

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

CHAPTER 93. WATER QUALITY STANDARDS

GENERAL PROVISIONS

§ 93.1. Definitions.

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*Toxic substance*—A chemical or compound in sufficient quantity or concentration which is, or may become, harmful to human, animal or plant life. The term includes, but is not limited to, priority pollutants and those substances, which are identified in Tables 5 and 6 (relating to water quality criteria for toxic substances; and Great Lakes aquatic life and human health criteria). [Additional toxic substances are also described in Chapter 16 Appendix A, Table 1A (relating to site-specific water quality criteria for toxic substances).]

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WATER QUALITY CRITERIA

§ 93.7. Specific water quality criteria.

(a) Table 3 displays specific water quality criteria and associated critical uses. The criteria associated with the Statewide water uses listed in § 93.4, Table 2 apply to all surface waters, unless a specific exception is indicated in §§ 93.9a—93.9z. These exceptions will be indicated on a stream-by-stream or segment-by-segment basis by the words "Add" or "Delete" followed by the appropriate symbols described elsewhere in this chapter. Other specific water quality criteria apply to surface waters as specified in §§ 93.9a—93.9z. All applicable criteria shall be applied in accordance with this chapter, Chapter 96 (relating to water quality standards implementation) and other applicable State and Federal laws and regulations. Unless otherwise specified in Table 3, the duration of aquatic life criteria with "minimum" or "maximum" values is a one-hour average. The duration of the pH criterion in Table 3 is a one-hour average.

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§ 93.8c. Human health and aquatic life criteria for toxic substances.

(a) Table 5 (relating to water quality criteria for toxic substances) and the table of site-specific criteria maintained by the Department list the aquatic life and human health criteria for toxic substances which the Department uses in development of effluent limitations in NPDES

Permits and for other purposes. The human health criteria, which include probable modes of exposure (such as, but not limited to ingestion from drinking water and fish consumption, inhalation and dermal absorption), are further defined as to the specific effect (that is, cancer or threshold health effects). For those aquatic life criteria which are a function of local water quality conditions and are specified as a formula, such as several of the heavy metals, the values used for the local water quality condition to derive the appropriate water quality criteria shall be determined by instream measurements or best estimates based on reference waters that are representative of the median concentrations or conditions of the receiving water for the applicable time period and design conditions. Instream measurements for the water quality condition will be gathered using Department data collection protocols. The priority pollutants are a set of specific chemical pollutants regulated by EPA. The priority pollutant numbers (PP NO) used by the EPA to identify priority pollutants are included in Table 5 for reference purposes. The toxics without a PP NO are nonpriority pollutants or State-derived criteria.

(b) Some of these criteria may be superseded for the Delaware Estuary, Ohio River Basin, Lake Erie Basin, and Genesee River Basin under interstate and international compact agreements with the Delaware River Basin Commission, Ohio River Valley Sanitation Commission and International Joint Commission, respectively. Water quality criteria for the Great Lakes System are contained in § 93.8e (relating to special criteria for the Great Lakes System) and Table 6 (relating to Great Lakes **[Aquatic Life and Human Health Criteria] aquatic life and human health criteria**). Criteria in Table 5 may apply to the Great Lakes System for those substances not listed in Table 6. Criteria may be developed for the Great Lakes System for substances other than those listed in Tables 5 and 6, under the methodologies in § 16.61 (relating to special provisions for the Great Lakes system).

**(c) Unless otherwise specified in this section, the aquatic life criteria in Table 5 have the following duration periods:**

