

7. REGULATIONS AND ADVISORIES

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

An acute oral MRL of 0.06 mg/kg/day was derived. The MRL is based on a NOAEL value of 6 mg/kg/day for seizures in rats administered RDX on gestation days 6-15 in a developmental study (Army 1986d).

An intermediate oral MRL of 0.03 mg/kg/day was derived. The MRL is based on a NOAEL value of 8 mg/kg/day for reproductive effects in rats after 6 months of exposure (Army 1983a).

A chronic oral reference dose (RfD) of 0.003 mg/kg/day has been derived by EPA for RDX (IRIS 1994). The RfD is based on a NOAEL for reproductive effects (inflammation of the prostate) in rats fed 0.3 mg/kg/day of RDX.

EPA (IRIS 1994) has assigned RDX a weight-of-evidence carcinogenic classification of C, which indicates that RDX is a possible human carcinogen.

The transportation of explosives, including RDX, 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.

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Table 7-1. Regulations and Guidelines Applicable to RDX

Agency	Description	Information	Reference
<u>NATIONAL</u>			
Regulations:			
a. Air:			
OSHA	PEL TWA (skin designation)	1.5 mg/m ³	OSHA 1989 (29 CFR 1910.1000)
b. Water:			
EPA/ODW	Drinking Water Guideline	2.0 µg/L	FSTRAC 1994
EPA/OW	Explosives Manufacturing Point Source Category	none	EPA 1976 (40 CFR 457.11)
c. Other			
DOT	Class A Explosive (high explosive); domestic transportation limited to road and water (cargo only, in magazines)	Yes	DOT 1989 (49 CFR 172.101)
DOT	Designated as a hazardous substance subject to requirements for packaging, labeling, and transportation	Yes	DOT 1989 (49 CFR 172.101 Appendix A)
Guidelines:			
a. Air			
ACGIH	TLV TWA (skin designation)	1.5 mg/m ³	ACGIH 1994
NIOSH	REL - TWA (skin)	1.5 mg/m ³	NIOSH 1992
	STEL (skin)	3.0 mg/m ³	
b. Other			
EPA	RfD (oral)	3.0x10 ⁻³ mg/kg/day	IRIS 1994
	Carcinogen classification	C ^a	IRIS 1994
	Unit risk (air)	ND	IRIS 1994
	Unit risk (water)	3.1x10 ⁻⁶ µg/L	IRIS 1994
<u>STATE</u>			
Regulations and Guidelines:			
a. Air:			
	Acceptable Ambient Air Concentrations		NATICH 1991
CT	8 hr avg. time	30.0 µg/m ³	
FL- Pinellas	8 hr avg. time	15.0 mg/m ³	
FL-Pinellas	24 hr avg. time	3.60 µg/m ³	
MD		0.00	

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Table 7-1. Regulations and Guidelines Applicable to RDX (continued)

Agency	Description	Information	Reference
STATE (cont.)			
ND	8 hr avg. time	0.015 mg/m ³	
NV	8 hr avg. time	0.036 mg/m ³	
OK	24 hr avg. time	30.0 µg/m ³	
TX	30 min avg. time	15.0 µg/m ³	
TX	Annual avg. time	1.5 µg/m ³	
VA	24 hr avg. time	25.0 µg/m ³	
KY	Significant emission levels of toxic air pollutants	3.827x10 ⁻⁴ pounds/hour	NREPC 1986 (410 KAR 63:022)
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		CELDs 1994
AL		Yes	
AK		Yes	
AZ		Yes	
CA		Yes	
CT		Yes	
CO		Yes	
DE		Yes	
FL		Yes	
GA		Yes	
HI		Yes	
ID		Yes	
IN		Yes	
IA		Yes	
LA		Yes	
MD		Yes	
MA		Yes	
MI		Yes	
MN		Yes	
MS		Yes	

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Table 7-1. Regulations and Guidelines Applicable to RDX (continued)

Agency	Description	Information	Reference
STATE (cont.)			
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	
	Rules and regulations for air quality control and/or solid waste disposal have been established for explosives in general; regulations vary from state to state		CELDs 1994
AL	Pretreatment standards for discharge Hazardous waste: thermal treatment	Yes	
AR	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	

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Table 7-1. Regulations and Guidelines Applicable to RDX (continued)

Agency	Description	Information	Reference
STATE (cont.)			
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 management	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	
	Explosive control laws regulating storage, manufacture, and use; regulations vary from state to state		CELDs 1994
AK		Yes	
CA		Yes	
CT		Yes	
GA		Yes	
HI		Yes	
IN		Yes	
IA		Yes	
KS		Yes	
NJ		Yes	
MA		Yes	
NE		Yes	
NJ		Yes	

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Table 7-1. Regulations and Guidelines Applicable to RDX (continued)

Agency	Description	Information	Reference
STATE (cont.)			
OK		Yes	
OR		Yes	
WA-DC		Yes	
WV		Yes	
WI		Yes	

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

a Possible human carcinogen

ACGIH = American Conference of Governmental and Industrial Hygienists; CELDs = Comprehensive Environmental Legislative Database; CFR = Code of Federal Regulations; DOT = Department of Transportation; EPA = Environmental Protection Agency; FSTRAC = Federal-State Toxicology and Regulatory Alliance; IRIS = Integrated Risk Information System; NATICH = National Air Toxics Information Clearinghouse; ND = No data; NIOSH = National Institute of Occupational Safety and Health; NREPC = Natural Resources and Environmental Protection Cabinet (KY); ODW = Office of Drinking Water; OSHA = Occupational Safety and Health Administration; OSW = Office of Solid Waste; OW = Office of Water; PEL = Permissible Exposure Limit; REL = Recommended Exposure Level; RfD = Reference Dose; STEL = Short-term Exposure Limit; TLV = Threshold Limit Value; TWA = Time Weighted Average