

DELAWARE RIVER BASIN COMMISSION

PROPOSED

NOTICE OF PROPOSED RULEMAKING AND PUBLIC HEARING

Amendments to the Water Quality Regulations, Water Code and Comprehensive Plan to Update Water Quality Criteria for Toxic Pollutants in the Delaware Estuary and Extend These Criteria to Delaware Bay

The Delaware River Basin Commission ("DRBC" or "Commission") is a federal interstate compact agency charged with managing the water resources of the Basin without regard to political boundaries. Its commissioners are the governors of the four Basin states – New Jersey, New York, Pennsylvania and Delaware – and a federal representative, the North Atlantic Division Commander of the U.S. Army Corps of Engineers. The Commission is not subject to the requirements of the Delaware Administrative Procedures Act. This notice is published by the Commission for information purposes.

Summary: The Delaware River Basin Commission (DRBC or "Commission") will hold a public hearing to receive comments on proposed amendments to the Commission's Water Quality Regulations, Water Code and Comprehensive Plan to update many of the Commission's stream quality objectives (also called water quality criteria) for human health and aquatic life for toxic pollutants in the Delaware Estuary (DRBC Water Quality Zones 2 through 5) and to extend application of the criteria to Delaware Bay (DRBC Water Quality Zone 6). The proposed changes will bring the Commission's criteria for toxic pollutants into conformity with current guidance published by the U.S. Environmental Protection Agency (EPA) and provide a more consistent regulatory framework for managing the tidal portion of the main stem Delaware River.

Dates: The public hearing will take place on Thursday, September 23 at 2:30 p.m. and will continue on that day until all those who wish to testify are afforded an opportunity to do so. Written comments will be accepted through 5:00 p.m. on Friday, October 1, 2010.

Addresses: The public hearing will take place in the Goddard Room at the Commission's office building, located at 25 State Police Drive, West Trenton, New Jersey. Driving directions are available on the Commission's Web site, www.drbc.net. Please do not rely on Internet mapping services as they may not provide accurate directions to this location.

Written comments may be submitted by e-mail to regs@drbc.state.nj.us; by fax to Regulations at 609-883-9522; by U.S. Mail to Regulations c/o Commission Secretary, DRBC, P.O. Box 7360, West Trenton, NJ 08628-0360; or by private mail carrier to Regulations c/o Commission Secretary, DRBC, 25 State Police Drive, West Trenton, NJ 08628-0360. In all cases, please include the commenter's name, address and affiliation if any in the comment and include "Water Quality Criteria" in the subject line.

Further Information, Contact: The current rule and the full text of the proposed amendments are posted on the Commission's Web site, www.drbc.net, along with the report entitled "Water Quality Criteria for Toxic Pollutants for Zones 2-6 of the Delaware Estuary: Basis and Background Document" (DRBC, June 2010) and a set of PowerPoint slides presented to the Commission at the latter's public meeting on December 9, 2009 by the chair of the Commission's Toxics Advisory Committee. Hard copies of these materials may be obtained for the price of postage by contacting Ms. Paula Schmitt at 609-883-9500, ext. 224. For questions about the technical basis for the rule, please contact Dr. Ronald MacGillivray at 609-477-7252. For queries about the rulemaking process, please contact Pamela Bush at 609-477-7203.

Supplemental Information:

Background. At the request of the states of Delaware, New Jersey and Pennsylvania, which border the Delaware Estuary (hereinafter, "the Estuary States"), the Commission in 1996 adopted water quality criteria for human health and aquatic life for Water Quality Zones 2 through 5 (Trenton, New Jersey to Delaware Bay) of the main stem Delaware River and the tidal portions of its tributaries for a set of pollutants that included the list of Priority Pollutants published by the EPA in accordance with section 307 of the federal Clean Water Act (CWA); other

pollutants for which EPA had published national recommended criteria in accordance with section 304(a) of the CWA; and additional pollutants for which one or more of the Estuary States had adopted criteria. See 40 C.F.R. 401.15 (consisting of a list of 65 toxic pollutants, including categories of pollutants, for which effluent limitations are required in accordance with section 307(a)(1) of the Clean Water Act, 33 U.S.C. § 1317(a)(1)); Appendix A of 40 C.F.R. Part 423 (consisting of a list of 129 "Priority Pollutants," individual chemicals and forms of chemicals for which EPA has established national criteria); and 33 U.S.C. §1314(a) (providing for criteria development and publication by EPA).