**(1) One-hour average for criteria maximum concentrations.**

**(2) Four-day average for criteria continuous concentrations.**

**TABLE 5**  
**WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES**

PP	NO	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human Health Criteria	Notes
				Criteria Continuous	Criteria Maximum		
				[Concentrations (ug/L)] Concentration (ug/L)	Concentration [(ug/L)] (ug/L)		
1M	ANTIMONY	7440360	220	1100	5.6 [†]	[H] <u>2.5</u>	
2M	ARSENIC	7440382	150 (As3+)	340 (As3+)	10	[H] <u>2</u>	
3M	BERYLLIUM	7440417	N/A	N/A	N/A	-	
4M	CADMIUM	7440439	$[*]\{1.101672-(\ln[H] \times 0.041838)\} \times$	$[*]\{1.136672-(\ln[H] \times 0.041838)\} \times$	N/A	[-] <u>3</u>	
			<b>[Exp(0.7409xln[H]-4.719)] Exp(0.7977 x ln([H]) - 3.909)</b>	<b>[Exp(1.0166xln[H]-3.924)] Exp(0.9789 x ln([H]) - 3.866)</b>			
			(ex: @H=100, CCC= <b>[0.25][0.72]</b> )	(ex: @H=100, CMC= <b>[2.0][1.8]</b> )			
			<b>(ex: @ H=50, CCC= 0.43)</b>	<b>(ex: @ H=50, CMC= 0.94)</b>			
			<b>(ex: @ H=25, CCC= 0.25)</b>	<b>(ex: @ H=25, CMC= 0.49)</b>			
5M	CHROMIUM III	16065831	$[*]0.860 \times \text{Exp}(0.819 \times \ln[H] + 0.6848)$	$[*]0.316 \times \text{Exp}(0.819 \times \ln[H] + 3.7256)$	N/A	[-] <u>3</u>	
			(ex: @H=100, CCC=74)	(ex: @H=100, CMC=570)			
5M	CHROMIUM VI	18540299	$[*]11$	$[*]16$	N/A	[-] <u>3</u>	
6M	COPPER	7440508	$[*]0.960 \times \text{Exp}(0.8545 \times \ln[H] - 1.702)$	$[*]0.960 \times \text{Exp}(0.9422 \times \ln[H] - 1.700)$	N/A	[-] <u>3</u>	
			(ex: @H=100, CCC=9.0)	(ex: @H=100, CMC=13)			
7M	LEAD	7439921	$[*]\{1.46203-(\ln[H] \times 0.145712)\} \times$	$[*]\{1.46203-(\ln[H] \times 0.145712)\} \times$	N/A	[-] <u>3</u>	
			Exp(1.273xln[H]-4.705)	Exp(1.273xln[H]-1.460)			
			(ex: @H=100, CCC=2.5)	(ex: @H=100, CMC=65)			
8M	MERCURY	7439976	$[*]0.77$ (Hg2+)	$[*]1.4$ (Hg2+)	0.05	[H] <u>2.3</u>	

9M	NICKEL	7440020	$[*]0.997 \times \text{Exp}(0.846 \times \ln[H] + 0.0584)$	$[*]0.998 \times \text{Exp}(0.846 \times \ln[H] + 2.255)$	610 [†]	[H] <u>2,3,5</u>
			(ex: @H=100, CCC=52)	(ex: @H=100, CMC=470)		
10M	SELENIUM	7782492	[*]4.6	N/A	N/A	[-] <u>3</u>
11M	SILVER	7440224	N/A	$[*]0.850 \times \text{Exp}(1.72 \times \ln[H] - 6.590)$	N/A	[-] <u>3</u>
				(ex: @H=100, CMC=3.2)		
12M	THALLIUM	7440280	13	65	0.24 [†]	[H] <u>2,5</u>
13M	ZINC	7440666	$[*]0.986 \times \text{Exp}(0.8473 \times \ln[H] + 0.884)$	$[*]0.978 \times \text{Exp}(0.8473 \times \ln[H] + 0.884)$	N/A	[-] <u>3</u>
			(ex: @H=100, CCC=120)	(ex: @H=100, CMC=120)		
14M	CYANIDE, FREE	57125	5.2	22	4	[H] <u>2</u>
1A	2-CHLOROPHENOL	95578	110	560	30	[H] <u>2</u>
2A	2,4-DICHLOROPHENOL	120832	340	1700	10	[H] <u>2</u>
3A	2,4-DIMETHYLPHENOL	105679	130	660	100	[H] <u>2</u>
4A	4,6-DINITRO-o-CRESOL (2 METHYL-4,6-DINITROPHENOL)	534521	16	80	2	[H] <u>2</u>
5A	2,4-DINITROPHENOL	51285	130	660	10	[H] <u>2</u>
E	DINITROPHENOLS	25550587	N/A	N/A	10	[H] <u>2</u>
6A	2-NITROPHENOL	88755	1600	8000	N/A	-
7A	4-NITROPHENOL	100027	470	2300	N/A	-
8A	P-CHLORO-m-CRESOL	59507	30	160	500	[H] <u>2</u>
	(3 METHYL-4-CHLOROPHENOL)					
9A	PENTACHLOROPHENOL	87865	$\text{Exp}(1.005 \times [\text{pH}] - 5.134)$	$\text{Exp}(1.005 \times [\text{pH}] - 4.869)$	0.03	[CRL] <u>1</u>
			@pH= 6.5 7.8 9.0	@pH= 6.5 7.8 9.0		
			Crit= 4.1 15 50	Crit= 5.3 19 65		
10A	PHENOL	108952	N/A	N/A	4000	[H] <u>2</u>
E	2,4,5-TRICHLOROPHENOL	95954	N/A	N/A	300	[H] <u>2</u>
11A	2,4,6-TRICHLOROPHENOL	88062	91	460	1.5	[CRL] <u>1</u>
1V	ACROLEIN	107028	3.0	3.0	3	[H] <u>2</u>

