

## 7. REGULATIONS AND ADVISORIES

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

ATSDR has derived a Minimal Risk Level (MRL) of 0.003 mg/kg/day for both acute (14 days or less) and intermediate (15-364 days) duration oral exposure to chlorpyrifos, based on a NOAEL of 0.03 mg/kg/day observed in human adult males exposed orally to chlorpyrifos (Coulston et al. 1972). An uncertainty factor of 10 was used in the calculation of the MRL to account for variability in susceptibility within the human population.

ATSDR has derived a chronic-duration oral MRL of 0.001 mg/kg/day, based on a NOAEL for acetylcholinesterase inhibition in rats exposed to 0.1 mg/kg/day chlorpyrifos in feed for 2 years (McCollister et al. 1974). An uncertainty factor of 100 was used in the calculation of the MRL: 10 for extrapolation from animals to humans and 10 for variability within the human population.

The U.S. EPA oral reference dose for chlorpyrifos is  $3 \times 10^{-3}$  mg/kg/day (IRIS 1994). No inhalation reference concentration exists for this compound.

Chlorpyrifos is one of the chemicals regulated under “The Emergency Planning and Community Right-to-Know Act of 1986” (EPCRA) (EPA 1988a). 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 media.

An Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for chlorpyrifos has not been set.

Chlorpyrifos is designated a hazardous substance and subject to regulations implementing Section 311 of the Federal Water Pollution Act (EPA 1978b) and Section 311 of the Clean Water Act (EPA 1986b). A maximum contaminant level in (MCL) drinking water does not exist.

Tolerances for chlorpyrifos in raw agricultural commodities, foods, and animal feeds have been established by EPA (EPA 1987, 1982, 1979) ranging from 0.05 to 25 ppm.

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

Agency	Description	Information	References
<u>INTERNATIONAL</u>			
Guidelines:			
WHO	Drinking-water guideline values for health-related organics	None	WHO 1984
<u>NATIONAL</u>			
Regulations:			
a. Water			
EPA OW	Designation of Hazardous Substances	Yes	40 CFR 116.4 EPA 1978a
	Reportable Quantities of Hazardous Substances Pursuant to the Clean Water Act	1 lbs.	40 CFR 117.3 EPA 1986a
	National Pollutant Discharge Elimination System (NPDES) -- List of Toxic Pollutants and Hazardous Substances	Yes	40 CFR 122, App. D EPA 1993a
	Instructions -- Form 2c, NPDES Criteria and Standards	Yes	40 CFR 125 EPA 1984
	Proposed Rule: Water Quality Guidance for the Great Lakes System	Yes	58 FR 20802 EPA 1993b
b. Food:			
EPA OPTS	Tolerances for Related Pesticide Chemicals	Yes	40 CFR 180.3 EPA 1976b
	Tolerance Range for Agriculture Products	0.05–15.0 ppm	40 CFR 180.342 EPA 1987
	Listing of Pesticide Chemicals	Yes	40 CFR 180 EPA 1976a
	Tolerance in Food: Citrus Oil Corn Oil Mint Oil Peanut Oil	Yes 25 ppm 3.0 ppm 10.0 ppm 1.5 ppm	40 CFR 185.1000 EPA 1982a
	Tolerance Range in Animal Feeds	0.5–15.0 ppm	40 CFR 186.1000] EPA 1979
c. Other			
EPA OERR	Reportable Quantity	1 lb.	40 CFR 302.4 EPA 1989
Guidelines:			
a. Air:			
ACGIH	Threshold Limit Value for Occupational Exposure (TLV-TWA)	0.90 mg/m <sup>3</sup> (skin)	ACGIH 1994
NIOSH	Recommended Exposure Limit for Occupational Exposure (TWA)	0.2 mg/m <sup>3</sup>	NIOSH 1992
	Recommended Exposure Limit for Occupational Exposure (STEL)	0.6 mg/m <sup>3</sup>	NIOSH 1992
NRC	Recommended maximum air concentration in residential houses	10 µg/m <sup>3</sup>	NAS/NRC 1982

