

7. REGULATIONS AND ADVISORIES

The international, national, and state regulations and guidelines regarding 1,3-DNB and 1,3,5-TNB in air, water, and other media are summarized in Table 7-1.

ATSDR has derived two MRL values for 1,3-DNB. An acute-duration oral MRL of 0.08 mg/kg/day was derived for 1,3-DNB based on a NOAEL for testicular damage in male rats administered a single dose of 1,3-DNB by gavage (Linder et al. 1990).

An intermediate-duration oral MRL of 0.0005 mg/kg/day was derived for 1,3-DNB based on a LOAEL for hematological effects in male rats administered 1,3-DNB by gavage intermittently for 12 weeks (Linder et al. 1986).

The EPA reference dose (RfD) is 1×10^{-4} mg/kg/day for 1,3-DNB and is based on spleen enlargement in rats (IRIS 1994). The EPA RfD for 1,3,5-TNB is 5×10^{-5} mg/kg/day and is extrapolated from the RfD for 1,3-DNB based on the structural similarity.

EPA has assigned 1,3-DNB a weight-of-evidence carcinogenic classification of D, which indicates that 1,3-DNB is not classifiable as to human carcinogenicity (IRIS 1994). EPA has not assigned a weight-of-evidence carcinogenic classification for 1,3,5-TNB.

1,3-DNB and 1,3,5-TNB are designated as hazardous substances (EPA 1978, 1987b) and are subject to groundwater monitoring requirements (EPA 1987a, 1988b).

The transportation of explosives, including 1,3-DNB and 1,3,5-TNB, must be in accordance with the Department of Transportation hazardous material regulations (49 CFR 171-190) and the motor carrier safety regulations (49 CFR 390-398). Numerous states have established regulations on explosives for air quality control, solid waste disposal, storage, manufacture, and use.

OSHA requires employers of workers who are occupationally exposed to 1,3-DNB to institute engineering controls and work practices to reduce and maintain employee exposure at or below permissible exposure limits (PEL). The employer must use engineering and work practice controls, if feasible, to reduce exposure to or below an 8-hour time-weighted average (TWA) of 1.0 mg/m³ (skin

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designation) for 1,3-DNB. No value has been designated for 1,3,5-TNB. Respirators must be provided and used during the time period necessary to install or implement feasible engineering and work practice controls. Also, special protective measures should be taken to significantly reduce or preclude skin contact.

1,3-DNB is regulated as a toxic chemical under the Emergency Planning and Community Right-to-Now Act (EPCRA) (EPA 1986c) and the Toxic Substances Control Act (TSCA) for preliminary assessment of new products (EPA 1982a) and health and safety data reporting (EPA 1982b).

The Resource Conservation and Recovery Act (RCRA) identifies both compounds for groundwater monitoring at hazardous waste management facilities (EPA 1987a). RCRA also designates 1,3,5-TNB as a hazardous waste when it occurs as a discarded commercial product, off-spec species, container - residue, or spill residue (EPA 1980a).

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB

Agency	Description	Information	Reference
NATIONAL			
Regulations:			
a. Air:			
OSHA	PEL TWA (skin designation) (1,3-DNB)	1 mg/m ³	OSHA 1989a (29 CFR 1910.1000) OSHA 1989b
OSHA	Meets criteria for medical records (1,3-DNB)	Yes	OSHA 1987 (29 CFR 1910.20) OSHA 1988
b. Other			
EPA-OERR	Reportable quantity: 1,3-DNB 1,3,5-TNB	100 lb. 10 lb.	EPA 1985a (40 CFR 302.4) EPA 1985b
EPA-OERR/ CEPP	Chemicals and chemical categories to which this part applies (1,3-DNB)	25,000 lbs. mfd. or processed; 10,000 lbs. otherwise used	EPA 1988c (40 CFR 372.65)
EPA-OSW	Designated as a hazardous substance (1,3-DNB, 1,3,5-TNB)	Yes	EPA 1978 (40 CFR 116.4) EPA 1987b
	Listing as a hazardous waste: Discarded commercial chemical product off-specification species, container residues, and spill residues thereof (1,3,5-TNB)	Yes	EPA 1980a (40 CFR 261.33) EPA 1980b
	Municipal Solid Waste Landfills: Appendix II 1,3-DNB TNB (sym)	20 µg/L 10 µg/L (Practical Quantitation Limit)	EPA 1991a (40 CFR 258)
	Groundwater Monitoring List: Appendix IX 1,3-DNB 1,3,5-TNB	10 µg/L 10 µg/L (Practical Quantitation Limit)	EPA 1987a (40 CFR 264)
	Hazardous Constituents: Appendix VIII (1,3,5-TNB)	none	EPA 1988a (40 CFR 261)
	Treatment Standards Expressed as Specified Technologies (1,3,5-TNB)	none	EPA 1986b (40 CFR 268.42)
EPA/OPTS	Chemical lists and reporting periods (1,3-DNB)	none	EPA 1982a (40 CFR 712.30)
	Substances and listed mixtures to which this subpart applies (1,3-DNB)	none	EPA 1988d (40 CFR 716.120)