2V	ACRYLONITRILE	107131	130	650	0.06	[CRL] <u>1,4</u>
3V	BENZENE	71432	130	640	0.58	[CRL] <u>1</u>
5V	BROMOFORM	75252	370	1800	7	[CRL] <u>1</u>
6V	CARBON TETRACHLORIDE	56235	560	2800	0.4	[CRL] <u>1</u>
7V	CHLOROBENZENE	108907	240	1200	100	[H] <u>2</u>
8V	CHLORODIBROMO- METHANE	124481	N/A	N/A	0.8	[CRL] <u>1</u>
9V	CHLOROETHANE	75003	N/A	N/A	N/A	-
10V	2-CHLOROETHYL VINYL ETHER	110758	3500	18000	N/A	-
11V	CHLOROFORM	67663	390	1900	[5.7] <u>60</u>	[H] <u>2</u>
12V	DICHLOROBROMO- METHANE	75274	N/A	N/A	0.95	[CRL] <u>1</u>
14V	1,1-DICHLOROETHANE	75343	N/A	N/A	N/A	-
15V	1,2-DICHLOROETHANE	107062	3100	15000	9.9	[CRL] <u>1</u>
16V	1,1-DICHLOROETHYLENE	75354	1500	7500	33	[H] <u>2</u>
17V	1,2-DICHLOROPROPANE	78875	2200	11000	0.9	[CRL] <u>1</u>
18V	1,3-DICHLOROPROPENE	542756	61	310	0.27	[CRL] <u>1</u>
19V	ETHYLBENZENE	100414	580	2900	68	[H] <u>2</u>
20V	METHYL BROMIDE	74839	110	550	100	[H] <u>2</u>
21V	METHYL CHLORIDE	74873	5500	28000	N/A	-
22V	METHYLENE CHLORIDE	75092	2400	12000	20	[CRL] <u>1</u>
23V	1,1,2,2- TETRACHLOROETHANE	79345	210	1000	0.2	[CRL] <u>1</u>
24V	TETRACHLORO- ETHYLENE	127184	140	700	10	[CRL] <u>1</u>
25V	TOLUENE	108883	330	1700	57	[H] <u>2</u>
26V	trans-1,2- DICHLOROETHYLENE	156605	1400	6800	100	[H] <u>2</u>

