

**CTDEP Public Hearing (February 3, 2010)
Regarding Proposed Changes to Connecticut's
Water Quality Standards**



Testimony of Jay Kulowiec, PE., BCEE

My name is Jay Kulowiec . I am a registered Professional Engineer in Connecticut. I have practiced environmental engineering for 40 years. I have provided environmental engineering in the practice areas of water quality and NPDES permitting for numerous industries in Connecticut, including:

- Power Plants (20)
- Organic Chemical and Pharmaceutical (5)
- Pulp and Paper (3)
- Miscellaneous Manufacturing (>12)

The Department provided initial notice of this Public Hearing on its web page on December 22, 2009. Although various documents related to this matter were also posted and available, two very significant documents were made available as follows:

- Technical Supporting Information for Proposed Revisions to the Connecticut Water Quality Standards: Water Temperature (January 28, 2010)
- Technical Support Document: Proposed Revisions to Connecticut Water Quality Criteria (still not available)

Comments on Technical Supporting Information for Proposed Revisions to the Connecticut Water Quality Standards: Water Temperature (January 28, 2010)

This document explains what changes are proposed for Marine, Estuarine Temperature Criteria, (pages 7, 8 and 9). It is stated that “The current temperature criterion for incremental increases is proposed to be retained. During the months of July, August, and September, the temperature increase to marine waters is 1.5°F. At all other times, the allowance increase in marine water is 4°F.”

However, in the proposed Water Quality Standards, the allowable temperature increase proposed for both SA and SB water is 2°F (pages 27 and 29). The Department has not provided an explanation for this discrepancy, or supporting technical information justifying this reduction.

Comments on Technical Support Document (TSD): Proposed Revisions to Connecticut Water Quality Criteria (still not available)

The TSD, not yet available, presumably provides the information that the Department used to amend Appendix D, Table 1 of the Water Quality Standards. Without the TSD and adequate time to conduct a thorough and objective review of it, it is not possible to provide detailed comments at this time. However, I am providing a comparison table of the current Appendix D, Table 1 with that which the Department is proposing. The comparison has also been extended to the USEPA Recommended National Water Quality Criteria (2009). In summary, the Department is proposing to add and/or revise approximately 553 numerical criteria. The comparison table also provided comments on a number of the procedural items proposed. It is my understanding that the amendments to Appendix D, Table 1 were not publically available until December 22, 2009. In that regard, I support CBIA's request to amend the schedule of this proceeding and adoption of amended standards until the Department provides all relevant information, and adequate time is allowed for a thorough and objective review and submittal of comments and suggestions.


J. Kulowiec

February 3, 2010

Comparison of 2002 Adopted Water Quality Standards to Proposed Revisions in the Criteria for Chemical Constituents