Managing an interstate waterway that is simultaneously an industrial and commercial hub, a source of drinking water for urban and suburban populations in three states and a fragile tidal ecosystem is a complex task. After nearly fifteen years of applying uniform human health and aquatic life criteria in the Delaware Estuary, the Commission has determined that maintaining a uniform set of criteria in a single regulatory code is an essential predicate to measuring and managing the ecological health of this vital interstate resource.

Since 1996, EPA has updated its guidance for the development of human health water quality criteria and its list of national recommended water quality criteria for many toxic pollutants to reflect advances in scientific knowledge. Although the states have independently amended some of their criteria to conform to the current guidance and national recommended criteria, the Commission has not yet done so. The result is that many of DRBC's estuary toxics criteria are not currently consistent with state criteria, best available science, or current EPA guidance. Moreover, because the Bay and Estuary comprise a single tidal system in which each water quality zone is at times downstream and at times upstream of the adjacent zone or zones, regulators, dischargers and other stakeholders have determined that they are ill-served by excluding the Bay from application of uniform criteria in the Estuary. Amending the criteria at this time is necessary to restore consistency and fairness in the regulation of discharges, to facilitate coordination among state and federal programs and to continue to ensure that regulation of water quality in the shared interstate waters of the Estuary and Bay is based on the best science available.

The proposed amendments to the Commission's human health and aquatic life criteria for the Estuary and Bay were developed by the Commission's standing Toxics Advisory Committee (TAC), comprised of representatives of the four basin states – Delaware, New Jersey, New York and Pennsylvania – and members of the academic, agricultural, public health, industrial and municipal sectors and non-governmental environmental community. The TAC in 2007 adopted as its objectives (a) evaluating recent data and current methodologies for establishing water quality criteria for toxic pollutants and (b) developing recommendations for revising the Commission's 1996 criteria to reflect current science and risk assessment procedures and provide for consistency across interstate waters. The TAC's recommendations were formally presented to the Commissioners at a public meeting on December 9, 2009 by then TAC chair, Christopher S. Crockett of the Philadelphia Water Department. Dr. Crockett's PowerPoint presentation is available on the Commission's website.

No Change Proposed to Criteria for PCBs and Taste and Odor. The amendments proposed by the Commission in this rulemaking do not include changes to the Commission's criteria for polychlorinated biphenyls (PCBs), currently listed in Table 6 (criteria for carcinogens) and Table 7 (criteria for systemic toxicants) of Article 3 of the Commission's Water Quality Regulations and Water Code, or to the criteria to protect the taste and odor of ingested water and fish, set forth in Table 4 of the same Article. The Commission initiated a separate rulemaking in August of 2009 to update its human health criteria for carcinogenic effects for PCBs in the Delaware Estuary (see 74 FR 41100). The comment period for that proposal ended on October 19, 2009 and the Commission has not yet approved a final rule. The current PCB criteria will continue in effect pending completion of the Commission's separate rulemaking for PCBs. The Commission's Toxics Advisory Committee has not yet taken up the matter of revisions to the criteria to protect taste and odor.

Proposed Changes. The Commission's criteria for human health and aquatic life in the Delaware Estuary are listed in tables 3, 5, 6 and 7 of section 3.30 "Interstate Streams – Tidal" of the Water Quality Regulations and Water Code. In addition to extending these criteria to Water Quality Zone 6, two major types of changes to the criteria are proposed: (1) compounds are proposed to be added to or deleted from the four tables and (2) numeric criteria for many of the compounds currently listed in the tables are proposed to be revised. In addition, to assist users sub-headings have been added for categories of pollutants (metals, pesticides, etc.) and the sequence of the parameters has been modified to arrange them within these categories. Minor changes for consistency in spelling and capitalization are also proposed. The additions, deletions and criteria changes are proposed in order to make

the list of regulated compounds consistent with current EPA guidance and to ensure the criteria are uniform throughout the shared waters. The Basis and Background Document cited above sets forth in detail the policies and technical assumptions on which the TAC relied in developing the revised criteria.