D	1,2 cis-DICHLORO-ETHYLENE	156592	N/A	N/A	12	[H] 2
	27V	1,1,1-TRICHLOROETHANE	71556	610	3000	10000
28V	1,1,2-TRICHLOROETHANE	79005	680	3400	0.55	[CRL] 1
29V	TRICHLOROETHYLENE	79016	450	2300	0.6	[CRL] 1
31V	VINYL CHLORIDE	75014	N/A	N/A	0.02	[CRL] 1
1B	ACENAPHTHENE	83329	17	83	70	[H] 2
2B	ACENAPHTHYLENE	208968	N/A	N/A	N/A	-
3B	ANTHRACENE	120127	N/A	N/A	300	[H] 2
4B	BENZIDINE	92875	59	300	0.0001	[CRL] 1
5B	BENZO(a)-ANTHRACENE	56553	0.1	0.5	0.001	[CRL] 1
6B	BENZO(a)PYRENE	50328	N/A	N/A	0.0001	[CRL] 1
7B	3,4-BENZO-FLUOR-ANTHENE (BENZO(b)FLUORANTHENE)	205992	N/A	N/A	0.001	[CRL] 1
	8B					
9B	BENZO(k)-FLUORANTHENE	207089	N/A	N/A	0.01	[CRL] 1
E	BIS(CHLOROMETHYL)-ETHER	542881	N/A	N/A	0.0002	[CRL] 1
	10B					
11B	BIS(2-CHLOROETHYL)-ETHER	111444	6000	30000	0.03	[CRL] 1
12B	BIS(2-CHLORO-1-METHYLETHYL) ETHER	108601	N/A	N/A	200	[H] 2
13B	BIS(2-ETHYLHEXYL)-PHTHALATE	117817	910	4500	0.32	[CRL] 1
	14B					

15B	BUTYLBENZYL PHTHA-	85687	35	140	0.1	[H] 2
	LATE					
16B	2-CHLORONAPHTHALENE	91587	N/A	N/A	800	[H] 2
17B	4-CHLOROPHENYL	7005723	N/A	N/A	N/A	-
	PHENYL ETHER					
18B	CHRYSENE	218019	N/A	N/A	0.12	[CRL] 1
19B	DIBENZO(a,h)ANTHRACENE	53703	N/A	N/A	0.0001	[CRL] 1
20B	1,2-DICHLOROBENZENE	95501	160	820	1000	[H] 2
21B	1,3-DICHLOROBENZENE	541731	69	350	7	[H] 2
22B	1,4-DICHLOROBENZENE	106467	150	730	300	[H] 2
23B	3,3-DICHLOROBENZIDINE	91941	N/A	N/A	0.05	[CRL] 1
24B	DIETHYL PHTHALATE	84662	800	4000	600	[H] 2
25B	DIMETHYL PHTHALATE	131113	500	2500	2000	[H] 2
26B	DI-N-BUTYL PHTHALATE	84742	21	110	20	[H] 2
27B	2,4-DINITROTOLUENE	121142	320	1600	0.05 for dinitro-toluene	[CRL] 1
28B	2,6-DINITROTOLUENE	606202	200	990	See 27B	[CRL] 1
29B	DI-N-OCTYL PHTHALATE	117840	N/A	N/A	N/A	-
30B	1,2-DIPHENYLHYDRAZINE	122667	3	15	0.03	[CRL] 1
31B	FLUORANTHENE	206440	40	200	20	[H] 2
32B	FLUORENE	86737	N/A	N/A	50	[H] 2
33B	HEXACHLOROBENZENE	118741	N/A	N/A	0.00008	[CRL] 1
34B	HEXACHLOROBUTADIENE	87683	2	10	0.01	[CRL] 1
35B	HEXACHLOROCYCLO-	77474	1	5	4	[H] 2
	PENTADIENE					
36B	HEXACHLOROETHANE	67721	12	60	0.1	[CRL] 1
37B	INDENO(1,2,3-cd)PYRENE	193395	N/A	N/A	0.001	[CRL] 1
38B	ISOPHORONE	78591	2100	10000	34	[H] 2

