

7. REGULATIONS AND ADVISORIES

The national and state regulations and guidelines regarding dinitrocresols (DNOC) in air, water, and other media are summarized in Table 7- 1.

An acute-duration and an intermediate-duration oral MRL of 0.004 mg/kg/day were derived for DNOC. The MRLs are based on a LOAEL value of 0.36 mg/kg/day for neurological effects in humans in case reports by Plotz (1936), in which humans were taking DNOC for the purpose for weight reduction.

The reference concentration for dinitrocresols is undergoing review by an EPA Workgroup. No reference dose exists for the compound.

Dinitrocresols are on the list of chemicals appearing in The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (EPA 1988b). 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 release of those chemicals to any environmental medium.

OSHA requires employers of workers who are occupationally exposed to dinitrocresols 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 0.2 ppm. Respirators must be provided and used during the time period necessary to install or implement feasible engineering and work practice controls (OSHA 1993). In 1989, the TWA was promulgated at 0.25 mg/m³. However, that limit and limits over 400 other chemicals were revoked based on a 1992 Court of Appeals Decision, and the pre-1989 limit of 0.2 mg/m³ was reinstated. Approximately 13 states continue to enforce the 0.25 mg/m³ limit.

Dinitrocresols are regulated by the Clean Water Effluent Guidelines as stated in Title 40, Sections 400-475, of the Code of Federal Regulations. The point source categories for which dinitrocresols are controlled as a Total Toxic Organic include electroplating, steam electric power generation, and metal finishing.

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The Resource Conservation and Recovery Act (RCRA) identifies dinitrocresols as hazardous waste when discarded as a commercial product, off-specification materials, (i.e., does not meet a company's specifications on chemical composition), container residue, or spill residue (EPA 1980a).

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Table 7-1. Regulations and Guidelines Applicable to Dinitrocresols

Agency	Description	Information	Reference
<u>NATIONAL</u>			
Regulations:			
a. Air:			
EPA	Listed as Hazardous Air Pollutant (dinitro-o-cresols and salts)	Yes	U.S. Congress 1990 (Clean Air Act)
OSHA	PEL TWA (dinitro-o-cresol)	0.2 mg/m ³ (skin)	29 CFR 1910.1000 OSHA 1993
b. Water:			
EPA OW	Appendix D—NPDES Permit Application Testing Requirements (122.21)	Yes	40 CFR 122 EPA 1983a
	Additional Conditions Applicable to Specified Categories of NPDES Permits—Notification Levels	500 µg/L	40 CFR 122.42 EPA 1983b
	Method 604—Phenols	Yes	40 CFR 136 EPA 1973a
	Method 625—Base/Neutrals and Acids	Yes	40 CFR 136 EPA 1973a
	Method 1625—Semivolatile Organic Compounds by Isotope Dilution GC/MS		40 CFR 136 EPA 1973a
	Guidelines Establishing Test Procedures for the Analysis of Pollutants	Yes	40 CFR 136.3 EPA 1973b
	Effluent Guidelines and Standards: Electroplating—Definition of Total Toxic Organic	>10 µg/L	40 CFR 413.02 EPA 1981
	Toxic Pollutant Effluent Limitation and Standards for Direct Discharge Point Sources That Use End-of-pipe Biological Treatment		40 CFR 414.91 EPA 1987a
	- Maximum for any one day	277 µg/L	
	- Maximum for monthly average	78 µg/L	
	Toxic Pollutant Effluent Limitation and Standards for Direct Discharge Point Sources That Do Not Use End-of-pipe Biological Treatment		40 CFR 414.101 EPA 1987b
	- Maximum for any one day	277 µg/L	
	- Maximum for monthly average	78 µg/L	
Toxic Pollutant Standards for Indirect Discharge Point Sources		40 CFR 414.111 EPA 1993a	
Effluent Guidelines and Standards: Steam Electric Power Generation: Appendix A—126 Priority Pollutants	Yes	40 CFR 423 EPA 1982b	
Effluent Guidelines and Standards: Metal Finishing—Definition of Total Toxic Organic	>10 µg/L	40 CFR 433.11 EPA 1983c	