The proposed changes to tables 3, 5, 6 and 7 are described briefly below:

For Table 3, "Maximum Contaminant Levels ["MCLs"] to be Applied as Human Health Stream Quality Objectives in Zones 2 and 3":

- Antimony, Cadmium, 1,2 – Dichloropropane, Ethylbenzene and 1,2,4 –Trichlorobenzene are proposed to be removed because the proposed updates to Table 7 (criteria for systemic toxicants) would establish DRBC criteria for these compounds more stringent than the MCLs.
- Nickel is proposed to be removed because the MCL for nickel was withdrawn by the EPA.
- Chromium (total) is proposed to be replaced by Chromium III for consistency with current EPA guidance.
- Current MCL values for Beryllium, Copper, Lead, alpha-BHC, beta-BHC, 2,4-Dichlorophenoxyacetic acid (2,4-D), Methoxychlor, Toxaphene, Dioxin (2,3,7,8-TCDD), 2,4,5 – Trichlorophenoxypropionic acid (2,4,5-TP-Silvex), Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, 1,1-Dichloroethylene, Dichloromethane (methylene chloride), Tetrachloroethylene (PCE), Toluene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, Vinyl Chloride, Benzo(a)pyrene, Asbestos, Bis(2-Ethylhexyl) Phthalate, Flouride, Nitrate, and Pentachlorophenol are proposed to be added because these MCL values were developed by EPA after 1996 in accordance with the Safe Drinking Water Act, 42 U.S.C.A. § 1412g-1(b).

As to Table 5, "Stream Quality Objectives for Toxic Pollutants for the Protection of Aquatic Life", Table 6, "Stream Quality Objectives for Carcinogens" and Table 7, "Stream Quality Objectives for Systemic Toxicants," nearly all of the freshwater and marine criteria are proposed to be updated to conform to current EPA guidance, resulting in minor changes in most instances and substantial changes in some. Most but not all of the proposed criteria are more stringent than the existing criteria.

Proposed changes to Table 6 (criteria for carcinogens) also include the following:

- Beryllium and 1,1 – Dichloroethene are proposed to be removed because EPA no longer lists these compounds as carcinogens.
- 1,1,1,2 – Tetrachloroethane is proposed to be removed because it is no longer recommended by the EPA for water quality criteria development.
- Arsenic, beta-BHC, N-Nitrosodi-N-butylamine, N-Nitrosodiethylamine, and N-Nitrosopyrrolidine are proposed to be added because EPA and an Estuary State have adopted criteria for them.
- Dinitrotoluene mixture (2, 4 & 2, 6) is proposed to be replaced by 2, 4-Dinitrotoluene to be consistent with current EPA guidance.
- Hexachlorobutadiene is proposed to be moved to Table 6 (criteria for carcinogens) from Table 7 because its toxicity is based on carcinogenicity.

Proposed changes to Table 7 (criteria for systemic toxicants) also include the following:

- 1,1,1,2 – Tetrachloroethane is proposed to be removed because it is no longer recommended by the EPA for water quality criteria development.
- Chromium (Total), Methylmercury, alpha-Endosulfan, beta-Endosulfan, Endosulfan Sulfate, Endrin Aldehyde, Benzene, 2-Chloronaphthalene, Cyanide, 2-Methyl-4,6-dinitrophenol, Pentachlorobenzene, 1,2,4,5-Tetrachloro-benzene, 2,4,5-Trichlorophenol, and Vinyl Chloride are proposed to be added to Table 7 because EPA and an Estuary State adopted criteria for them.
- DDT is proposed to be replaced with "DDT and Metabolites (DDD and DDE)" to conform to current EPA guidance relating to the systemic toxicity of DDT and its degradation products, DDD and DDE. DDT, DDD and DDE, which are also deemed to be carcinogens, continue to be listed individually in Table 6.
- Hexachlorobutadiene has been moved from Table 7 to Table 6 because its toxicity is based on carcinogenicity.
- The column identifying EPA classifications is proposed to be removed from Table 7 because this information is not needed for application of the criteria for systemic toxicants. Detailed information on derivation of the criteria, including EPA classifications, is presented in the Basis and Background Document posted on DRBC's website.

Extension of Criteria to Delaware Bay (Zone 6). A new section 3.10.6 C.11. is proposed to be added to make

tables 3 through 7 of Article 3 of the Water Quality Regulations and Water Code applicable to Water Quality Zone 6, Delaware Bay.

It is proposed to amend the Water Quality Regulations and Water Code as follows:

Material proposed to be added to the Water Code and Water Quality Regulations is printed in **bold face** and material proposed to be deleted is enclosed in brackets [] and printed in **bold face**. Asterisks indicate ellipsis of rule text retained without changes. Explanatory text is printed in ordinary style face and enclosed in brackets [].

Section 3.30 Interstate Streams – Tidal.

3.30.2 Zone 2.

[Amend Tables 3, 5, 6 and 7 following subsection 3.30.2 as indicated to update current criteria and remove and add compounds.]

TABLE 3: MAXIMUM CONTAMINANT LEVELS TO BE APPLIED AS HUMAN HEALTH STREAM QUALITY OBJECTIVES IN ZONES 2 AND 3 OF THE DELAWARE RIVER ESTUARY.