39B	NAPHTHALENE	91203	43	140	N/A	-
40B	NITROBENZENE	98953	810	4000	10	[H] 2
41B	N-NITROSODIMETHYL- AMINE	62759	3400	17000	0.0007 [†]	[CRL] 1,5
42B	N-NITROSODI-N- PROPYLAMINE	621647	N/A	N/A	0.005 [†]	[CRL] 1,5
43B	N-NITROSODIPHENYL- AMINE	86306	59	300	3.3 [†]	[CRL] 1,5
E	PENTACHLOROBENZENE	608935	N/A	N/A	0.1	[H] 2
44B	PHENANTHRENE	85018	1	5	N/A	-
45B	PYRENE	129000	N/A	N/A	20	[H] 2
E	1,2,4,5- TETRACHLOROBENZENE	95943	N/A	N/A	0.03	[H] 2
46B	1,2,4-TRICHLOROBENZENE	120821	26	130	0.07	[H] 2
1P	ALDRIN	309002	0.1	3	0.0000008	[CRL] 1
2P	alpha-HEXACHLORO- CYCLOHEXANE (HCH)	319846	N/A	N/A	0.0004	[CRL] 1
3P	beta-HEXACHLORO- CYCLOHEXANE (HCH)	319857	N/A	N/A	0.008	[CRL] 1
4P	gamma- HEXACHLOROCYCLO- HEXANE (HCH) (LINDANE)	58899	N/A	0.95	4.2	[H] 2
5P	delta-BHC	319868	N/A	N/A	N/A	-
<b>E</b>	<b><u>CARBARYL</u></b>	<b><u>63252</u></b>	<b><u>2.1</u></b>	<b><u>2.1</u></b>	<b><u>N/A</u></b>	<b>=</b>
6P	CHLORDANE	57749	0.0043	2.4	0.0003	[CRL] 1,4
E	CHLOROPHENOXY HERBICIDE (2,4-D)	94757	N/A	N/A	[1400] 1300	[H] 2
E	CHLOROPHENOXY HERBICIDE (2,4,5-TP)	93721	N/A	N/A	100	[H] 2



7P	4,4-DDT	50293	0.001	1.1	0.00003	[CRL] <u>1,4</u>
8P	4,4-DDE	72559	0.001	1.1	0.00002	[CRL] <u>1</u>
9P	4,4-DDD	72548	0.001	1.1	0.0001	[CRL] <u>1</u>
10P	DIELDRIN	60571	0.056	0.24	0.000001	[CRL] <u>1</u>
11P	alpha-ENDOSULFAN	959988	0.056	0.22	20	[H] <u>2,4</u>
12P	beta-ENDOSULFAN	33213659	0.056	0.22	20	[H] <u>2,4</u>
13P	ENDOSULFAN SULFATE	1031078	N/A	N/A	20	[H] <u>2</u>
14P	ENDRIN	72208	0.036	0.086	0.03	[H] <u>2</u>
15P	ENDRIN ALDEHYDE	7421934	N/A	N/A	1	[H] <u>2</u>
16P	HEPTACHLOR	76448	0.0038	0.52	0.000006	[CRL] <u>1</u>
17P	HEPTACHLOR EPOXIDE	1024573	0.0038	0.5	0.00003	[CRL] <u>1</u>
E	HEXACHLOROCYCLO-	608731	N/A	N/A	0.007	[CRL] <u>1</u>
	HEXANE (HCH)-TECHNICAL					
E	METHOXYCHLOR	72435	N/A	N/A	0.02	[H] <u>2</u>
18P	PCB		0.014	N/A	0.000064 for PCBs [†]	[CRL] <u>1,4,5</u>
25P	TOXAPHENE	8001352	0.0002	0.73	0.0007	[CRL] <u>1</u>
PP	2,3,7,8-TCDD	1746016	N/A	N/A	5.0 E-9 [†]	[CRL] <u>1,5</u>
<b><u>E</u></b>	<b><u>TRIBUTYL TIN</u></b>		<b><u>0.072</u></b>	<b><u>0.46</u></b>	<b><u>N/A</u></b>	<b><u>-</u></b>
D	ACETONE	67641	86000	450000	<b><u>[3500]</u></b> <b><u>6000</u></b>	[H] <u>2</u>
D	ACRYLAMIDE	79061	N/A	N/A	0.07	[CRL] <u>1</u>
D	ALUMINUM	7429905	N/A	750	N/A	-
D	BARIUM	7440393	4100	21000	<b><u>[2400]</u></b> <b><u>1000</u></b>	[H] <u>2</u>
D	BENZENE METADISULFONIC ACID	98486	1600000	2600000	N/A	-
D	BENZENE MONOSULFONIC ACID	98113	1200000	2000000	N/A	-