New Criteria Lower Criteria Higher Criteria Revoked Criteria Revised Health Designation	Aquatic Life Criteria (µg/L)										Human Health Designation (µg/L)											
	Freshwater					Saltwater					Organisms Only					Consumption of: Water and Organisms						
	Acute		Chronic			Acute		Chronic			Proposed		EPA 2009*			Proposed		EPA 2009*				
Compound	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	Health Designation
Toxic Metals, Cyanides																						
Aluminum (Total)	750	750	87	87	233	233	35	35	35	180000	180000	2074	2074	11200	11200	138	138	138	TT	TT	TT	TT
Ammonia	900	900	190	190	69	69	69	69	69	4300	280	640	640	280	280	6	2.8	5.6	TT	TT	TT	TT
Arsenic*	340	340	150	150	69	69	36	36	36	0.021	0.05	0.14	0.14	0.021	0.05	0.011	0.02	0.018	A	C	A	C
Asbestos																						
Barium	2000	2000	220	220																		
Beryllium	30.6	30.6	3.6	3.6																		
Boron	8500	8500	950	950																		
Cadmium	2.02	1	2.0	0.15	0.25	42	40	40	9.3	8.8	8.8	8.8	8.8	10769	11.2	5	0.14		TT	TT	TT	TT
Chloride	860000	860000	230000	230000																		
Chlorine	19	19	11	11	13	13	13	13	13	7.5	7.5	7.5	7.5									
Chromium, hexavalent	16	16	11	11	1100	1100	50	50	50	2019	0.28	100	0.038	100	0.038	100	0.038	100	TT	TT	TT	TT
Chromium, trivalent	323	323	570	42	42	74								1009615	65625	100	9052		TT	TT	TT	TT
Cobalt	220	220	24	24										168	2				TT	TT	TT	TT
Copper	14.3	14.3	BLM	BLM**	4.8	4.8	4.8	4.8	3.1	3.1	3.1	3.1	3.1	194	1300	51	1300		TT	TT	TT	TT
Copper (site specific)	25.7	25.7	18.1	18.1										194	1300	51	1300		TT	TT	TT	TT
Cyanide	22	22	5.2	5.2	1	1	1	1	1	1	1	1	1	220000	14000	140	140		TT	TT	TT	TT
Iron	30	30	65	1.2	1.2	2.5	210	210	210	8.1	8.1	8.1	8.1						TT	TT	TT	TT
Lead	30	30	65	1.2	1.2	2.5	210	210	210	8.1	8.1	8.1	8.1						TT	TT	TT	TT
Lithium														1120	14	15	15		TT	TT	TT	TT
Manganese														39200	484				TT	TT	TT	TT
Mercury - inorganic*	1.4	1.4	0.77	0.77	1.8	1.8	1.8	1.8	0.94	0.94	0.94	0.94	0.94	0.051	0.00029	0.05	0.00029		TT-HB	TT	TT	TT
Nickel	280.5	280	470	28.9	29	52	74	74	74	8.2	8.2	8.2	8.2	4600	30	4,600	610	9.5	610	TT	TT	TT
Selenium (Total)*	20	20	5	5	290	290	290	290	71	71	71	71	71	11000	729	4,200	50	33	170	TT	TT	TT
Silver	1.02	1	3.2	0.06	1.96	1.9								107692	7000	0.47	1.7	0.26	0.24	TT	TT	TT
Thallium	79	79	17	17										6.3	0.48	0.47	1.7	0.26	0.24	TT	TT	TT
Tin	1600	1600	180	180										177	50				TT	TT	TT	TT
Uranium														1680	21				TT	TT	TT	TT
Vanadium	150	150	44	44										46	6				TT	TT	TT	TT
Zinc (Total) <	65	65	120	65	90	90	90	90	81	81	81	81	81	68740	4468	25,000	9100	1429	7,400	TT	TT	TT
Volatile Substances																						
Acetone	15000	15000	1700	1700										504000	6222				TT	TT	TT	TT
Acetonitrile	73705	73705	8189	8189										2800	35				TT	TT	TT	TT
Acrolein	0.8	3 µg/L	0.1	3 µg/L										780	0.16	9	320	0.11	6	TT	TT	TT
Acrylonitrile	369	369	41	41										0.66	0.22	0.25	0.059	0.049	0.051	C	C	C
Benzene	700	700	160	160										71	6.73	51	1.2	0.33	2.5	A	C	A
Bromomethane	0.04	0.04	0.005	0.005										4000	93	48	3.37			TT	TT	TT
2-Butanone	123077	123077	13752	13752										336000	4148					TT	TT	TT
n-Butylbenzene																						
sec-Butylbenzene																						
t-Butylbenzene																						
Carbon disulfide	130	130	15	15										28544	683					TT	TT	TT
Carbon tetrachloride	2200	2200	240	240										4.4	1.44	1.6	0.25	0.23	0.26	C	C	C
Chlorobenzene	420	420	47	47										21000	1359	1,600	100	127	130	TT	TT	TT
Chloroethane														752								
2-Chloroethyl vinyl ether (mixed)																						
Chloroform	1300	1300	140	140										470	187	470	5.7	6.75	5.7	C	TT	TT
Chloromethane														470	199		5.7	17.54		TT	TT	TT
2-Chloronaphthalene	79	79	9	9										4300	277		1700	185		TT-HB	TT	TT
2-Chlorotoluene														41	10					TT	TT	TT
4-Chlorotoluene	64	64	7	7										19	8					TT	TT	TT
Cyclohexane	2480	2480	276	276										33922	8810					TT	TT	TT

Comparison of 2002 Adopted Water Quality Standards to Proposed Revisions in the Criteria for Chemical Constituents