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
NATIONAL (Cont.)			
DOT	Poison B (1,3,5-DNB/solid and solution)	Yes	DOT 1989a (49 CFR 172.101) DOT 1989b
	Class A explosive (high explosive); Domestic transportation limited to road and water (cargo only, in magazines) (1,3,5-TNB/dry)	Yes	
DOT	Designated as a hazardous substance subject to requirements for packaging, labeling, and transportation (1,3-DNB, 1,3,5-TNB)	Yes	DOT 1989a (49 CFR 172.101) Appendix A DOT 1989b
Guidelines:			
a. Air			
ACGIH	TLV TWA (skin designation) (1,3-DNB)	1.0 mg/m ³ 0.15 ppm	ACGIH 1994
NIOSH	Recommended Exposure Limit (10-hour TWA) (DNB)	1.0 mg/m ³	NIOSH 1992
b. Water			
EPA/OW	10-d Health Advisory (child)	0.04 mg/L	EPA 1994
	1-d Health Advisory (child)	0.04 mg/L	EPA 1994
	Lifetime Health Advisory (adult)	0.001 mg/L	EPA 1994
EPA/ODW	Drinking Water Guideline	2.0 µg/L	FSTRAC 1990
c. Other			
EPA	1,3-DNB:		IRIS 1994
	RfD (oral)	1.0x10 ⁻⁴ mg/kg/day	
	Carcinogenic classification	D ^a	
	Unit risk (air)	ND	
	Unit risk (water)	ND	
	1,3,5-TNB:		IRIS 1994
	Rfd (oral)	5.0x10 ⁻⁵ mg/kg/day	
	Carcinogen classification	ND	
	Unit risk (air)	ND	
	Unit risk (water)	ND	
STATE			
Regulations and Guidelines:			
a. Air:			
	Acceptable Ambient Air Concentrations (1,3-DNB)		NATICH 1992
CT	8 hr avg. time	20.0 µg/m ³	

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
STATE (cont.)			
FL-Tampa	8 hr avg. time	0.01 mg/m ³	
FL-Ft. Lauderdale	8 hr avg. time	0.01 mg/m ³	
MD		0.00	
ME		0.00	
ND	8 hr avg. time	0.01 mg/m ³	
NV	8 hr avg. time	0.024 mg/m ³	
NY	1 yr avg. time	3.30	
SC	24 hr avg. time	10.0 µg/m ³	
TX	30 min avg. time	10.0 µg/m ³	
TX ⁹	30 min. avg. time	1.00 µg/m ³	
VA	24 hr avg. time	17.0 µg/m ³	
KY	Significant emission levels of toxic air pollutants (1,3-DNB)	2.551x10 ⁻⁴ pounds/hour	NREPC 1986 (410 401 63:022)
WI	Hazardous air contaminants with acceptable ambient air concentrations (1,3-DNB)	Yes	WAC 1988
b. Other	Transportation of explosives is in accordance with the U.S. Department of Transportation hazardous materials regulations 49 CFR 171-190 and the motor carrier safety regulations 49 CFR 390-398 with some exceptions or additional requirements that vary from state to state. (1,2-DNB; 1,3,5-TNB).		CELDs 1991
AL		Yes	
AK		Yes	
AZ		Yes	
CA		Yes	
CT		Yes	
CO		Yes	
DE		Yes	
FL		Yes	
GA		Yes	
HI		Yes	
ID		Yes	

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
STATE (cont.)			
IN		Yes	
IA		Yes	
LA		Yes	
MD		Yes	
MA		Yes	
MI		Yes	
MN		Yes	
MS		Yes	
MO		Yes	
MT		Yes	
NE		Yes	
NJ		Yes	
NM		Yes	
NC		Yes	
ND		Yes	
NY		Yes	
OH		Yes	
OR		Yes	
RI		Yes	
SD		Yes	
TN		Yes	
TX		Yes	
UT		Yes	
VA		Yes	
VT		Yes	
WA		Yes	
WA-DC		Yes	
WV		Yes	
WI		Yes	
WY		Yes	