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

Agency	Description	Information	Reference
<u>NATIONAL</u> (cont.)			
EPA OW	Applicability; Description of the Organic Pesticide Chemicals Manufacturing Subcategory	Yes	40 CFR 455.20 EPA 1978
c. Other			
EPA OERR	Reportable Quantity (dinitro-o-cresols and salts)	10 lb	40 CFR 302.4 EPA 1992c
	Appendix A—Extremely Hazardous Substance TPQ (dinitrocresol)	10/10,000 lb	40 CFR 355 EPA 1987c
EPA OPTS	Intent to Cancel, Restrict, or Require Reregistration of Pesticide Products Containing Dinitrocresol	Yes	HSDB 1992
	Toxic Chemical Release Reporting: Community Right-to-Know—Specific Toxic Chemical Listing (4,6-dinitro-o-cresol)	Yes	40 CFR 372.65 EPA 1988b
EPA OSW	Appendix II—Municipal Solid Waste Landfills Method 8040 Method 8270	150 µg/L 50 µg/L (Practical Quantitation Limit)	40 CFR 258 EPA 1991b
	Listing as Hazardous Waste: Discarded Commercial Chemical Products Off-specification Species, Container Residues, and Spill Residues Thereof	Yes	40 CFR 261.33 EPA 1980a
	Appendix VIII—Listing as Hazardous Waste Constituent (P047)	Yes	40 CFR 261 EPA 1980b
	Appendix IX—Wastes Excluded Under §260.22—Delisting Level	200 mg/L	40 CFR 261 EPA 1984d
	Appendix IX—Groundwater Monitoring Requirement	Yes	40 CFR 264 EPA 1980c
	Treatment Standards Expressed as Specified Technologies	Yes	40 CFR 268.42 EPA 1986d
	Constituent Concentrations in Waste: Waste Waters Concentration Nonwaste Waters	0.28 mg/L 160 mg/L	40 CFR 268.43 EPA 1988c
Guidelines:			
a. Air			
ACGIH	TLV TWA (dinitro-o-cresol)	0.2 mg/m ³ (skin)	ACGIH 1994
NIOSH	REL - TWA (dinitro-o-cresol)	1.5 mg/m ³ (skin)	NIOSH 1992
	IDLH (dinitrocresol)	5 mg/m ³	NIOSH 1990

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

Agency	Description	Information	Reference
<u>STATE</u>			
Regulations and Guidelines:			
a. Air:			
	Acceptable Ambient Concentration Guidelines or Standards (4,6-dinitro-o-cresol)		NATICH 1992
CT	8 hr avg. time	4 µg/m ³	
FL- Pinella	8 hr avg. time	2 µg/m ³	
FL-Pinella	24 hr avg. time	0.48 µg/m ³	
ND	8 hr avg. time	2 µg/m ³	
NV	8 hr avg. time	5 µg/m ³	
OK	24 hr avg. time	2 µg/m ³	
PA-Phil	24 hr avg. time (Also applies to 3,5-dinitro-o-cresol)	.75 µg/m ³	
TX	30 min avg. time (Also applies to 3,5-dinitro-o-cresol)	2 µg/m ³	
TX	Annual avg. time (Also applies to 3,5-dinitro-o-cresol)	2 µg/m ³	
VA	24 hr avg. time	3.3 µg/m ³	
WA-SW	24 hr avg. time	.7 µg/m ³	
WI	Hazardous air contaminant Acceptable ambient air concentration <25 feet (emission point)	0.01656 lb/hr	CELDs 1992
	≥25 feet (emission point)	0.0672 lb/hr	
b. Water			
	Water Quality: Human Health		CELDs 1994
AZ	(2-methyl - 2,4-dinitrophenol) Domestic water source Fish consumption Full body contact	2.7 µg/L 120 µg/L 550 µg/L	
CA	30 day average (4,6-dinitro-2-methylphenol)	220 µg/L	