New Criteria Lower Criteria Higher Criteria Revoked Criteria Revised Health Designation	Aquatic Life Criteria (µg/L)										Human Health Designation (µg/L)														
	Freshwater					Saltwater					Organisms Only					Consumption of: Water and Organisms					Health Designation				
	2002 Proposed	EPA 2009*	Chronic	Proposed	EPA 2009*	Acute	Proposed	EPA 2009*	Chronic	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	2002	Proposed	
Compound	36		4																						
Dibenzofuran	130		23																						
1,2-Dichlorobenzene	79		22																						
1,3-Dichlorobenzene	57		9.4																						
1,4-Dichlorobenzene																									
Dichlorobromomethane																									
1,4-Dichlorobutene																									
Dichlorodifluoromethane																									
1,1-Dichloroethane	3700		410																						
1,2-Dichloroethane	9600		2000																						
1,2-Dichloroethylene (1,2-Dichloroethene)	8800		970																						
1,1-Dichloroethylene (1,1-Dichloroethene)	1900		210																						
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)	5500		620																						
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)	5000		560																						
1,2-Dichloropropane	847		94																						
1,3-Dichloropropene	15		1.7																						
Ethyl acetate	14375		1597																						
Ethylbenzene	550		61																						
Ethylene dibromide																									
n-Hexane																									
Isopropylbenzene	193		21																						
4-Isopropyltoluene	148		16.5																						
Methyl isobutyl ketone																									
Methyl methacrylate																									
Methyl tert butyl ether	151000		51000																						
Methylene chloride	11000		1900																						
2-Methylnaphthalene	42		4.7																						
Nitrobenzene	1989		221																						
2-Nitrophenol	650		73																						
4-Nitrophenol																									
n-Propylbenzene																									
Pyridine	236		26																						
Styrene	214		24																						
1,1,1,2-Tetrachloroethane	770		85																						
1,1,2,2-Tetrachloroethane	1155		655																						
Tetrachloroethylene	430		53																						
Tetrahydrofuran	74000		11000																						
Toluene	560		62																						
1,1,2-Trichloro-1,2,2-trifluoroethane																									
1,2,4-Trichlorobenzene	690		76																						
1,1,1-Trichloroethane	3300		740																						
1,1,2-Trichloroethane	2000		220																						
Trichloroethylene																									
Trichlorofluoromethane	142		16																						
1,2,4-Trimethylbenzene	237		26																						
1,3,5-Trimethylbenzene																									

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	Freshwater					Saltwater					Organisms Only					Consumption of: Water and Organisms					Health Designation
	Acute	Chronic	Proposed	EPA 2009*	2002	Acute	Chronic	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	
Compound	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	Health Designation
Vinyl acetate	8400	2400	930	27	19	15	13	1.4	0.2	0.53	0.031	0.013	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	TT
Vinyl chloride	2400	27	930	27	19	15	13	1.4	0.2	0.53	0.031	0.013	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	TT
Semi-volatile Substances																					
Acenaphthene	19	15	13	1.4	0.2	0.53	0.031	0.013	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	TT
Acenaphthylene	120	11.4	1.3	0.02	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	TT
Aniline	1.18	0.18	0.02	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	C
Anthracene	38	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	C
Benzo(a)anthracene	42	4.7	0.06	2.6	0.49	0.0002	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	A
Benzo(a)pyrene	0.54	0.54	0.06	2.6	0.49	0.0002	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	C
Benzo(b)fluoranthene	23	2.6	0.06	2.6	0.49	0.0002	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	C
Benzo(g,h,i)perylene					4.92	0.016	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	C
Benzo(k)fluoranthene					0.49	0.004	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	C
Benzoic Acid					0.49	0.004	0.018	0.044	0.003	0.00012	0.000081	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	0.000086	C
Bis(2-chloroethoxy)methane	7077		786																		TT
Bis(2-chloroethyl)ether	9231		1026																		TT
Bis(2-chloroisopropyl)ether																					C
Bis(2-ethyl hexyl)phthalate	5		1																		C
Bromoform	1115		124																		C
4-Bromophenyl-phenylether																					TT
Butyl benzyl phthalate	130		23																		TT
Carbazole	48		5.3																		C
4-Chloroaniline	9		1																		TT
Chlorodibromomethane																					C
2-Chlorophenol	290		32																		C
3-methyl-4-Chlorophenol	66		7																		TT
4-Chlorophenyl-phenylether																					TT
Chrysene	42		4.7																		C
m-Cresol	560		62																		TT
Dibenzo(a,h)anthracene																					C
1,2-Dibromo-3-chloropropane																					C
3,3-Dichlorobenzidene	40		4.5																		C
2,4-Dichlorophenol	110		11																		TT
Dichlorofluoroethane																					TT
Diethyl phthalate	980		220																		TT
Dimethyl phthalate	2788		310																		TT
2,4-Dimethylphenol	140		15																		TT
Di-n-butyl phthalate	34		4																		TT
2,4-Dinitrophenol	199		22																		TT
2-methyl-4,6-Dinitrophenol	6.4		0.7																		TT
2,4-Dinitrotoluene	394		44																		C
2,6-Dinitrotoluene	730		81																		C
Di-n-octyl phthalate																					TT
1,4-Dioxane																					TT
1,2-Diphenylhydrazine	10		1																		C