Parameter	Maximum Contaminant Level (µg/l)
Metals	
[Antimony]	[6]
Arsenic	[50] 10
Barium	[2.0 mg/l] 2000
Beryllium	4
[Cadmium]	[5]
Chromium (trivalent) [(total)]	100
Copper	1300
[Nickel]	[100]
Lead	15
Selenium	50
Pesticides/PCBs	
alpha-BHC	0.2
beta-BHC	0.2
gamma - BHC (Lindane)	[0.2] 2
2,4-Dichloro-phenoxyacetic acid (2,4-D)	70
Methoxychlor	40
Toxaphene	3
Dioxin (2,3,7,8-TCDD)	0.00003

2,4,5 Trichloro-phenoxypropionic acid (2,4,5-TP-Silvex)	50
Volatile Organic Compounds (VOCs)	
Benzene	5
Carbon Tetrachloride	5
1,2-Dichloroethane	5
1,1-Dichloroethylene	7
[1,2 - trans – Dichloroethene] 1,2 - trans - Dichloroethylene	100
Dichloromethane (methylene chloride)	5
[1,2 – Dichloropropane]	[5]
[Ethylbenzene]	[700]
Tetrachloroethylene (PCE)	5
Toluene	1000
Total Trihalomethanes	[100] 80
[1,2,4 – Trichlorobenzene]	[70]
1,1,1-Trichloroethane	200
1,1,2-Trichloroethane	5
Trichloroethylene	5
Vinyl Chloride	2
Polycyclic Aromatic Hydrocarbons (PAHs)	
Benzo(a)Pyrene	0.2
Other Compounds	
Asbestos	7 million fibers/L
Bis(2-Ethylhexyl) Phthalate	6
Fluoride	4,000
Nitrate	10,000
Pentachlorophenol	1
Dioxin (2,3,7,8-TCDD)	0.00003

TABLE 5: STREAM QUALITY OBJECTIVES FOR TOXIC POLLUTANTS FOR THE PROTECTION OF AQUATIC LIFE IN THE DELAWARE RIVER ESTUARY.

Parameter	Freshwater Objectives (µg/l)		Marine Objectives (µg/l)	
	Acute	Chronic	Acute	Chronic

Metals [(Values indicated are total recoverable; See Section 3.10.3.C.2. for form of metal)]				
Aluminum ^{a,b}	750	87	[-] NA	[-] NA
Arsenic (trivalent) ^c	[360] 340	[190] 150	69	36
Cadmium ^c	$[e^{(1.128 \cdot \text{LN}(\text{Hardness}) - 3.828)}]$ 0.651*EXP(1.0166* LN(hardness)-3.924)	$[e^{(0.7852 \cdot \text{LN}(\text{Hardness}) - 3.49)}]$ 0.651*EXP(0.7409* LN(hardness)-4.719)	[43] 40	[9.3] 8.8
Chromium (trivalent) ^c	$[e^{(0.8190 \cdot \text{LN}(\text{Hardness}) + 3.688)}]$ 0.277*EXP(0.819* LN(hardness)+3.7256)	$[e^{(0.8190 \cdot \text{LN}(\text{Hardness}) + 1.561)}]$ 0.277*EXP(0.819* LN(hardness)+0.6848)	[-] NA	[-] NA
Chromium (hexavalent) ^c	16	11	1,100	50
Copper ^c	$[e^{(0.9422 \cdot \text{LN}(\text{Hardness}) - 1.464)}]$ 0.908*EXP(0.9422* LN(hardness)-1.7)	$[e^{(0.8545 \cdot \text{LN}(\text{Hardness}) - 1.465)}]$ 0.908*EXP(0.8545* LN(hardness)-1.702)	[5.3] 4.8	[3.4] 3.1
Lead ^c	[48] 38	[16] 5.4	[220] 210	[8.5] NA
Mercury ^c	[2.4] 1.4	[0.012] 0.77	[2.1] 1.8	[0.025] 0.94
Nickel ^c	$[e^{(0.846 \cdot \text{LN}(\text{Hardness}) + 3.3612)}]$ 0.846*EXP(0.846* LN(hardness)+2.255)	$[e^{(0.846 \cdot \text{LN}(\text{Hardness}) + 1.1645)}]$ 0.846*EXP(0.846* LN(hardness)+0.0584)	[75] 64	[8.3] 22
Selenium ^a	20	5.0	[300] 290	71
Silver ^c	$[e^{(1.72 \cdot \text{LN}(\text{Hardness}) - 6.52)}]$ 0.85*EXP(1.72* LN(hardness)-6.59)	[-] NA	[2.3] 1.9	[-] NA
Zinc ^c	$[e^{(0.8473 \cdot \text{LN}(\text{Hardness}) + 0.8604)}]$ 0.95*EXP(0.8473* LN(hardness)+0.884)	$[e^{(0.8473 \cdot \text{LN}(\text{Hardness}) + 0.7614)}]$ 0.95*EXP(0.8473* LN(hardness)+0.884)	[95] 90	[86] 81
Pesticides/PCBs				
Aldrin	[1.5] 3	[-] NA	[0.65] 1.3	[-] NA
gamma - BHC (Lindane)	[1.0] 0.95	[0.08] NA	[0.08] 0.16	[-] NA
Chlordane	[1.2] 2.4	0.0043	[0.045] 0.09	0.004
Chlorpyrifos (Dursban)	0.083	0.041	0.011	0.0056
DDT and metabolites (DDE & DDD) ^d	[0.55] 1.1	0.001	[0.065] 0.13	0.001
Dieldrin	[1.25] 0.24	[0.0019] 0.056	[0.355] 0.71	0.0019

