UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Ms. Jutta Schneider, Director
Water Planning Division
Virginia Department of Environmental Quality
1111 East Main Street, Suite 1400
Richmond, Virginia 23219

OCT 18 2019

Dear Ms. Schneider:

The U.S. Environmental Protection Agency (EPA) has completed its review of the new or revised provisions of the Virginia Water Quality Standards (WQS) regulations at 9 VAC 25-260. Sections 140 and 170 include revisions to bacteria criteria for human health protection in recreation waters, revisions to cadmium criteria for the protection of aquatic life, and updates for 94 human health criteria. Virginia adopted the WQS revisions on June 24, 2019 and the Virginia Office of Attorney General certified the revisions as duly adopted in accordance with Virginia law in a letter dated July 31, 2019. The EPA received this package on September 4, 2019.

The EPA's review of each revision is discussed in the enclosed decision document. Based on EPA's review of the submission and supporting documentation, EPA finds that the new or revised WQS provisions adopted by Virginia are consistent with CWA Section 303(c) and its implementing regulations at 40 CFR Part 131. The decision document also lists a number of new or revised provisions that EPA is not approving as part of this action, because EPA does not consider those provisions to be new or revised WQS subject to review under CWA Section 303(c).

Under Section 7 of the Endangered Species Act (ESA), 42 U.S.C. §1536, EPA has the obligation to ensure that the Agency's approval of these modifications to the State's aquatic life WQS regulations will not jeopardize the continued existence of Federally-listed threatened and endangered species and their critical habitat in Virginia. To fulfill our obligation, EPA prepared a biological evaluation of the revised cadmium criteria for the protection of aquatic life provision of Virginia's regulation and concluded that our approval is not likely to adversely affect listed species and their critical habitat. The U.S. Fish and Wildlife Service concurred with this conclusion on October 19, 2018, and the National Marine Fisheries Service on October 23, 2018.

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If you have any questions regarding this action, please do not hesitate to contact me or have your staff contact Cheryl Atkinson, at 215-814-3392.

Sincerely,

Catherine A. Libertz, Director
Water Division

Enclosure

cc: John Kennedy, DEQ

Enclosure
Decision Document

Revisions to Virginia's Water Quality Standards

Table 1A Bacteria Criteria: 9VAC25-260-170. Bacteria; Other Recreational Waters.	
Revisions are strikethrough for deletion and underline for additions.	**EPA Action Rationale**
9VAC25-260-170. Bacteria; other recreational waters. A. The following bacteria criteria (~~colony forming units (CFU)~~ counts/100 ml) shall apply to protect primary contact recreational uses in surface waters, except waters identified in subsection B of this section: In freshwater, E.coli bacteria shall not exceed a ~~monthly~~ geometric mean of 126 ~~CFU~~ counts/100 ml ~~in freshwater~~ and shall not have greater than a ten percent excursion frequency of a Statistical Threshold Value (STV) of 410 counts/100 ml, both in an assessment period of up to 90-days. In transition and saltwater, Enterococci bacteria shall not exceed a ~~monthly~~ geometric mean of 35 ~~CFU~~ counts/100 ml ~~in transition and saltwater~~ and shall not have greater than a ten percent excursion frequency of a Statistical Threshold Value (STV) of 130 counts/100 ml, both in an assessment period of up to 90-days.	EPA finds Virginia's updates to its geometric mean (GM) and a statistical threshold value (STV) to its bacteria criteria consistent with EPA's 2012 National Recommended Water Quality Criteria. EPA is approving pursuant to Section 303(c) of the Clean Water Act. In 2012, EPA published recommended water quality bacteria criteria for protection of recreational use (swimming). These updated criteria rely on the latest research and science. EPA considers a duration of up to 90 days to represent an acceptable critical exposure period to protect recreational uses for the following reasons. The epidemiological studies used to develop the 2012 criteria recommendations were conducted over exposure periods of up to 90 days, thus durations up to 90 days are scientifically defensible. For more information and supporting documents visit EPA's website at https://www.epa.gov/wqc/microbial-pathogenrecreational-water-quality-criteria.
~~A2. Geometric means shall be calculated using all data collected during any calendar month with a minimum of four weekly samples.~~	In applying protective bacteria criteria, the States have discretion in deciding how to apply the averaging period for the geometric mean. See 69 Fed. Reg, 67218, 67224 (Nov. 16, 2004). It is within the State's discretion to delete.
~~A3. If there are insufficient data to calculate monthly geometric means in freshwater, no more than 10% of the total samples in the assessment period shall exceed 235 E. coli CFU/100 ml.~~	Data sufficiency determinations are not water quality standards and therefore EPA takes no action on this provision.