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	Freshwater					Saltwater					Organisms Only					Consumption of: Water and Organisms					Health Designation
	Acute	Chronic	Proposed	EPA 2009*	2002	Acute	Chronic	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*			
Compound	20491	2277	140000	2277	140000	20491	2277	140000	2277	140000	37520	463	13827	463	13827	TT	TT	TT			
Ethanol	1300000	140000	140000	140000	140000	1300000	140000	140000	140000	140000	1120000	463	13827	463	13827	TT	TT	TT			
Ethylene glycol	3.7	0.8	0.8	0.8	0.8	3.7	0.8	0.8	0.8	0.8	5.7	140	5.6	130	1.01	5.6	130	C-HB			
Fluoranthene	110	19	19	19	19	110	19	19	19	19	848	5,300	211	1,100	4.37	211	1,100	C-HB			
Fluorene	4554	1178	1178	1178	1178	4554	1178	1178	1178	1178	11200	138	138	138	138	138	138	TT			
Formaldehyde	0.34	0.04	0.04	0.04	0.04	0.34	0.04	0.04	0.04	0.04	0.00077	0.000029	0.000029	0.000029	0.000029	0.000029	0.000029	C-HB			
Hexachlorobenzene	0.34	0.04	0.04	0.04	0.04	0.34	0.04	0.04	0.04	0.04	50	18	0.44	0.44	0.44	0.44	0.44	C-HB			
Hexachlorobutadiene	0.34	0.04	0.04	0.04	0.04	0.34	0.04	0.04	0.04	0.04	8.9	2.6	1.3	1.4	1.3	1.4	1.4	C-HB			
Hexachloroethane	0.34	0.04	0.04	0.04	0.04	0.34	0.04	0.04	0.04	0.04	0.49	0.016	0.016	0.016	0.016	0.016	0.016	C-HB			
Indeno(1,2,3-cd)pyrene	7500	920	920	920	920	7500	920	920	920	920	2600	841	960	35	35	35	35	C			
Isopropanol	3000	330	330	330	330	3000	330	330	330	330	1848	1027	1027	1027	1027	1027	1027	TT			
Methanol	600	67	67	67	67	600	67	67	67	67	84000	1037	1037	1037	1037	1037	1037	TT			
2-Methylphenol	499	55.5	55.5	55.5	55.5	499	55.5	55.5	55.5	55.5	840	20	20	20	20	20	20	TT			
4-Methylphenol	170	21	21	21	21	170	21	21	21	21	20513	133	13	13	677	13	13	TT			
Naphthalene	188	21	21	21	21	188	21	21	21	21	84	1.7	1.7	1.7	1.7	1.7	1.7	C			
2-Nitroaniline	61	7	7	7	7	61	7	7	7	7	197	1.7	1.7	1.7	1.7	1.7	1.7	C			
3-Nitroaniline	1063	118	118	118	118	1063	118	118	118	118	188	1.7	1.7	1.7	1.7	1.7	1.7	C			
4-Nitroaniline	1063	118	118	118	118	1063	118	118	118	118	188	1.7	1.7	1.7	1.7	1.7	1.7	C			
n-Nitrosodimethylamine	220	25	25	25	25	220	25	25	25	25	8.1	8.4	3	0.00069	0.002	0.00069	0.00069	C			
n-Nitrosodi-n-propylamine	28	28	28	28	28	28	28	28	28	28	1.4	0.44	0.51	0.005	0.005	0.005	0.005	C			
n-Nitrosodiphenylamine	22	2.5	2.5	2.5	2.5	22	2.5	2.5	2.5	2.5	16	5.3	6.0	5	3	3.3	3.3	C			