Endosulfan ^e		[0.11] 0.22	0.056	[0.017] 0.034	0.0087
Endrin		[0.09] 0.086	[0.0023] 0.036	[0.019] 0.037	0.0023
Heptachlor		[0.26] 0.52	0.0038	[0.027] 0.053	0.0036
Heptachlor Epoxide		0.52	0.0038	0.053	0.0036
Parathion		0.065	0.013	[-] NA	[-] NA
PCBs (Total)		1.0	0.014	5.0	0.03
Toxaphene		0.73	0.0002	0.21	0.0002
Other Compounds					
Cyanide (free) [(total)]		22	5.2	[1.0] 2.7	[-] 1
Pentachlorophenol		e ^(1.005*pH-4.83)	e ^(1.005*pH-5.29)	13	7.9
Indicator Parameters					
Whole Effluent Toxicity		0.3 Toxic Units _{acute}	1.0 Toxic Units _{chronic}	0.3 TU _a	1.0 TU _c

Footnotes to Table 5:

^a Total recoverable criteria

^b Aluminum criteria listed are restricted to waters with pH between 6.5 and 9.0.

^c Dissolved criteria

^d Criteria apply to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).

^e Values were derived from data for endosulfan and are most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.

Criteria for cadmium, chromium (trivalent), copper, nickel, silver and zinc are hardness-dependent and are expressed as the dissolved form (see Section 3.10.3.C.2. on form of metal).

TABLE 6: STREAM QUALITY OBJECTIVES FOR CARCINOGENS FOR THE DELAWARE RIVER ESTUARY.

PARAMETER	EPA class	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
		FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Metals				
Arsenic	A	0.017	0.061	0.061

[Beryllium]		[0.00767]	[0.132]	[0.0232]
Pesticides/PCBs				
Aldrin	B2	[0.00189] 0.000049	[0.0226] 0.000050	[0.00397] 0.000050
alpha – BHC	B2	[0.00391] 0.0026	[0.0132] 0.0049	[0.00231] 0.0049
beta – BHC	C	0.0091	0.017	0.017
Chlordane	B2	[0.000575] 0.00080	[0.000588] 0.00081	[0.000104] 0.00081
DDD	B2	[0.00423] 0.00031	[0.00436] 0.00031	[0.000765] 0.00031
DDE	B2	[0.00554] 0.00022	[0.00585] 0.00022	[0.00103] 0.00022
DDT	B2	[0.000588] 0.00022	[0.000591] 0.00022	[0.000104] 0.00022
Dieldrin	B2	[0.000135] 0.000052	[0.000144] 0.000054	[0.0000253] 0.000054
Heptachlor	B2	[0.000208] 0.000079	[0.000214] 0.000079	[0.0000375] 0.000079
Heptachlor Epoxide	B2	[0.000198] 0.000039	[0.000208] 0.000039	[0.0000366] 0.000039
PCBs (Total)	B2	0.0000444	0.0000448	0.0000079
Toxaphene	B2	[0.000730] 0.00028	[0.000747] 0.00028	[0.000131] 0.00028
Volatile Organic Compounds (VOCs)				
Acrylonitrile	B1	[0.0591] 0.051	[0.665] 0.25	[0.117] 0.25
Benzene	A	[1.19] 0.61	[71.3] 14	[12.5] 14
Benzidine	A	[0.000118] 0.000086	[0.000535] 0.00020	[0.000094] 0.00020
Bromoform	B2	[4.31] 4.3	[164.0] 140	[28.9] 140
Bromodichloromethane	B2	[0.559] 0.55	[55.7] 17	[9.78] 17
Carbon Tetrachloride	B2	[0.254] 0.23	[4.42] 1.6	[0.776] 1.6
Chlorodibromomethane	C	[0.411] 0.40	[27.8] 13	[4.88] 13
Chloroform	B2	[5.67] 5.7	[471.0] 470	[82.7] 470
3,3 - Dichlorobenzidine	B2	[0.0386] 0.021	[0.0767] 0.028	[0.0135] 0.028
1,2 - Dichloroethane	B2	[0.383] 0.38	[98.6] 37	[17.3] 37
[1,1 – Dichloroethene]	C	[0.0573]	[3.20]	[0.562]