~~A4. If there are insufficient data to calculate monthly geometric means in transition and saltwater, no more than 10% of the total samples in the assessment period shall exceed enterococci 104 CFU/100 ml.~~	Data sufficiency determinations are not water quality standards and therefore EPA takes no action on this provision.
~~A5. For beach advisories or closures, a single sample maximum of 235 E. coli CFU/100 ml in freshwater and a single sample maximum of 104 enterococci CFU/100 ml in saltwater and transition zones shall apply~~	The 1986 bacteria criteria document included four single sample maximum (SSM) values appropriate for different levels of beach usage (use intensities). In the 2012 National Recommended Water Quality Criteria, EPA removed those recommendations and instead provided states with optional, precautionary BAVs for use in monitoring and notification programs. It is within the State's discretion to delete.
A2. In VPDES discharges to freshwater, bacteria in effluent requiring disinfection shall not exceed a monthly geometric mean of E. coli bacteria of 126 counts/100ml. Alternative performance standards may be established where an approved Long-Term Control Plan establishes an alternative level of disinfection for a combined sewer system. In VPDES discharges to transition and saltwater, bacteria in effluent requiring disinfection shall not exceed a monthly geometric mean of enterococci bacteria of 35 counts/100ml.	EPA understands that this addition is the VADEQ's effort to address frequency of bacterial effluent monitoring at permitted discharges requiring disinfection and is a permitting policy element. EPA is not acting on this revision as it is a permitting provision and not a water quality standard under CWA 303(c).

Table 1B Cadmium Criteria: 9VAC25-260-140. Criteria for Surface Water.
EPA Action Rationale: In 2016, the EPA published revised recommended criteria for cadmium for the protection of aquatic life. For information see EPA's aquatic life criteria website at: http://www.epa.gov/wqc/aquatic-life-criteria-cadmium. Virginia's amendment to its cadmium criteria for the protection of fresh and saltwater aquatic life is consistent with the 2016 EPA national recommended water quality criteria for cadmium. EPA is approving Virginia's amendment to its cadmium criteria pursuant to Section 303(c) of the Clean Water Act.

Parameter CAS Number	**Revisions are strikethrough for deletion and underline for additions.**			
	AQUATIC LIFE			
	FRESHWATER		SALTWATER	
	Acute [1]	Chronic[2]	Acute [1]	Chronic[2]
Cadmium (µg/l) 7440439 Freshwater values are a function of total hardness as calcium carbonate (CaCO3) mg/l and the WER. The minimum hardness allowed for use in the equation below shall be 25 and the maximum hardness shall be 400 even when the actual ambient hardness is less than 25 or greater than 400. Freshwater acute criterion (µg/l) WER ~~e {1.128[ln(hardness)] - 3.828}~~ e (0.9789[ln(hardness)]-3.866) (CFa) Freshwater chronic criterion (µg/l) WER ~~[e {0.7852[ln(hardness)] - 3.490}]~~ e (0.7977[ln(hardness)]-3.909) (CFc) WER = Water Effect Ratio = 1 unless determined otherwise under 9VAC25- 260-140 F e = natural antilogarithm ln = natural logarithm CF = conversion factor a (acute) or c (chronic) CFa = 1.136672-[(ln hardness)(0.041838)] CFc = 1.101672-[(ln hardness)(0.041838)]	~~3.9~~ 1.8 CaCO3 = 100	~~1.1~~ 0.72 CaCO3 = 100	~~40~~ 33 X WER	~~8.8~~ 7.9 X WER

1One hour average concentration not to be exceeded more than once every 3 years on the average, unless otherwise noted.
2 Four-day average concentration not to be exceeded more than once every 3 years on the average, unless otherwise noted.

Table 1C Human Health Criteria: 9VAC25-260-140. Criteria for Surface Water.

In 2015, EPA published updated ambient water quality criteria for the protection of human health for 94 chemical pollutants. These updated recommendations reflect the latest scientific information and EPA policies, including updated body weight, drinking water consumption rate, fish consumption rate, bioaccumulation factors, health toxicity values, and relative source contributions. For more information and supporting documents visit EPA's website at: http://water.epa.gov/scitech/swguidance/standards/criteria/health/. Virginia adopted amended criteria for the 94 updated human health parameters at the levels recommended by EPA. EPA finds Virginia's updates to its human health criteria consistent with EPA's National Recommended Water Quality Criteria. EPA is approving Virginia's amended criteria for the 94 updated human health parameters pursuant to Section 303(c) of the Clean Water Act.