Nonylphenol	19	15	15	15	15	19	15	15	15	15	1.8	1.8	1.5	1.5	1.5	1.5	1.5	TT			
Pentachloronitrobenzene	31	2.3	2.3	2.3	2.3	31	2.3	2.3	2.3	2.3	8.2	0.83	3	0.28	0.22	0.27	0.27	C-HB			
Pentachlorophenol	4700	160	160	160	160	4700	160	160	160	160	49.17	972	4.37	257	4.37	257	257	C-HB			
Phenanthrene	640	71	71	71	71	640	71	71	71	71	4600000	860,000	21000	207	10,000	10,000	10,000	TT			
Phenol	42	4.6	4.6	4.6	4.6	42	4.6	4.6	4.6	4.6	280000	3457	3457	3457	3457	3457	3457	TT			
Propylene glycol	211692	23521	23521	23521	23521	211692	23521	23521	23521	23521	49.17	350	4,000	4.37	131	830	830	C-HB			
Sodium acetate	18	2	2	2	2	18	2	2	2	2	9520	118	118	118	118	118	118	TT			
Tert-butyl alcohol	18	2	2	2	2	18	2	2	2	2	0.14	0.13	0.13	0.13	0.13	0.13	0.13	TT			
1,2,4,5-Tetrachlorobenzene	25	2.8	2.8	2.8	2.8	25	2.8	2.8	2.8	2.8	0.000000014	5.38E-11	5.10E-09	1.3E-08	5.38E-11	5.00E-09	5.00E-09	C-HB			
2,3,7,8-Tetrachlorodibenzo-p-dioxin	30	3.3	3.3	3.3	3.3	30	3.3	3.3	3.3	3.3	64	33	33	33	33	33	33	TT			
2,4,5-Trichlorophenol	294	33	33	33	33	294	33	33	33	33	6.5	0.3	2.4	2.1	0.2	1.4	1.4	C-HB			
2,4,6-Trichlorophenol	11.4	1.3	1.3	1.3	1.3	11.4	1.3	1.3	1.3	1.3	1.5	0.45	0.45	0.45	0.45	0.45	0.45	C			
Pesticides and PCB's	1.5	0.45	0.45	0.45	0.45	1.5	0.45	0.45	0.45	0.45	0.00014	0.00000044	0.00005	0.00013	4.4E-07	0.000049	0.000049	C-HB			
Alachlor	14.5	1.6	1.6	1.6	1.6	14.5	1.6	1.6	1.6	1.6	18	0.67	0.67	0.67	0.67	0.67	0.67	TT			
Aldicarb	1.2	2.4	0.0043	0.00215	0.0043	1.2	2.4	0.0043	0.00215	0.0043	0.0022	0.0000084	0.00081	0.0021	0.0000084	0.00080	0.00080	C-HB			
Aldrin	0.083	0.041	0.041	0.041	0.041	0.083	0.041	0.041	0.041	0.041	560	6.91	6.91	6.91	6.91	6.91	6.91	C			
Atrazine	47	5	5	5	5	47	5	5	5	5	0.00084	0.000004	0.00031	0.00083	0.000004	0.00031	0.00031	C-HB			
Chlordane	0.55	0.001	0.001	0.001	0.001	0.55	0.001	0.001	0.001	0.001	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
Chlorpyrifos	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.55	0.001	0.001	0.001	0.001	0.55	0.001	0.001	0.001	0.001	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
4,4-DDD	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
4,4-DDE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
4,4-DDT (Total)	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			
Diazinon	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.00059	0.000002	0.00022	0.00059	0.000002	0.00022	0.00022	C-HB			

