adverse-effect level; MCL = maximum contaminant level; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OPP = Office of Pesticide Programs; OSHA = Occupational Safety and Health Administration; PAC = protective action criteria; PEL = permissible exposure limit; PHG = public health goal; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; T4 = thyroxine; TWA = time-weighted average; WHO = World Health Organization