1,2 - Dichloropropane	B2	0.50	15	15
1,3 - Dichloropropene	B2	[87.0] 0.34	[14.1] 21	[2.48] 21
Dichloromethane (Methylene chloride)	B2	[4.65] 5	[1,580] 590	[277] 590
[Tetrachloroethene] Tetrachloroethylene	B2	[0.80] 0.69	[8.85] 3.3	[1.55] 3.3
[1,1,1,2 – Tetrachloroethane]	C	[1.29]	[29.3]	[5.15]
1,1,2,2 - Tetrachloroethane	C	[0.172] 0.17	[10.8] 4.0	[1.89] 4.0
1,1,2 - Trichloroethane	C	[0.605] 0.59	[41.6] 16	[7.31] 16
[Trichloroethene] Trichloroethylene	B2	[2.70] 2.5	[80.7] 30	[14.2] 30
Vinyl Chloride	A	[2.00] 0.025	[525.0] 2.4	[92.9] 2.4
Polycyclic Aromatic Hydrocarbons (PAHs)				
Benz[a]anthracene	B2	[0.00171] 0.0038	[0.00177] 0.18	[0.00031] 0.18
Benzo[b]fluoranthene	B2	[0.000455] 0.038	[0.000460] 0.18	[0.000081]0.18
Benzo[k]fluoranthene	B2	[0.000280] 0.38	[0.000282] 1.8	[0.000049] 1.8
Benzo[a]pyrene	B2	[0.0000644] 0.0038	[0.0000653] 0.018	[0.0000115] 0.018
Chrysene	B2	[0.0214] 3.8	[0.0224] 18	[0.00394] 18
Dibenz[a,h]anthracene	B2	[0.0000552] 0.0038	[0.0000559] 0.018	[0.0000098] 0.018
Indeno[1,2,3-cd]pyrene	B2	[0.0000576] 0.038	[0.0000576] 0.18	[0.0000101] 0.18
Other Compounds				
Bis (2-chloroethyl) ether	B2	[0.0311] 0.03	[1.42] 0.53	[0.249] 0.53
Bis (2-ethylhexyl) phthalate	B2	[1.76] 1.2	[5.92] 2.2	[1.04] 2.2
[Dinitrotoluene mixture (2,4 & 2,6)] 2,4 - Dinitrotoluene	B2	[17.3] 0.11	[1420] 3.4	[249] 3.4
1,2 - Diphenylhydrazine	B2	[0.0405] 0.036	[0.541] 0.2	[0.095] 0.2
Hexachlorobenzene	B2	[0.000748] 0.00028	[0.000775] 0.00029	[0.000136] 0.00029
Hexachlorobutadiene	C	[0.445] 0.44	[49.7] 18	[8.72] 18
Hexachloroethane	C	[1.95] 1.4	[8.85] 3.3	[1.56] 3.3

Isophorone	B2	[36.3] 35	[2590] 960	[455] 960
N-Nitrosodi-N-butylamine	B2	0.0063	14	14
N-Nitrosodi-N-methylamine	B2	[0.000686] 0.00069	[8.12] 3.0	[1.43] 3.0
N-Nitrosodiethylamine	B2	0.0008	1.24	1.24
N-Nitrosodi-N-phenylamine	B2	[4.95] 3.3	[16.2] 6	[2.84] 6
N-Nitrosodi-N-propylamine	B2	[0.00498] 0.0050	[1.51] 0.51	[0.265] 0.51
N-Nitrosopyrrolidine	B2	0.016	34	34
Pentachlorophenol	B2	[0.282] 0.27	[8.16] 3.0	[1.43] 3.0
Dioxin (2,3,7,8 – TCDD)	NA	[1.3 x 10 ⁻⁸] 0.000000005	[1.4 x 10 ⁻⁸] 0.0000000051	[2.4 x 10 ⁻⁹] 0.0000000051
2,4,6 - Trichlorophenol	B2	[2.14] 1.4	[6.53] 2.4	[1.15] 2.4

