

CHAPTER 7. REGULATIONS AND GUIDELINES

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

Table 7-1. Regulations and Guidelines Applicable to Antimony

Agency	Description	Information	Reference
Air			
EPA	RfC		IRIS 1995
	Antimony trioxide	2×10^{-4} mg/m ³ ^a	
WHO	Air quality guidelines	Not listed	WHO 2010
Water & Food			
EPA	Drinking water standards and health advisories (antimony)		EPA 2018a
	1-Day health advisory (10-kg child)	0.01 mg/L	
	10-Day health advisory (10-kg child)	0.01 mg/L	
	DWEL	0.01 mg/L	
	Lifetime health advisory	0.006 mg/L	
	National primary drinking water regulations		EPA 2009
	MCL (antimony)	0.006 mg/L	
	RfD (antimony)	4×10^{-4} mg/kg/day ^b	IRIS 1987
WHO	Drinking water quality guidelines (antimony and compounds)		WHO 2017
	Guideline value	0.02 mg/L	
	TDI	6 µg/kg body weight	
FDA	Substances added to food	Not listed ^c	FDA 2018
	Allowable level for antimony in bottled water	0.006 mg/L	FDA 2017
Cancer			
HHS	Carcinogenicity classification (antimony trioxide)	Reasonably anticipated to be a human carcinogen	NTP 2018
EPA	Carcinogenicity classification	No data	IRIS 1987 , 1995

7. REGULATIONS AND GUIDELINES

Table 7-1. Regulations and Guidelines Applicable to Antimony

Agency	Description	Information	Reference
IARC	Carcinogenicity classification		IARC 1989
	Antimony trioxide	Group 2B ^d	
	Antimony trisulfide	Group 3 ^e	
Occupational			
OSHA	PEL (8-hour TWA) for general industry, shipyards and construction (antimony and compounds, as Sb)	0.5 mg/m ³	OSHA 2018a , 2018b , 2018c
NIOSH	REL (up to 10-hour TWA)		
	Antimony and compounds (as Sb)	0.5 mg/m ³	NIOSH 2018a
	Stibine	0.1 ppm	NIOSH 2018b
	IDLH		
	Antimony compounds (as Sb)	50 mg/m ³	NIOSH 1994a
	Stibine	5 ppm	NIOSH 1994b
Emergency Criteria			
EPA	AEGLs-air (stibine)		EPA 2016b
	AEGL-1 ^f		
	10-minute	NR ^g	
	30-minute	NR ^g	
	60-minute	NR ^g	
	4-hour	NR ^g	
	8-hour	NR ^g	
	AEGL-2 ^f		
	10-minute	4.2 ppm	
	30-minute	2.9 ppm	
	60-minute	1.5 ppm	
	4-hour	0.36 ppm	
	8-hour	0.18 ppm	
	AEGL-3 ^f		
	10-minute	28 ppm	
	30-minute	19 ppm	
	60-minute	9.6 ppm	
4-hour	2.4 ppm		
8-hour	1.2 ppm		
DOE	PACs-air		DOE 2018b
	PAC-1 ^h		
	Antimony	0.5 mg/m ³	
	Antimony pentasulfide	2.5 mg/m ³	
	Antimony potassium tartrate	1.7 mg/m ³	
	Antimony trichloride	0.94 mg/m ³	
	Antimony trioxide	0.6 mg/m ³	
Stibine	0.14 ppm		

7. REGULATIONS AND GUIDELINES

Table 7-1. Regulations and Guidelines Applicable to Antimony

Agency	Description	Information	Reference
	PAC-2 ^h		
	Antimony	0.5 mg/m ³	
	Antimony pentasulfide	22 mg/m ³	
	Antimony potassium tartrate	1.7 mg/m ³	
	Antimony trichloride	0.94 mg/m ³	
	Antimony trioxide	0.6 mg/m ³	
	Stibine	1.5 ppm	
	PAC-3 ^h		
	Antimony	80 mg/m ³	
	Antimony pentasulfide	130 mg/m ³	
	Antimony potassium tartrate	220 mg/m ³	
	Antimony trichloride	150 mg/m ³	
	Antimony trioxide	96 mg/m ³	
	Stibine	9.6 ppm	

^aThe RfC is based on a calculated BMC10(HEC) of 0.074 mg/cu³ for pulmonary toxicity and chronic interstitial inflammation in rats.

^bThe RfD is based on a LOAEL of 0.35 mg/kg/day for effects on longevity, blood glucose, and cholesterol in rats.

^cThe 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."

^dGroup 2B: possibly carcinogenic to humans.

^eGroup 3: not classifiable as to its carcinogenicity to humans.

^fDefinitions of AEGL terminology are available from EPA (2018b).

^gNR = not recommended due to insufficient data.

^hDefinitions of PAC terminology are available from DOE (2018a).

AEGL = acute exposure guideline levels; BMC = benchmark concentration; 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; HEC = human equivalent concentration; 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; 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; TDI = tolerable daily intake; TWA = time-weighted average; WHO = World Health Organization