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
STATE (cont.)			
	Rules and regulations for air quality control and/or solid waste disposal have been established for explosives in general. The regulations vary from state to state (1,3-DNB; 1,3,5-TNB).		CELDs 1991
AL	Pretreatment standards for discharge Hazardous waste: Thermal treatment	Yes Yes	
AZ	Solid waste collection	Yes	
AR	Solid waste storage and collection	Yes	
CO	Fugitive dust	Yes	
CT	Hazardous waste: Thermal treatment	Yes	
FL	Hazardous waste: Thermal treatment	Yes	
GA	Open burning	Yes	
IL	Sewer discharge	Yes	
IN	Open burning	Yes	
KY	Hazardous waste management	Yes	
LA	Open burning	Yes	
MN	Hazardous waste management	Yes	
NH	Open burning	Yes	
NJ	Hazardous waste management	Yes	
NM	Hazardous waste management	Yes	
NV	Hazardous waste management	Yes	
NC	Hazardous waste: Thermal treatment	Yes	
ND	Fugitive emissions	Yes	
PA	Fugitive emissions	Yes	
SC	Open burning	Yes	
TN	Hazardous waste: Thermal treatment	Yes	
UT	Hazardous waste management	Yes	
VT	Open burning	Yes	
VA	Solid waste management	Yes	
WI	Open burning and malodorous emissions	Yes	
	Hazardous Constituent		CELDs 1993
CO	(1,3-DNB; 1,3,5-TNB)	none	
IL	(1,3-DNB; 1,3,5-TNB)	none	

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
STATE (cont.)			
LA	(1,3-DNB; 1,3,5-TNB)	none	
MN	(1,3-DNB; 1,3,5-TNB)	none	
ND	(1,3-DNB; 1,3,5-TNB)	none	
WV	(1,3-DNB; 1,3,5-TNB)	none	
WI	(1,3-DNB; 1,3,5-TNB)	none	
	Groundwater Monitoring		CELDs 1993
CO	(1,3-DNB; 1,3,5-TNB)	none	
IL	(1,3-DNB; 1,3,5-TNB)	none	
LA	(1,3-DNB; 1,3,5-TNB)	none	
MN	(1,3-DNB; 1,3,5-TNB)	none	
WV	(1,3-DNB; 1,3,5-TNB)	none	
WI	(1,3-DNB; 1,3,5-TNB)	none	
	Explosive control laws regulate storage, manufacture, and use. The regulations vary from state to state (1,3-DNB; 1,3,5-TNB).		CELDs 1991
AK		Yes	
CA		Yes	
CT		Yes	
GA		Yes	
HI		Yes	
IN		Yes	
IA		Yes	
KS		Yes	
NJ		Yes	
MS		Yes	
NB		Yes	
NJ		Yes	
OK		Yes	
OR		Yes	
WA-DC		Yes	
WV		Yes	

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Table 7-1. Regulations and Guidelines Applicable to 1,3-DNB and 1,3,5-TNB (continued)

Agency	Description	Information	Reference
STATE (cont.)			
WI		Yes	
KY	Listing as a hazardous waste (1,3,5-TNB)	Yes	NREPC 1986 (401 MASS 31:040)

NOTE: Units in table reflect values and units of measure designated by each agency in its regulations or advisories.

^aNot classifiable as to human carcinogenicity.

ACGIH = American Conference of Governmental and Industrial Hygienists; CELDs = Comprehensive Environmental Legislative Database; CEPP = Chemical Emergency Preparedness and Prevention; CFR = Code of Federal Regulations; D = not classifiable as to human carcinogenicity; DOT = Department of Transportation; EPA = Environmental Protection Agency; FSTRAC = Federal-State Toxicology and Regulatory Alliance Committee; IRIS = Integrated Risk Information System; ND = No data; NIOSH = National Institute for Occupational Safety and Health; ODW = Office of Drinking Water; OERR = Office of Emergency and Remedial Response; OPTS = Office of Pesticides and Toxic Substances; OSHA = Occupational Safety and Health Administration; OSW = Office of Solid Waste; OW = Office of Water; PEL = Permissible exposure limit; REL = Recommended Exposure Limits; RfD = Reference dose; TLV = Threshold limit value; TWA = Time weighted average