

## CHAPTER 7. REGULATIONS AND GUIDELINES

Pertinent international and national regulations, advisories, and guidelines regarding chlorophenols 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 chlorophenols.

<b>Table 7-1. Regulations and Guidelines Applicable to Chlorophenols</b>			
Agency	Description	Information	Reference
<b>Air</b>			
EPA	RfC	Not evaluated/ Not derived	IRIS, <a href="#">1988</a> , <a href="#">1990</a> , <a href="#">2002a</a> , <a href="#">2002b</a> , <a href="#">2002c</a> , <a href="#">2021</a>
WHO	Air quality guidelines	Not listed	<a href="#">WHO 2010</a>
<b>Water &amp; Food</b>			
EPA	Drinking water standards and health advisories		<a href="#">EPA 2018a</a>
	1-Day health advisory (10-kg child)		
	2-CP	0.5 mg/L	
	2,4-DCP	0.03 mg/L	
	2,4,6-TCP	0.03 mg/L	
	10-Day health advisory (10-kg child)		
	2-CP	0.5 mg/L	
	2,4-DCP	0.03 mg/L	
	2,4,6-TCP	0.03 mg/L	
	DWEL		
	2-CP	0.2 mg/L	
	2,4-DCP	0.1 mg/L	
	2,4,6-TCP	0.01 mg/L	
	Lifetime health advisory		
	2-CP	0.04 mg/L	
	2,4-DCP	0.02 mg/L	
	2,4,6-TCP	No data	
	10 <sup>-4</sup> Cancer risk		
	2-CP	No data	
	2,4-DCP	No data	
	2,4,6-TCP	0.3 mg/L	

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Agency	Description	Information	Reference
	National primary drinking water regulations	Not listed	<a href="#">EPA 2009</a>
	RfD		<a href="#">IRIS 2021</a>
	2-CP	5x10 <sup>-3</sup> mg/kg/day	<a href="#">IRIS 2002a</a>
	2,4-DCP	3x10 <sup>-3</sup> mg/kg/day	<a href="#">IRIS 2002b</a>
	2,4,5-TCP	1x10 <sup>-1</sup> mg/kg/day	<a href="#">IRIS 2002c</a>
	2,3,4,6-TeCP	3x10 <sup>-2</sup> mg/kg/day	<a href="#">IRIS 1988</a>
	Provisional RfD - Chronic		
	2,4,6-TCP	1x10 <sup>-3</sup> mg/kg/day	<a href="#">EPA 2007a</a>
	Provisional RfD - Subchronic		
	2-CP	8x10 <sup>-3</sup> mg/kg/day	<a href="#">EPA 2007b</a>
	2,4-DCP	2x10 <sup>-2</sup> mg/kg/day	<a href="#">EPA 2007c</a>
	2,4,5-TCP	3x10 <sup>-1</sup> mg/kg/day	<a href="#">EPA 2007d</a>
WHO	Drinking water quality guidelines		<a href="#">WHO 2017</a>
	Guideline value <sup>a</sup>		
	2,4,6-TCP	0.2 mg/L	
FDA	Substances Added to Food	No data <sup>b</sup>	<a href="#">FDA 2021</a>
<b>Cancer</b>			
HHS	Carcinogenicity classification		
	2,4,6-TCP	Reasonably anticipated to be a human carcinogen (based on sufficient evidence in animal bioassays)	<a href="#">NTP 2021</a>
EPA	Carcinogenicity classification		<a href="#">IRIS 2021</a>
	2,4,6-TCP	Probably carcinogenic to humans—Group B2 (based on sufficient evidence in animal bioassays)	<a href="#">IRIS 1990</a>
	Provisional carcinogenicity classification <sup>c</sup>		<a href="#">EPA 2007b</a> , <a href="#">EPA 2007d</a>
	2,4-DCP	Not likely to be carcinogenic to humans via oral exposure; inadequate information to assess the carcinogenic potential to humans via inhalation exposure	<a href="#">EPA 2007c</a>

