CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding perfluoroalkyls 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. A list of some select state drinking water regulations/guidelines or health based values are summarized in Table 7-2.

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 provisional MRLs for perfluoroalkyls.

Table 7-1. Regulations and Guidelines Applicable to Perfluoroalkyls

Agency	Description	Information	Reference
	Air		
EPA	RfC	No data	IRIS 2017
WHO	Air quality guidelines	No data	WHO 2010
	Water & Food		
EPA	Drinking water standards and health advisories		
	Lifetime Health Advisory		
	PFOA	0.07 µg/L	EPA 2016e
	PFOS	0.07 µg/L	EPA 2016f
	National primary drinking water regulations	No data	EPA 2009d
	RfD	No data	IRIS 2017
	PFOA	$2x10^{-5}$ mg/kg/day	EPA 2016e
	PFOS	$2x10^{-5}$ mg/kg/day	EPA 2016f
WHO	Drinking water quality guidelines	No data	WHO 2017
FDA	EAFUS	No data[a]	FDA 2013
	Cancer		
ACGIH	Carcinogenicity classification	No data	ACGIH 2016
HHS	Carcinogenicity classification	No data	NTP 2016a
EPA	Carcinogenicity classification	No data	IRIS 2017
IARC	Carcinogenicity classification		IARC 2017
	PFOA	Group 2B[b]	
	Occupational		
ACGIH	TLV	No data	ACGIH 2016
OSHA	PEL (8-hour TWA) for general industry, shipyards and construction	No data	OSHA 2013 29 CFR 1910.1000, Table Z-1

Table 7-1. Regulations and Guidelines Applicable to Perfluoroalkyls

Agency	Description	Information	Reference
	PEL (8-hour TWA) for shipyards and construction	No data	OSHA 2014b 29 CFR 1915.1000, Table Z
	PEL (8-hour TWA) for construction	No data	OSHA 2014a 29 CFR 1926.55, Appendix A
NIOSH	REL (up to 10-hour TWA)	No data	NIOSH 2016
	Emergency Criteria		
EPA	AEGLs-air	No data	EPA 2016b
AIHA	ERPGs	No data	AIHA 2015
DOE	PACs-air		DOE 2016a
	PFOA		
	PAC-1[c]	1.1 mg/m^3	
	PAC-2[c]	12 mg/m^3	
	PAC-3[c]	75 mg/m^3	
	PFBA		
	PAC-1[c]	0.5 mg/m^3	
	PAC-2[c]	5.5 mg/m^3	
	PAC-3[c]	33 mg/m^3	

[a]The EAFUS list of substances contains ingredients added directly to food that FDA has either approved as food additives or listed or affirmed as GRAS.
[b]Group 2B: possibly carcinogenic to humans.
[c]Definitions of PAC terminology are available from DOE (2016b).

ACGIH = American Conference of Governmental Industrial Hygienists; AEGL = acute exposure guideline level; AIHA = American Industrial Hygiene Association; CFR = Code of Federal Regulations; DOE = Department of Energy; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; ERPG = emergency response planning guidelines; FDA = Food and Drug Administration; GRAS = generally recognized as safe; HHS = Department of Health and Human Services; IARC = International Agency for Research on Cancer; IRIS = Integrated Risk Information System; 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; PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonic acid; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TLV = threshold limit values; TWA = time-weighted average; WHO = World Health Organization

Table 7-2. Select State Drinking Water and Daily Intake Levels for Perfluoroalkyls

Value type	Value (ppb or µg/L) PFOA	PFOS	PFBuS	PFBA	PFNA	PFHxS	Reference
Maine							
Maximum exposure guideline for drinking water	0.07[a]	0.07[a]	ND	ND	ND	ND	MECDC 2016
Michigan							
Human noncancer drinking water value	0.42	0.011	ND	ND	ND	ND	Michigan DEQ 2016
Minnesota							
Health risk limit							MDH 2017a, 2017b
Short-term	ND	ND	ND	7	ND	ND	
Subchronic	ND	ND	9	7	ND	ND	
Chronic	0.3	0.3	7	7	ND	ND	
Health-based value							
Short-term, subchronic or chronic	0.035	0.027	ND	7	ND	0.027[b]	
Nevada							
Basic comparison level	0.667	0.667	667	ND	ND	ND	NDEP 2017
New Jersey							
Health-based chronic maximum contaminant level	0.014	0.013 (draft)	ND	ND	0.013	ND	DWQI 2015, 2017a, 2017b
North Carolina							
Interim maximum allowable concentration in groundwater	1.1–1.6	ND	ND	ND	ND	ND	NCDENR 2012, NC DEQ 2013
Vermont							
Drinking water health advisory	0.02[c]	0.02[c]	ND	ND	ND	ND	Vermont DOH 2017

[a]MECDC notes that according to the U.S. EPA lifetime health advisory for PFOA and PFOS, when both PFOS and PFOA are present in drinking water combined levels are not to exceed 0.07 ppb (EPA 2016j).
[b]MDH recommends using the health based value for PFOS (0.027 ppb) as a surrogate for PFHxS until more toxicological research on PFHxS is available (MDH 2017b).
[c]Sum of PFOS and PFOA not to exceed 0.02 µg/L.

DEC = Department of Environmental Conservation; DEQ = Department of Environmental Quality; DOH = Department of Health; DTSC = Department of Toxic Substances Control; DWQI = Drinking Water Quality Institute; MECDC = Maine Center for Disease Control & Prevention; MDH = Minnesota Department of Health; NCDENR = North Carolina Department of Environment and Natural Resources; ND = no data; NDEP = Nevada Division of Environmental Protection