Parameter CAS Number	**Revisions are strikethrough to for deletion and underline for additions.**	
	Public Water Supply (µg/l)[1]	**All Other Surface Waters (µg/l)[2]**
Acenapthene 83329	~~670~~ 70	~~990~~ 90
Acrolein 107028	~~6.1~~ 3	~~9.3~~ 400
Acrylonitrile 107131 *	~~0.51~~ 0.61	~~2.5~~ 70
Aldrin 309002	~~0.00049~~ 0.0000077	~~0.00050~~ 0.0000077
Anthracene 120127	~~8,300~~ 300	~~40,000~~ 400
Benzene 71432 *	~~22~~ 5.8	~~510~~ 160
Benzidine 92875 *	~~0.00086~~ 0.0014	~~0.0020~~ 0.11
*Benzo (a) anthracene 56553 *	~~0.038~~ 0.012	~~0.18~~ 0.013
Benzo (b) fluoranthene 205992 *	~~0.038~~ 0.012	~~0.18~~ 0.013
Benzo (k) fluoranthene 20708 *	~~0.038~~ 0.12	~~0.18~~ 0.13
Benzo (a) pyrene 50328 *	~~0.038~~ 0.0012	~~0.18~~ 0.0013
Bis2-Chloroethyl Ether 111444 *	0.30	~~5.3~~ 22
Bis (chloromethyl) Ether 542881 *	0.0015	0.17
Bis2-Chloroisopropyl Ether (Bis (2-Chloro-1-methylethyl) Ether) 108601	~~1,400~~ 200	~~65,000~~ 4,000
Bis2-Ethylhexyl Phthalate 117817 *	~~12~~ 3.2	~~22~~ 3.7
Bromoform 75252 *	~~43~~ 70	~~1,400~~ 1,200
Butyl benzyl phthalate 85687	~~1,500~~ 1.0	~~1,900~~ 1.0
Carbon tetrachloride 56235 *	~~2.3~~ 4.0	~~16~~ 50
Chlordane 57749 *	~~0.0080~~ 0.0031	~~0.0081~~ 0.0032
Chlorobenzene 108907	~~130~~ 100	~~1,600~~ 800

[1] Virginia Human Health Public Water Supply criteria have been calculated to protect human health from toxic effects through drinking water and fish consumption, unless otherwise noted and apply in segments designated as PWS in 9VAC25-260-390 through 9VAC25-260-540.

[2] Virginia Human Health All Other Surface Waters criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted and apply in all other surface waters not designated as PWS in 9VAC25-260-390 through 9VAC25-260-540

* Known or suspected carcinogen; human health criteria at risk level 10-5

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Chlorodibromomethane 124481 *	~~4.0~~ 8.0	~~130~~ 210
Chloroform 67663	~~340~~ 60	~~11,000~~ 2,000
2-Chloronaphthalene 91587	~~1,000~~ 800	~~1,600~~ 1,000
2-Chlorophenol (µg/l) 95578	~~81~~ 30	~~150~~ 800
Chrysene 218019 *	~~0.0038~~ 1.2	~~0.018~~ 1.3
Cyanide, Free (ug/l) 57125	~~140~~ 4	~~16,000~~ 400
DDD (µg/l) 72548 *	~~0.0031~~ 0.0012	~~0.0031~~ 0.0012
DDE (µg/l) 72559 *	~~0.0022~~ 0.00018	~~0.0022~~ 0.00018
DDT 50293 *	~~0.0022~~ 0.00030	~~0.0022~~ 0.00030
Dibenz (a, h) anthracene 53703 *	~~0.038~~ 0.0012	~~0.18~~ 0.0013
1,2–Dichlorobenzene 95501	~~420~~ 1,000	~~1,300~~ 3,000
1,3– Dichlorobenzene 541731	~~320~~ 7	~~960~~ 10
1,4 Dichlorobenzene 106467	~~63~~ 300	~~190~~ 900
3,3 Dichlorobenzidine 91941 *	~~0.21~~ 0.49	~~0.28~~ 1.5
Dichlorobromomethane 75274 *	~~5.5~~ 9.5	~~170~~ 270
1,2 Dichloroethane (µg/l) 107062 *	~~3.8~~ 99	~~370~~ 6,500
1,1 Dichloroethylene 75354	~~330~~ 300	~~7,100~~ 20,000
1,2-trans-dichloroethylene (µg/l) 156605	~~140~~ 100	~~10,000~~ 4,000
2,4 Dichlorophenol 120832	~~77~~ 10	~~290~~ 60
2,4 Dichlorophenoxy acetic acid (Chlorophenoxy Herbicide) (2,4-D) 94757	~~100~~ 1,300	12,000
1,2-Dichloropropane 78875 *	~~5.0~~ 9.0	~~150~~ 310
1,3-Dichloropropene 542756 *	~~3.4~~ 2.7	~~240~~ 120
Dieldrin 60571 *	~~0.00052~~ 0.00001	~~0.00054~~ 0.000012
Diethyl Phthalate 84662	~~17,000~~ 600	~~44,000~~ 600
2,4 Dimethylphenol 105679	~~380~~ 100	~~850~~ 3,000
Dimethyl Phthalate 131113	~~270,000~~ 2,000	~~1,100,000~~ 2,000
Di-n-Butyl Phthalate 84742	~~2,000~~ 20	~~4,500~~ 30
2,4 Dinitrophenol 51285	~~69~~ 10	~~5,300~~ 300
Dinitrophenols 25550587	10	1,000
2-Methyl-4,6-Dinitrophenol 534521	~~13~~ 2	~~280~~ 30
2,4 Dinitrotoluene 121142 *	~~1.1~~ 0.49	~~34~~ 17
1,2-Diphenylhydrazine (µg/l) 122667 *	~~0.36~~ 0.3	2.0
Alpha-Endosulfan 959988	~~62~~ 20	~~89~~ 30
Beta-Endosulfan (µg/l) 33213659	~~62~~ 20	~~89~~ 40
Endosulfan Sulfate (µg/l) 1031078	~~62~~ 20	~~89~~ 40
Endrin (µg/l) 72208	~~0.059~~ 0.03	~~0.060~~ 0.03
Endrin Aldehyde (µg/l) 7421934	~~0.29~~ 1	~~0.30~~ 1
Ethylbenzene 100414	~~530~~ 68	~~2,100~~ 130
Fluoranthene 206440	~~130~~ 20	~~140~~ 20
Fluorene 86737	~~1,100~~ 50	~~5,300~~ 70
Heptachlor 76448 *	~~0.00079~~ 0.000059	~~0.00079~~ 0.000059
Heptachlor Epoxide 1024573 *	~~0.00039~~ 0.00032	~~0.00039~~ 0.00032