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

Agency	Description	Information	References
<u>NATIONAL</u> (cont.)			
b. Water:			
EPA OW	1-d Health Advisory	0.03 mg/L (child)	EPA 1994
	10-d Health Advisory	0.03 mg/L (child)	EPA 1994
	Lifetime Health Advisory	0.02 mg/L	EPA 1994
	Longer-term Health	0.03 mg/L (child) 0.1 mg/L (adult)	EPA 1994
	Drinking water cancer classification	D (not assigned)	EPA 1995
c. Other			
EPA	RfD	$3 \times 10^{-3}$ mg/kg/day	IRIS 1997
<u>STATE</u>			
Regulations and Guidelines:			
a. Air:	Average Acceptable Ambient Air Concentrations		NATICH 1992
CT	8-hour	4.00 $\mu\text{g}/\text{m}^3$	
FL-Pinella	8-hour 24-hour	2.00 $\mu\text{g}/\text{m}^3$ 0.48 $\mu\text{g}/\text{m}^3$	
ND	8-hour 1-hour	0.002 mg/m <sup>3</sup> 0.006 mg/m <sup>3</sup>	
NV	8-hour	0.005 mg/m <sup>3</sup>	
TX	30-minutes Annual	2.00 $\mu\text{g}/\text{m}^3$ 0.20 $\mu\text{g}/\text{m}^3$	
VA	Annual	3.30 $\mu\text{g}/\text{m}^3$	
WA-SWEST	24-hour	0.70 $\mu\text{g}/\text{m}^3$	
b. Water:	<u>Water Quality: Human Health</u>		FSTRAC 1990
VT	Drinking Water Standard	21 $\mu\text{g}/\text{L}$	
AR	<u>Water Quality Criteria: Human Health</u>		CELDs 1994
	Toxic Substances - Chronic Toxicity 4-day avg	0.041 $\mu\text{g}/\text{L}$	
	Toxic Substances - Acute Toxicity - 1-hr avg	0.083 $\mu\text{g}/\text{L}$	
HI	Toxic Substances Applicable to All Waters		
	Fresh water acute	0.083 $\mu\text{g}/\text{L}$	
	Fresh water chronic	0.041 $\mu\text{g}/\text{L}$	
	Saltwater acute	0.011 $\mu\text{g}/\text{L}$	
	Saltwater chronic	0.0056 $\mu\text{g}/\text{L}$	
	Fish consumption	NS	
CO	<u>Water Quality Criteria: Aquatic Life</u>		CELDs 1994
	Aquatic Life Segments Organic Compounds to Second Power		
	Standard acute	0.083 $\mu\text{g}/\text{L}$	
	Standard chronic	0.041 $\mu\text{g}/\text{L}$	

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

Agency	Description	Information	References
<u>STATE</u>			
PR	Maximum Allowable Conc. for Organothiophosphorus and Other Non- Persistent Pesticides		
	Coastal estuaries	0.0056 µg/L	
	Surface waters	0.41 µg/L	
	Groundwaters	0.041 µg/L	
OK	Numeric Criteria for Toxic Substances to Protect Fish and Wildlife		
	Acute	.083 µg/L	
	Chronic	.041 µg/L	
VT	WQ Criteria for Protection of Aquatic - Biota		
	Acute	.083 µg/L	
	Chronic	.041 µg/L	
NJ	<u>Restricted Pesticides</u>	All conc. above 15%	CELDs 1994

ACGIH = American Conference of Governmental Industrial Hygienists; CELDs = Computer-assisted Environmental Legislative Database; EPA = Environmental Protection Agency; FSTRAC = Federal State Toxicology and Regulatory Alliance Committee; IRIS = Integrated Risk Information System; NATICH = National Air Toxics Information Clearinghouse; NIOSH = National Institute of Occupational Safety and Health; NPDES = National Pollutant Discharge Elimination System; RfD = Reference Dose; STEL = Short-term Exposure Limit; TLV = Threshold Limit Value; TWA = Time Weighted Average