

CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding Nitrobenzene 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 nitrobenzene.

Nitrobenzene is on the list of chemicals subject to the requirements of “The Emergency Planning and Community Right-to-Know Act of 1986” (EPCRA) (EPA 2019). Section 313 of Title III of EPCRA, requires owners and operators of certain facilities that manufacture, import, process, or otherwise use the chemicals on this list to report annually their relation of these chemicals to any environmental media (EPA 1999).

The EPA regulates nitrobenzene under the Clean Air Act (CAA) and it has designated nitrobenzene as a hazardous air pollutant (HAP) (EPA 2017). The manufacture of nitrobenzene is subject to certain provisions for the control of volatile organic compound emissions. The major source of nitrobenzene emissions is other substituted nitrobenzenes and anilines (NTP 2016).

The Clean Water Act (CWA) lists nitrobenzene as a toxic pollutant and designated it as a hazardous substance (EPA 2018). Since nitrobenzene concentrations above trace levels in water are infrequent, according to the WHO, it is unnecessary to derive a formal guideline value (WHO 2017). Health-based values are derived and included in table 7-1 (WHO 2017).

The Resource Conservation and Recovery Act (RCRA) identifies nitrobenzene as a toxic waste with toxicity and a hazardous constituent of waste. Because nitrobenzene is listed as a hazardous substance, the storage, transportation, treatment and disposal of waste nitrobenzene is controlled by EPA. It has been assigned the hazardous waste codes of U169, F004, K083, K103, K104 (NTP 2016). Since nitrobenzene is assigned the hazardous waste code F004, nitrobenzene wastes are prohibited from underground injection unless the waste contains less than 1 percent of nitrobenzene (EPA 2020a). Nitrobenzene is also subject to land disposal restrictions (EPA 2020b).

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Table 7-1. Regulations and Guidelines Applicable to Nitrobenzene

Agency	Description	Information	Reference
Air			
EPA	RfC	9 x 10 ⁻³ mg/m ³	IRIS 2009
EPA	RfD	2 x 10 ⁻³ mg/kg-day	IRIS 2009
OSHA	PEL TWA	1 ppm (5 mg/m ³)	NTP 2016
Water & Food			
EPA	Food and Water		NTP 2016
	Fish or shellfish and water consumption	10 µg/L	
	Fish or shellfish consumption only	600 µg/L	
	Organoleptic-effect criteria	30 µg/L	
WHO	Drinking water guidelines		WHO 2017
	Long-term exposure	8-63 µg/L	
	Short-term exposure	30 µg/L	
Cancer			
EPA	Carcinogenicity classification	Likely to be carcinogenic to humans by any route of exposure	IRIS 2009
IARC	Carcinogenicity classification	Group 2B ^a	IARC 2019
NTP-HHS	Carcinogenicity classification	Reasonably anticipated to be a human carcinogen ^a	NTP 2016
Occupational			
OSHA	PEL (8-hour TWA) for general industry, shipyards, and construction	1 ppm (5 mg/m ³)	NIOSH 2018
NIOSH	REL (Up to 10-hour TWA)	1 ppm (5 mg/m ³)	NIOSH 2018
Emergency Criteria			
EPA	AEGLs-air	No data	AEGLs 2018
	ERPG-1		
AIHA	ERPG-2	No data	AIHA 2019
	ERPG-3		
	PAC-1	15	
DOE	PAC-2	100	DOE 2018
	PAC-3	1,000	

^a Group 2B: Possibly carcinogenic to humans.

^b Definitions of PAC terminology are available from U.S. Department of Energy ([DOE 2016](#)).

AEGL = acute exposure guideline levels; AIHA = American Industrial Hygiene Association; HHS = Department of Health and Human Services; DOE = Department of Energy; EPA = Environmental Protection Agency; ERPG = emergency response planning guidelines; 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; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TWA = time-weighted average; WHO = World Health Organization