Comparison of 2002 Adopted Water Quality Standards to Proposed Revisions in the Criteria for Chemical Constituents

New Criteria Lower Criteria Higher Criteria Revoked Criteria Revised Health Designation	Aquatic Life Criteria (µg/L)				Human Health Designation (µg/L)				
	Freshwater		Saltwater		Organisms Only		Consumption of: Water and Organisms		Health Designation
	Acute	Chronic	Acute	Chronic	2002	Proposed	2002	Proposed	
Compound	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*	2002 Proposed
Dicamba	1619	180	0.056	0.056	0.056	0.056	0.056	0.056	TT
Dichloroprop	105	12	0.24	0.24	0.24	0.24	0.24	0.24	TT
Dieldrin	0.24	0.24	0.11	0.11	0.11	0.11	0.11	0.11	C
Endosulfan*	0.11	0.11	0.086	0.086	0.086	0.086	0.086	0.086	TT
Endosulfan sulfate	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	TT
Endrin	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	TT
Endrin aldehyde	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	TT
Endrin ketone	0.086	0.086	0.086	0.086	0.086	0.086	0.086	0.086	TT
Heptachlor	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	C
Heptachlor epoxide	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	C
Hexachlorocyclohexane, alpha									C
Hexachlorocyclohexane, beta									C
Hexachlorocyclohexane, delta									C
Hexachlorocyclopentadiene	2.8	0.3							TT
Lindane	0.95	0.95	0.086	0.086	0.086	0.086	0.086	0.086	TT
Methoxychlor									C
Simazine	5	1							TT
Toxaphene	0.73	0.73	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	C
PCB's			0.014	0.014	0.014	0.014	0.014	0.014	C
Radionuclides									
Alpha Particles									15 pCi/L
Beta Particles									4 pCi/L

Notes:
 --- Criteria Not Established
 + 2002 Criteria lists compound as Arsenic (Tri)
 > 2002 Criteria lists compound as Cyanide (HCN + CN⁻)
 * 2002 Criteria does not explicitly name compound as organic or inorganic Mercury
 ^ 2002 Criteria only lists the freshwater acute and freshwater chronic criteria for Selenium as (total)
 < 2002 Criteria does not list Zinc as (total)
 # 2002 Criteria lists endosulfan (alpha) and endosulfan (beta) separately. The values used are identical between the two listed endosulfan compounds for every category in the 2002 Criteria.
 * USEPA 2009 National Recommended Water Quality Criteria (www.epa.gov/ost/criteria/wqtable)
 ** BLM - USEPA Biotic Ligand Model used to calculate criteria based upon organic content of receiving water
 ■ 2001 Ohio EPA adopted water quality criteria for Ohio River Basin based upon Tier I data

DISCLAIMER: This table is provided without warranty of any kind, either expressed or implied, and you should always refer to the official DEP proposed regulations at:

http://www.ct.gov/deep/lib/deep/water/water_quality_standards/water_quality_standards_proposed_12_22_09.pdf

Comparison: CT Numerical Water Quality Criteria (Adopted 2002/Proposed 2010/USEPA (2009))

Aquatic Life Criteria

It appears that CTDEP is proposing to adopt ninety-two (92) freshwater aquatic criteria adopted by Ohio EPA (DEPA) in 2001. These were reported to be based upon Tier I data and calculation procedures. What are the data sources and procedures used to calculate the remaining new and/or reduced criteria that CTDEP is proposing?

- Criteria derived with Tier I data sets: provide data and sources and methodology used to derive FAV and FCV
- Criteria derived with Tier II data sets: provide data and sources and methodology used to derive FAV and FCV
- Please provide criteria listed that were adopted from criteria adopted in other states water quality criteria
- Please provide basis for aldrin, acrolein and chlordane criteria that is more stringent than that recommended by USEPA
- Please provide basis for reducing criteria for endosulfan
- Please provide basis for proposing aquatic protection criteria for BEHP and styrene more stringent than those adopted by Ohio EPA

Comparison of 2002 Adopted Water Quality Standards to Proposed Revisions in the Criteria for Chemical Constituents

Compound	Aquatic Life Criteria (µg/L)				Human Health Designation (µg/L)			
	Freshwater		Saltwater		Organisms Only		Consumption of:	
	Acute	Chronic	Acute	Chronic	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*
	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*	2002 Proposed	EPA 2009*

Criteria (ug/l)