TABLE 7: STREAM QUALITY OBJECTIVES FOR SYSTEMIC TOXICANTS FOR THE DELAWARE RIVER ESTUARY

PARAMETER	[EPA Class]	FRESHWATER OBJECTIVES (µg/l)		MARINE OBJECTIVES (µg/l)
		FISH & WATER INGESTION	FISH INGESTION ONLY	FISH INGESTION ONLY
Metals				
Antimony		[14.0] 5.6	[4,310] 640	[757] 640
Arsenic	[A]	[9.19] *	[73.4] NA	[12.9] NA
Beryllium	[B2]	[165] *	[2,830] 42	[498] 42
Cadmium		[14.5] 3.4	[84.1] 16	[14.8] 16
Chromium (trivalent)		[33,000] *	[673,000] 380,000	[118,000] 380,000
[Hexavalent] Chromium (hexavalent)	[A]	[166] 92	[3,370] NA	[591] NA
Chromium (Total)		NA	750	750
Mercury		[0.144] 0.050	[0.144] 0.051	[0.144] 0.051
Methylmercury		0.3 mg/kg fish tissue	0.3 mg/kg fish tissue	0.3 mg/kg fish tissue

Nickel		[607] 500	[4,580] 1,700	[805] 1,700
Selenium		[100] 170	[2,020] 4,200	[355] 4,200
Silver		[175] 170	[108,000] 40,000	[18,900] 40,000
Thallium		[1.70] 0.24	[6.20] 0.47	[1.10] 0.47
Zinc		[9110] 7,400	[68700] 26,000	[12100] 26,000
Pesticides/PCBs				
Aldrin	[B2]	[0.96] 0.025	[11.5] 0.025	[2.03] 0.025
gamma - BHC (Lindane)		[7.38] 0.98	[24.9] 1.8	[4.37] 1.8
Chlordane	[B2]	[0.0448] 0.14	[0.0458] 0.14	[0.00805] 0.14
DDT and Metabolites (DDD and DDE)	[B2]	[0.100] 0.037	[0.100] 0.037	[0.0176] 0.037
Dieldrin	[B2]	[0.108] 0.041	[0.115] 0.043	[0.020] 0.043
[Endosulfan]		[111]	[239]	[42.0]
alpha -Endosulfan		62	89	89
Beta- Endosulfan		62	89	89
Endosulfan Sulfate		62	89	89
Endrin	[D]	[0.755] 0.059	[0.814] 0.060	[0.143] 0.060
Endrin Aldehyde		0.29	0.30	0.30
Heptachlor	[B2]	[0.337] 0.18	[0.344] 0.18	[0.060] 0.18
Heptachlor Epoxide	[B2]	[0.0234] 0.0046	[0.0246] 0.0046	[0.00433] 0.0046
Total PCBs	[B2]	0.00839	0.00849	0.00149
Volatile Organic Compounds (VOCs)				
Acrolein		[320] 6.1	[780] 9.3	[137] 9.3
Benzene		*	3,100	3,100
Bromoform	[B2]	[682] 650	[25,900] 9,600	[4,560] 9,600
Bromodichloromethane	[B2]	[693] 680	[69,000] NA	[12,100] NA
Dibromochloromethane	[C]	[690] 680	[46,600] 21,000	[8,190] 21,000
Carbon Tetrachloride	[B2]	[23.1] *	[402] 150	[70.6] 150
Chloroform	[B2]	[346] 68	[28,700] 2,100	[5,050] 2,100
Chlorobenzene	[D]	[677] 130	[20,900] 1,600	[3,670] 1,600