D	BENZYL CHLORIDE	100447	N/A	N/A	0.2	[CRL] <u>1</u>
D	BORON	7440428	1600	8100	[3100] <u>1000</u>	[H] <u>2</u>
D	2-BUTOXY ETHANOL	111762	N/A	N/A	700	[H] <u>2</u>
D	COBALT	7440484	19	95	N/A	-
D	p-CRESOL	106445	160	800	N/A	-
D	CYCLOHEXYLAMINE	108918	N/A	N/A	1000	[H] <u>2</u>
E	DIAZINON	333415	0.17	0.17	N/A	-
<b>D</b>	<b><u>1,4-DIOXANE</u></b>	<b><u>123911</u></b>	<b><u>N/A</u></b>	<b><u>N/A</u></b>	<b><u>0.3</u></b>	<b><u>1</u></b>
D	FORMALDEHYDE	50000	440	2200	[700] <u>1000</u>	[H] <u>2</u>
D	2-HEXANONE	591786	4300	21000	N/A	-
D	LITHIUM	7439932	N/A	N/A	N/A	-
D	METHYL ETHYL KETONE	78933	32000	230000	[21000] <u>4000</u>	[H] <u>2</u>
D	METHYL ISOBUTYL KETONE	108101	5000	26000	N/A	-
D	METOLACHLOR	51218452	N/A	N/A	[69] <u>700</u>	[H] <u>2</u>
D	NONYLPHENOL	84852153	6.6	28	N/A	-
D	P-PHENOL SULFONIC ACID	98679	1400000	3500000	N/A	-
D	1-PROPANOL	71238	46000	230000	N/A	-
D	2-PROPANOL	67630	89000	440000	N/A	-
D	RESORCINOL	1084603	7200	28000	[2700] <u>3000</u>	[H] <u>2</u>
D	STRONTIUM	7440246	N/A	N/A	4000	[H] <u>2</u>
D	1,2,3-TRICHLOROPROPANE	96184	N/A	N/A	[210] <u>30</u>	[H] <u>2</u>
D	1,2,4-TRIMETHYLBENZENE	95636	N/A	N/A	[72] <u>10</u>	[H] <u>2</u>
D	1,3,5-TRIMETHYLBENZENE	108678	N/A	N/A	[72] <u>10</u>	[H] <u>2</u>
D	VANADIUM	7440622	100	510	N/A	-

D	XYLENE	1330207	210	1100	[70000] 1000	[H] 2
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**Acronyms and [Footnotes]Notes to Table 5**

**<sup>1</sup>Indicates a human health criterion based on a cancer potency factor and cancer risk level at  $1 \times 10^{-6}$  (CRL); where no cancer potency factor exists the human health criterion is based on threshold toxicity data plus additional safety factors.**

**<sup>2</sup>Indicates a human health criterion based on threshold effect (H).**

[\*] <sup>3</sup>Indicates dissolved [metal] aquatic life criterion; others are total recoverable [metals]. Each listed dissolved criterion in Table 5 is equal to the corresponding total recoverable criterion before rounding (from the EPA National Ambient Water Quality Criteria Documents) multiplied by the conversion factor (from the Conversion Factors Table); a criterion that is expressed as a hardness (H)-based equation is shown in Table 5 as the conversion factor (listed) multiplied by the hardness criterion equation; an example criterion at hardness=100mg/L is included.

**<sup>4</sup>Indicates duration for aquatic life criteria; CMC = instantaneous; CCC = 24 hour average.**

[†] <sup>5</sup>Indicates human health criterion is based on the exposure inputs of 2 liters per day of drinking water and consumption of 17.5 grams of fish per day, for protection of a 70 Kg person.