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Agency	Description	Information	Reference
IARC	Carcinogenicity classification		
	Polychlorophenols or their sodium salts (combined exposures)	Possibly carcinogenic to humans—Group 2B (based on sufficient evidence in animal bioassays)	<a href="#">IARC 1999</a>
	2,4-DCP	Evidence suggesting lack of carcinogenicity of 2,4-DCP in experimental animals	
	2,4,5-TCP	Inadequate evidence in experimental animals for carcinogenicity	
	2,4,6-TCP	Possibly carcinogenic to humans—Group 2B (based on sufficient evidence in animal bioassays)	<a href="#">IARC 2019</a>
<b>Occupational</b>			
ACGIH	TLV (TWA)	No data	ACGIH 2019
OSHA	PEL (8-hour TWA) for general industry, shipyards and construction	No data	OSHA <a href="#">2021a</a> , <a href="#">2021b</a> , <a href="#">2021c</a>
NIOSH	REL (up to 10-hour TWA)	No data	<a href="#">NIOSH 2018</a>
<b>Emergency Criteria</b>			
EPA	AEGLs-air	No data	<a href="#">EPA 2018b</a>
DOE	PACs-air <sup>d</sup>		<a href="#">DOE 2018a</a>
	2-CP		
	PAC-1	2.3 mg/m <sup>3</sup>	
	PAC-2	25 mg/m <sup>3</sup>	
	PAC-3	150 mg/m <sup>3</sup>	
	3-CP		
	PAC-1	2.1 mg/m <sup>3</sup>	
	PAC-2	23 mg/m <sup>3</sup>	
	PAC-3	140 mg/m <sup>3</sup>	
	4-CP		
	PAC-1	1.5 mg/m <sup>3</sup>	
	PAC-2	17 mg/m <sup>3</sup>	
	PAC-3	99 mg/m <sup>3</sup>	
	2,4-DCP		
	PAC-1	0.2 ppm	
	PAC-2	2 ppm	
	PAC-3	20 ppm	
	2,6-DCP		
	PAC-1	8.8 mg/m <sup>3</sup>	

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Agency	Description	Information	Reference
	PAC-2	97 mg/m <sup>3</sup>	
	PAC-3	580 mg/m <sup>3</sup>	
	2,3,6-TCP		
	PAC-1	1.8 mg/m <sup>3</sup>	
	PAC-2	20 mg/m <sup>3</sup>	
	PAC-3	120 mg/m <sup>3</sup>	
	2,4,5-TCP		
	PAC-1	2.5 mg/m <sup>3</sup>	
	PAC-2	27 mg/m <sup>3</sup>	
	PAC-3	160 mg/m <sup>3</sup>	
	2,4,6-TCP		
	PAC-1	2.5 mg/m <sup>3</sup>	
	PAC-2	27 mg/m <sup>3</sup>	
	PAC-3	160 mg/m <sup>3</sup>	

<sup>a</sup>Available data inadequate to permit derivation of health-based guideline values for 2-CP and 2,4-DCP.

<sup>b</sup>The Substances Added to Food inventory replaces EAFUS and contains the following types of ingredients: food and color additives listed in FDA regulations, flavoring substances evaluated by FEMA or JECFA, GRAS substances listed in FDA regulations, substances approved for specific uses in food prior to September 6, 1958, substances that are listed in FDA regulations as prohibited in food, delisted color additives, and some substances "no longer FEMA GRAS."

<sup>c</sup>For 2-CP and 2,4,5-TCP, available data were deemed inadequate for assessment of human carcinogenic potential.

<sup>d</sup>Definitions of PAC terminology are available from U.S. Department of Energy (DOE 2018b).

ACGIH = American Conference of Governmental Industrial Hygienists; AEGL = acute exposure guideline levels; CP = chlorophenol; DCP = dichlorophenol; DOE = Department of Energy; DWEL = drinking water equivalent level; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; FEMA = Flavor and Extract Manufacturers Association of the United States; GRAS = generally recognized as safe; HHS = Department of Health and Human Services; IARC = International Agency for Research on Cancer; IRIS = Integrated Risk Information System; JECFA = Joint FAO/WHO Expert Committee on Food Additives; 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; TCP = trichlorophenol; TeCP = tetrachlorophenol; TLV = threshold limit value; TWA = time-weighted average; WHO = World Health Organization