[1,1 – Dichloroethene] 1,1 - Dichloroethylene	[C]	[309] *	[17,300] 7,100	[3,040] 7,100
[1,2 - trans – Dichloroethene] 1,2 - trans - Dichloroethylene		[696] 140	[136,000] 10,000	[23,900] 10,000
1,3 - Dichloropropene	[B2]	[10.4] 1,000	[1,690] 63,000	[297] 63,000
Ethylbenzene		[3,120] 530	[28,700] 2,100	[5,050] 2,100
Methyl Bromide		[49.0] 47	[N/A] 1,500	[N/A] 1,500
Methylene Chloride	[B2]	[2,090] *	[710,000] 260,000	[125,000] 260,000
1,1,2 – Trichloroethane	[C]	[138] *	[9,490] 3,600	[1,670] 3,600
[Tetrachloroethene] Tetrachloroethylene		[318] *	[3,520] 1,300	[618] 1,300
[1,1,1,2 – Tetrachloroethane]	[C]	[1,000]	[22,400]	[3,940]
Toluene		[6,760] 1,300	[201,000] 15,000	[35,400] 15,000
Polycyclic Aromatic Hydrocarbons (PAHs)				
Anthracene	[D]	[4,110] 8,300	[6,760] 40,000	[1,190] 40,000
Fluoranthene		[296] 130	[375] 140	[65.8] 140
Fluorene	[D]	[730] 1,100	[1,530] 5,300	[268] 5,300
Pyrene	[D]	[228] 830	[291] 4,000	[51.1] 4,000
Other Compounds				
Acenaphthene		[1,180] 670	[2,670] 990	[469] 990
Benzidine	[A]	[81.8] 59	[369] 140	[64.9] 140
Bis (2-chloroisopropyl) ether		[1,390] 1,400	[174,000] 65,000	[30,600] 65,000
Bis (2-ethylhexyl) phthalate	[B2]	[492] *	[1,660] 620	[291] 620
Butylbenzyl phthalate	[C]	[298] 1,500	[520] 1,900	[91.4] 1,900
2 - Chloronaphthalene		1,000	1,600	1,600
2 - Chlorophenol		[122] 81	[402] 150	[70.6] 150
Cyanide		140	140	140
Dibutyl Phthalate	[D]	[2,710] 2,000	[12,100] 4,500	[2,130] 4,500
1,2 - Dichlorobenzene	[D]	[2,670] 420	[17,400] 1,300	[3,060] 1,300
1,3 - Dichlorobenzene	[D]	[414] 420	[3,510] 1,300	[617] 1,300
1,4 - Dichlorobenzene		[419] 63	[3,870] 190	[677] 190

2,4 - Dichlorophenol		[92.7] 77	[794] 290	[139] 290
Diethyl Phthalate	[D]	[22,600] 17,000	[118,000] 44,000	[20,700] 44,000
Dimethyl Phthalate	[D]	[313,000] 270,000	[2,990,000] 1,100,000	[526,000] 1,100,000
2,4 - Dimethylphenol		[536] 380	[2,300] 850	[403] 850
2,4 - Dinitrophenol		[70] 69	[14,300] 5,300	[2,500] 5,300
2,4 - Dinitrotoluene		[69.2] 68	[5670] 2,100	[996] 2,100
Hexachlorobenzene	[B2]	[0.958] 0.35	[0.991] 0.36	[0.174] 0.36
[Hexachlorobutadiene]	[C]	[69.4]	[7,750]	[1,360]
Hexachlorocyclopentadiene		[242] 40	[17,400] 1,100	[3,050] 1,100
Hexachloroethane	[C]	[27.3] 20	[124] 46	[21.7] 46
Isophorone	[C]	[6,900] 6,700	[492,000] 180,000	[86,400] 180,000
2-Methyl-4,6-dinitrophenol		13	280	280
Nitrobenzene	[D]	[17.3] 17	[1,860] 690	[327] 690
Pentachlorobenzene		1.4	1.5	1.5
Pentachlorophenol		[1,010] *	[29,400] 11,000	[5,160] 11,000
Phenol		[20,900] 10,000	[4,620,000] 860,000	[811,000] 860,000
1,2,4,5-Tetrachlorobenzene		0.97	1.1	1.1
1,2,4 - Trichlorobenzene	[D]	[255] 35	[945] 70	[166] 70
2,4,5-Trichlorophenol		1,800	3,600	3,600
Vinyl Chloride		*	10,000	10,000

* The MCL for this compound applies in Zones 2 and 3 and is listed in Table 3. Objectives for "Fish Ingestion Only" listed for this compound apply in Zones 4, 5, and 6.

3.30.6 Zone 6.

[Add the following text immediately following sub-section 3.30.6 C.10. and preceding sub-section 3.30.6 D.]

11. Toxic Pollutants.

a. Applicable criteria to protect the taste and odor of ingested water and fish are presented in Table 4.

b. Applicable freshwater stream quality objectives for the protection of aquatic life are presented in Table 5.

c. Applicable freshwater stream quality objectives for the protection of human health are presented in Tables 6 and 7.

Dated: July 8, 2010

PAMELA M. BUSH, ESQ.
Commission Secretary

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