CAS—Chemical Abstract Service number

[CRL—Cancer risk level at  $1 \times 10^{-6}$ ]

D—DEP developed criteria

E—EPA developed criteria

**[H—Threshold effect human health criterion; incorporates additional uncertainty factor for some Group C carcinogens.]**

[ln [H]] ln[H]—Natural Logarithm of the Hardness of stream as mg/l CaCO<sub>3</sub>

[ug/L] ug/L—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

\* \* \* \* \*

§ 93.8e. Special criteria for the Great Lakes System.

\* \* \* \* \*

(b) *Water quality criteria for the Great Lakes System.* Human health and aquatic life criteria for the Great Lakes System are contained in Table 6 (relating to Great Lakes aquatic life and human health criteria). For any pollutant not listed in the table, criteria in Table 5 (**relating to water quality criteria for toxic substances**) may be used to protect existing and designated uses, or criteria will be developed by the Department, as needed, in accordance with this chapter and § 16.61 (relating to special provisions for the Great Lakes System).

**(b.1) Unless a different duration is indicated by the Notes in Table 6, the aquatic life criteria in Table 6 have the following duration periods:**

**(1) One-hour average for criteria maximum concentrations.**

**(2) Four-day average for criteria continuous concentrations.**

TABLE 6						
GREAT LAKES AQUATIC LIFE AND HUMAN HEALTH CRITERIA						
PP NO	Chemical Name	CAS Number	Fish and Aquatic Life Criteria		Human	Notes
			Criteria Continuous Concentration[s] [(ug/L)] (ug/L)	Criteria Maximum Concentration [(ug/L)] (ug/L)	Health Criteria [(ug/L)] (ug/L)	
2M	Arsenic	7440382	[*]148 (As3+)	[*]340 (As3+)	N/A	[-] <u>3</u>
4M	Cadmium	7440439	[*]{1.101672-(ln[H]x0.041838)}x Exp(0.7852xln[H]-2.715)	[*]{1.136672-(ln[H]x0.041838)}x Exp(1.128xln[H]-3.6867)	N/A	[-] <u>3</u>
			(ex: @H=100, CCC=2.24)	(ex: @H=100, CMC=4.26)		
5M	Chromium, III	16065831	[*]0.860xExp(0.819xln[H]+0.6848 )	[*]0.316xExp(0.819xln[H]+3.7256)	N/A	[-] <u>3</u>
			(ex: @H=100, CCC=74)	(ex: @H=100, CMC=570)		
5M	Chromium, VI	18540299	[*]10.56	[*]15.73	N/A	[-] <u>3</u>
6M	Copper	7440508	[*]0.960xExp(0.8545xln[H]-1.702)	[*](0.960xExp(0.9422xln[H]-1.700)	N/A	<u>3</u>
			(ex: @H=100, CCC=8.96)	(ex: @H=100, CMC=13.44)		

8M	Mercury	7439976	[*]0.77	[*]1.44	0.0031	[H] <u>2,3</u>
9M	Nickel	7440020	[*]0.997xExp(0.846xln[H]+0.0584 (ex: @H=100, CCC=52.01)	[*][0.998xExp(0.846xln[H]+2.255) (ex: @H=100, CMC=468.24)	N/A	[H] <u>2,3</u>
10M	Selenium	7782492	[*]4.61	N/A	N/A	[-] <u>3</u>
13M	Zinc	7440666	[*]0.986xExp(0.8473xln[H]+0.884 ) (ex: @H=100, CCC=118.14)	[*]0.978xExp(0.8473xln[H]+0.884) (ex: @H=100, CMC=117.18)	N/A	<u>3</u>
14M	Cyanide, Free	57125	5.2	22	600	[H] <u>2</u>
3A	2,4-Dimethyl-phenol	105679	N/A	N/A	450	[H] <u>2</u>
5A	2,4-Dinitro-phenol	51285	N/A	N/A	55	[H] <u>2</u>
9A	Pentachlorophenol	87865	Exp(1.005[pH]-5.134) @pH= 6.5 7.8 9.0 Crit = 4.05 14.95 49.95	Exp (1.005[pH]-4.869) @pH = 6.5 7.8 9.0 Crit = 5.28 19.49 65.10	N/A	-
3V	Benzene	71432	N/A	N/A	1.2	[CRL] <u>1</u>
7V	Chloro-benzene	108907	N/A	N/A	470	[H] <u>2</u>
22V	Methylene Chloride	75092	N/A	N/A	4.7	[CRL] <u>1</u>
25V	Toluene	108883	N/A	N/A	5600	[H] <u>2</u>
29V	Trichloro-ethylene	79016	N/A	N/A	2.9	[CRL] <u>1</u>
33B	Hexachloro-benzene	118741	N/A	N/A	0.000045	[CRL] <u>1</u>
36B	Hexachloro-ethane	67721	N/A	N/A	0.53	[CRL] <u>1</u>
4P	gamma-BHC (Lindane)	58899	N/A	0.95	0.47	[H] <u>2</u>
6P	Chlordane	57749	N/A	N/A	0.000025	[CRL] <u>1</u>
7P	4,4-DDT	50293	N/A	N/A	0.000015	[CRL] <u>1</u>
10P	Dieldrin	60571	0.056	0.24	0.0000006 5	[CRL] <u>1</u>
14P	Endrin	72208	0.036	0.086	N/A	-
18P	PCBs		N/A	N/A	0.0000003 9	[CRL] <u>1</u>
25P	Toxaphene	8001352	N/A	N/A	0.0000068	[CRL] <u>1</u>
PP	2,3,7,8-TCDD	1746016	N/A	N/A	8.6 E-10	[CRL] <u>1</u>