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

Agency	Description	Information	Reference
<u>STATE</u> (Cont.)			
CT	(2-methyl - 2,6-dinitrophenol)		
	Fish consumption	765 ^a	
	Fish and water consumption	13.4 ^a	
HI	Fish consumption (dinitro-o-cresol (2,4))	250 µg/L	
IN	(2,4-dinitro-o-cresol)		
	Outside mixing zone (4-day avg.)	765 µg/L	
	Point of water intake (4-day avg.)	13.4 µg/L	
	Domestic water supply source	13.4 µg/L	
KY	(2,4-dinitro-o-cresol)		
	Fish consumption	765 µg/L	
	Domestic water supply source	13.4 µg/L	
MO	(2-methyl - 4,6-dinitrophenol)		
	Fish consumption	765 µg/L	
	Drinking water supply	13 µg/L	
NJ	24-hour maximum - potable water (2,4-dinitro-o-cresol)	13.4 ^a	
OH	Outside mixing zone (30-day avg.) (4,6-dinitro-o-cresol)	765 µg/L	
OR	(4,6-dinitro-o-cresol)		
	Water and fish consumption	13.4 µg/L	
	Fish consumption	765 µg/L	
SD	Domestic water	13.4 µg/L	
	All other uses	765 µg/L	
TN	All categories (2-methyl - 4,6-dinitrophenol)	765 µg/L	
VT	Class A or B waters	13.4 µg/L	
	Class C Waters	765 µg/L	
	Water Quality: Aquatic Life		CELDs 1994
AZ	(2-methyl - 4,6-dinitrophenol)		
	Acute-cold water fishery	310 µg/L	
	Acute-warm water fishery	310 µg/L	
	Acute-effluent dominated water	310 µg/L	
	Chronic-warm water fishery	24 µg/L	
	Chronic-effluent dominated water	24 µg/L	
NJ	(nitrophenols)		
	24 hr maximum-freshwater	230 ^a	
	24 hr maximum-saltwater	4,850 ^a	

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

Agency	Description	Information	Reference
<u>STATE</u> (Cont.)			
	Water Quality: Agricultural Uses		CELDs 1994
MO	Irrigation (2-methyl - 4,6-dinitrophenol)	13 µg/L	
OH	(4,6-dinitro-o-cresol)	13.4 µg/L	
	Water Quality: Recreational Uses		CELDs 1994
TN		765 µg/L	
	Groundwater Quality Standards		CELDs 1994
MO	Groundwater (2-methyl - 4,6-dinitrophenol)	13 µg/L	
	Groundwater Quality Monitoring Parameters (4,6-dinitro-o-cresol)		CELDs 1994
CO		Yes	
IL		Yes	
KY		Yes	
LA		Yes	
MN		Yes	
NY		Yes	
SC		Yes	
TN		Yes	
WV		Yes	
WI		Yes	
	Discharge Limits		CELDs 1994
NJ	NPDES Permits: Testing Requirements for Organic Toxic Pollutant (4,6-dinitro-o-cresol)	Yes	
SD	Surface Water Discharge Permit Application Requirements: Test Requirements for Organic Toxic Pollutants (4,6-dinitro-o-cresol)	Yes	
WI	Maximum Allowable Concentration = BAT effluent		
c. Other			
	Hazardous Waste Constituents (4,6-dinitro-o-cresol and salts)		CELDs 1994
CA		Yes	
CO		Yes	
IL		Yes	
KY		Yes	

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

Agency	Description	Information	Reference
<u>STATE (cont.)</u>			
LA		Yes	
MA		Yes	
MD		Yes	
MN		Yes	
MT		Yes	
ND		Yes	
NE		Yes	
NH		Yes	
NJ		Yes	
OH		Yes	
SC		Yes	
VA		Yes	
VT		Yes	
WV		Yes	
WI		Yes	
WY		Yes	
Restricted Pesticides			
CA	(4,6-dinitro-o-cresol)	Yes	CELDs 1994
HI	(1,6-dinitro-o-cresol and salts)	All concentrations	CELDs 1992
ME	Sinox	>2%	CELDs 1994
NH	(dinitro-o-cresol)	Any concentrations	CELDs 1994
NJ	Designated restricted pesticide	Yes	CELDs 1992
OR	Highly toxic pesticide registration required (dinitro-o-cresol and salts)	In any form (all uses)	

^a Unit of measure was not provided.

ACGIH = American Conference of Governmental and Industrial Hygienists; BAT = Best Available Technology; CFR = Code of Federal Regulations; EPA = Environmental Protection Agency; HSDB = Hazardous Substance Data Bank; GC/MS = Gas Chromatogram/Mass Spectrometry; IDLH = Immediately Dangerous to Life and Health; NATICH = National Air Toxics Information Clearinghouse; NIOSH = National Institute of Occupational Safety and Health; NPDES = National Pollutant Discharge Elimination System; OERR = Office of Emergency and Remedial Response; OPP = Office of Pesticide Programs; OSHA = Occupational Safety and Health Administration; OSW = Office of Solid Waste; OTS = Office of Toxic Substances; OW = Office of Water; OPTS = Office of Pesticides and Toxic Substances; PEL = Permissible Exposure Limit; REL = Recommended Exposure Level; TLV = Threshold Limit Value; TPQ = Threshold Planning Quality; TWA = Time Weighted Average