CTDEP Ohio EPA

BEHP		
- FAV	5	1,100
- FCV	1	8
Styrene		
- FAV	214	290
- FCV	24	32

Ammonia, No Change (NC)

CTDEP and USEPA methodology to calculate ammonia criteria based upon pH, temperature and organism life stage have r

Metals/Cyanide

- some difference in CTDEP and USEPA aquatic life criteria because of water hardness allowance, but no significant changes to existing criteria
- CTDEP has adopted new aquatic life criteria (none previous) for nine (9) metals; USEPA (2009) does not have recommended criteria for these metals

Volatile Compounds

- addition of compounds not listed by USEPA (2009)
- addition of freshwater aquatic criteria for forty-nine (49) compounds; no USEPA (2009) criteria recommended
- aquatic life criteria for acrolein much lower than USEPA (0.8 ug/l versus 3 ug/l)

Semi-Volatiles

- addition of freshwater aquatic life criteria for fifty-six (56); no USEPA (2009) criteria recommended

Pesticides and PCBs

- addition of freshwater aquatic life criteria for twelve (12); no USEPA (2009) criteria recommended
- addition of freshwater aquatic life criteria for three (3) acute criteria more stringent than USEPA (2009) recommended
- addition of freshwater aquatic life criteria for three (3) chronic criteria more stringent than USEPA (2009) recommended

Human Health Criteria

- Please provide basis for proposing criteria that are lower than currently adopted and/or lower than USEPA recommended criteria (2009). Constituents include (but not limited to):
 - cadmium, hexavalent chromium, nickel, zinc, copper, cobalt, antimony

- acrolein

- benzene

- chloroform

- ethyl benzene

- toluene

- TCE

- PAHs

- BEHP

- naphthalene

- pesticides

- Please provide basis for change in human health category for

- hexavalent chromium

- 1,4 dichlorobenzene

- 1,2 dichloropropane

- 1,3 dichloropropane

- PCE

- 1,2,4 trichlorobenzene

- iso phorone

- lindane

- eliminated high bio-accumulation (HB) designation

Comparison of 2002 Adopted Water Quality Standards to Proposed Revisions in the Criteria for Chemical Constituents

Compound	Aquatic Life Criteria (µg/L)						Human Health Designation (µg/L)										
	Freshwater			Saltwater			Organisms Only			Consumption of:							
	Acute	Chronic	Proposed EPA 2009*	Acute	Chronic	Proposed EPA 2009*	Proposed EPA 2009*	Proposed EPA 2009*	Proposed EPA 2009*	Proposed EPA 2009*	Proposed EPA 2009*	Proposed EPA 2009*	Health Designation				
	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed	EPA 2009*	2002	Proposed

- elimination of "A" designation for carcinogens
- proposed to classify CR⁴⁵ as carcinogen
- proposal to change six (6) organic compounds to threshold toxicant (TT), from carcinogen (C)
- proposal to change eight (8) organic compounds to carcinogens from TT
- proposal to adopt new criteria (organisms only) for ninety-two (92) constituents; no recommended USEPA (2009) criteria
- proposed to adopt new criteria (organisms and water) eighty (80) constituents; no recommended USEPA (2009) criteria
- criteria lower than current or lower than recommended USEPA (2009) for approximately one hundred and forty-seven (147) constituents

Other Authority Specified in Appendix D
 • CTDEP can at their discretion, utilize fresh water aquatic protection criteria in salt water environments, if no salt water criteria has been adopted. The scientific validity of this approach is questionable at best.

- CTDEP can at its discretion, is proposing to adopt and utilize numerical criteria (at some "future" time) not specified in the proposed WQStd by utilizing methods prescribed in federal regulations 40 CFR 132. These regulations were adopted by USEPA for the Great Lakes. Such a procedure would not provide for public participation procedures specified in state and federal law.

Comparison: CT Numerical Water Quality Criteria: Adopted 2002/Proposed 2010/USEPA (2009)

Criteria	New Criteria ¹	Lower Criteria ²
Aquatic Life	250	3 ³
Human Health	156	144
Total	406	147

1. - not listed in 2002, and no USEPA (2009) recommended criteria
 2. - lower than currently adopted (2002) and/or lower than USEPA (2009) recommended criteria
 3. - differences limited to organic compounds