—	Parathion	56382	0.013	0.065	N/A	-
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**Acronyms and [Footnotes] Notes to Table 6**

**<sup>1</sup> Indicates a human health criterion based on a cancer potency factor and cancer risk level at  $1 \times 10^{-6}$  (CRL); where no cancer potency factor exists the human health criterion is based on threshold toxicity data plus additional safety factors.**

**<sup>2</sup> Indicates a human health criterion based on threshold effect (H).**

**[\*]<sup>1</sup>** Indicates dissolved **[metal] aquatic life** criterion; others are total recoverable **[metals]**. Each listed dissolved criterion in Table 6 is equal to the corresponding total recoverable criterion before rounding (from the EPA National Ambient Water Quality Criteria Documents) multiplied by the conversion factor (from the Conversion Factors Table); a criterion that is expressed as a hardness (H)-based equation is shown in Table 6 as the conversion factor (listed) multiplied by the hardness criterion equation; an example criterion at hardness=100mg/L is included.

CAS—Chemical Abstract Service number

**[CRL—Cancer risk level at  $1 \times 10^{-6}$**

**H—Threshold effect human health criterion; incorporates additional uncertainty factor for some Group C carcinogens.**

**ln [H] | ln[H]**—Natural Logarithm of the Hardness of stream as mg/l CaCO<sub>3</sub>

**[ug/L] | ug/L**—Micrograms per liter

N/A—Criterion not developed

PP NO—Priority Pollutant Number

\* \* \* \* \*

## DESIGNATED WATER USES AND WATER QUALITY CRITERIA

### § 93.9. Designated water uses and water quality criteria.

(a) The tables in §§ 93.9a—93.9z display designated water uses and water quality criteria in addition to the water uses and criteria specified in Tables 2 and 3. Designated uses shall be protected in accordance with Chapters 95 and 96 (relating to wastewater treatment requirements; and water quality standards implementation) and any other applicable State and Federal laws and regulations. The tables also indicate specific exceptions to Tables 2 and 3 on a stream-by-stream or segment-by-segment basis by the words "add" or "delete" followed by the appropriate symbols described elsewhere in this chapter. **A one-hour average duration period applies to: the Tur<sub>1</sub> and Tur<sub>2</sub> criteria in § 93.9e (relating to Drainage List E); the dissolved oxygen criterion for the Yellow Breeches in § 93.9o (relating to Drainage List O); and the pH criterion in § 93.9x (relating to Drainage List X).** The county column in §§ 93.9a—93.9z indicates the county in which the mouth of the stream or the downstream limit of the zone described for that entry is located. Abbreviations used in the Stream and the "Zone" columns are as follows:

\* \* \* \* \*