Hexachlorobenzene 118741 *	~~0.0028~~ 0.00079	~~0.0029~~ 0.00079
Hexachlorobutadiene 87683 *	~~4.4~~ 0.1	~~180~~ 0.1
Hexachlorocyclohexane Alpha-BHC 319846 *	~~0.026~~ 0.0036	~~0.049~~ 0.0039
Hexachlorocyclohexane Beta-BHC 319857 *	~~0.091~~ 0.080	~~0.17~~ 0.14
Hexachlorocyclohexane (Lindane) Gamma-BHC 58899 ~~Known or suspected carcinogen; human health criteria at risk level 10^{-5}.~~	~~0.98~~ 4.2	~~1.8~~ 4.4
Hexachlorocyclohexane (HCH)-Technical 608731 *	0.066	0.1
Hexachlorocyclopentadiene 77474	~~40~~ 4	~~1,100~~ 4
Hexachloroethane 67721 *	~~14~~ 1	~~33~~ 1
Indeno (1,2,3,-cd) pyrene 193395 *	~~0.038~~ 0.012	~~0.18~~ 0.013
Isophorone 78591 *	~~350~~ 340	~~9,600~~ 18,000
Methyl Bromide 74839	~~47~~ 100	~~1,500~~ 10,000
3-Methyl-4-Chlorophenol 59507	500	2,000
Methylene Chloride 75092 *	~~46~~ 20	~~5,900~~ 1,000
Methoxychlor 72435	~~100~~ 0.02	0.02
Nitrobenzene 98953	~~17~~ 10	~~690~~ 600
Pentachlorobenzene 608935	0.1	0.1
Pentachlorophenol 87865 *	~~2.7~~ 0.3	~~30~~ 0.4
Phenol 108952	~~10,000~~ 4,000	~~860,000~~ 300,000
Pyrene 129000	~~830~~ 20	~~4,000~~ 30
1,2,4,5-Tetrachlorobenzene 95943	0.03	0.03
1,1,2,2-Tetrachloroethane 79345 *	~~1.7~~ 2.0	~~40~~ 30
Tetrachloroethylene 127184 *	~~6.9~~ 100	~~33~~ 290
Toluene 108883	~~510~~ 57	~~6,000~~ 520
Toxaphene 8001352 *	~~0.0028~~ 0.0070	~~0.0028~~ 0.0071
1, 2, 4 Trichlorobenzene 120821 *	~~35~~ 0.71	~~70~~ 0.76
1,1,1-Trichloroethane 71556	10,000	200,000
1,1,2-Trichloroethane 79005 *	~~5.9~~ 5.5	~~160~~ 89
Trichloroethylene 79016 *	~~25~~ 6.0	~~300~~ 70
2, 4, 5 –Trichlorophenol 95954	600	600
2, 4, 6 –Trichlorophenol 88062 *	~~14~~ 15	~~24~~ 28
2–(2, 4, 5 –Trichlorophenoxy propionic acid (Silvex) 93721	~~50~~ 100	400
Vinyl Chloride 75014 *	~~0.25~~ 0.22	~~24~~ 16