

## CHAPTER 7. REGULATIONS AND GUIDELINES

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

**Table 7-1. Regulations and Guidelines Applicable to Acrylonitrile**

Agency	Description	Information	Reference
<b>Air</b>			
EPA	RfC	$2 \times 10^{-3}$ mg/m <sup>3</sup> (0.001 ppm)	<a href="#">IRIS 2002</a>
WHO	Air quality guidelines for Europe Guideline	Treated as if a human carcinogen, no safe level can be recommended	<a href="#">WHO 2000</a>
	Lifetime unit risk (at air concentration of 1 µg/m <sup>3</sup> )	$2 \times 10^{-5}$	
<b>Water &amp; Food</b>			
EPA	Drinking water standards and health advisories		<a href="#">EPA 2018a</a>
	10 <sup>-4</sup> Cancer risk	0.006 mg/L	
	National primary drinking water regulations	No data	<a href="#">EPA 2009</a>
	RfD	No data	<a href="#">IRIS 2002</a>
WHO	Drinking water quality guidelines	No data	<a href="#">WHO 2022</a>
FDA	Substances added to food <sup>a</sup>	Acrylonitrile monomer not listed	<a href="#">FDA 2022b</a>
<b>Cancer</b>			
HHS	Carcinogenicity classification	Reasonably anticipated to be a human carcinogen	<a href="#">NTP 2021</a>
EPA	Carcinogenicity classification	B1 <sup>b</sup>	<a href="#">IRIS 2002</a>
	Inhalation unit risk	$6.8 \times 10^{-5}$ per µg/m <sup>3</sup>	
	Oral slope factor	$5.4 \times 10^{-1}$ per mg/kg/day	
IARC	Carcinogenicity classification	Group 2B <sup>c</sup>	<a href="#">IARC 1999</a>

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Agency	Description	Information	Reference
<b>Occupational</b>			
OSHA	PEL (8-hour TWA) for general industry, shipyards, and construction	2 ppm	OSHA <a href="#">2021a</a> , <a href="#">2021b</a> , <a href="#">2021c</a>
	Ceiling limit (15-minute) for general industry, shipyards, and construction	10 ppm	
	Dermal and eye exposure for general industry, shipyards, and construction	No skin or eye contact with liquid acrylonitrile	
NIOSH	REL (up to 10-hour TWA)	1 ppm <sup>d,e</sup>	<a href="#">NIOSH 2019</a>
	Ceiling limit (15-minute)	10 ppm	
	IDLH	60 ppm	<a href="#">NIOSH 2016</a>
<b>Emergency Criteria</b>			
EPA	AEGLs-air		<a href="#">EPA 2018b</a>
	AEGL 1 <sup>f</sup>		
	10-minute	1.5 ppm	
	30-minute	1.5 ppm	
	60-minute	NR <sup>g</sup>	
	4-hour	NR <sup>g</sup>	
	8-hour	NR <sup>g</sup>	
	AEGL 2 <sup>f</sup>		
	10-minute	8.6 ppm	
	30-minute	3.2 ppm	
	60-minute	1.7 ppm	
	4-hour	0.48 ppm	
	8-hour	0.26 ppm	
	AEGL 3 <sup>f</sup>		
	10-minute	130 ppm	
30-minute	50 ppm		
60-minute	28 ppm		
4-hour	9.7 ppm		
8-hour	5.2 ppm		
DOE	PACs-air		<a href="#">DOE 2018a</a>
	PAC-1 <sup>h</sup>	0.15 ppm	
	PAC-2 <sup>h</sup>	1.7 ppm	
	PAC-3 <sup>h</sup>	28 ppm	

<sup>a</sup>The 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".

<sup>b</sup>Group B1: probable human carcinogen, based on limited evidence of carcinogenicity in humans.

<sup>c</sup>Group 2B: possibly carcinogenic to humans.

<sup>d</sup>Skin designation.

<sup>e</sup>Potential occupational carcinogen.

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<sup>f</sup>Definitions of AEGL terminology are available from U.S. Environmental Protection Agency (EPA 2018c).

<sup>g</sup>NR: Not recommended due to insufficient data.

<sup>h</sup>Definitions 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; IDLH = immediately dangerous to life or health; 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; TLV = threshold limit value; TWA = time-weighted average; WHO = World Health Organization