

CHAPTER 7. REGULATIONS AND GUIDELINES

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

Table 7-1. Regulations and Guidelines Applicable to Chlorodibenzofurans (CDFs)

Agency	Description	Information	Reference
Air			
EPA	RfC	No data	IRIS 2022
WHO	Air quality guidelines	Not listed	WHO 2010
Water & Food			
EPA	Drinking water standards and health advisories	Not listed	EPA 2018a
	National primary drinking water regulations	Not listed	EPA 2009
	RfD	No data	IRIS 2022
WHO	Drinking water quality guidelines	Not listed	WHO 2022
FDA	Substances Added to Food	No data ^a	FDA 2022
Cancer			
HHS	Carcinogenicity classification	No data	NTP 2021
EPA	Carcinogenicity classification	No data	IRIS 2022
IARC	Carcinogenicity classification		
	2,3,4,7,8-PentaCDF	Group 1 ^b	IARC 2012
	2,3,7,8-TetraCDF	Group 3 ^d	IARC 1997
	1,2,3,4,7,8-HexaCDF		
Occupational			
OSHA	PEL (8-hour TWA) for general industry, shipyards and construction	No data	OSHA 2021a , 2021b , 2021c
NIOSH	REL (up to 10-hour TWA)	No data	NIOSH 2018

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Agency	Description	Information	Reference
Emergency Criteria			
EPA	AEGLs-air	Not listed	EPA 2018b
DOE	PACs-air		DOE 2018a
	2,3,7,8-TetraCDF and 2,3,4,7,8-pentaCDF		
	PAC-1 ^c	4.30x10 ⁻⁴ mg/m ³	
	PAC-2 ^c	0.0046 mg/m ³	
	PAC-3 ^c	0.028 mg/m ³	
	1,2,3,7,8-PentaCDF		
	PAC-1 ^c	0.0043 mg/m ³	
	PAC-2 ^c	0.046 mg/m ³	
	PAC-3 ^c	0.28 mg/m ³	
	1,2,3,4,7,8-HexaCDF, 1,2,3,6,7,8-hexaCDF, 1,2,3,7,8,9-hexaCDF, 2,3,4,6,7,8-hexaCDF, 1,2,3,4,6,7,8-heptaCDF, and 1,2,3,4,7,8,9-heptaCDF		
	PAC-1 ^c	0.0013 mg/m ³	
	PAC-2 ^c	0.014 mg/m ³	
	PAC-3 ^c	0.085 mg/m ³	
	1,2,3,4,6,7,8-HeptaCDF and 1,2,3,4,7,8,9-heptaCDF		
	PAC-1 ^c	0.013 mg/m ³	
	PAC-2 ^c	0.14 mg/m ³	
	PAC-3 ^c	0.85 mg/m ³	
	1,2,3,4,6,7,8,9-OctaCDF		
	PAC-1 ^c	0.43 mg/m ³	
	PAC-2 ^c	4.7 mg/m ³	
	PAC-3 ^c	28 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 in food, delisted color additives, and some substances "no longer FEMA GRAS."

^bGroup 1: carcinogenic to humans.

^cDefinitions of PAC terminology are available from U.S. Department of Energy (DOE 2018b).

AEGL = acute exposure guideline levels; DOE = Department of Energy; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; 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; IRIS = Integrated Risk Information System; JECFA = Joint FAO/WHO Expert Committee on Food Additives; 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; TWA = time-weighted average; WHO = World Health Organization