

1 ENERGY AND ENVIRONMENT CABINET

2 Department for Environmental Protection

3 Division of Water

4 (Amendment)

5 401 KAR 10:031. Surface water standards.

6 RELATES TO: KRS 146.200-146.360, 146.410-146.535, 146.550-146.570, 146.600-
7 146.619, 146.990, 224.1-010~~[224.01-010]~~, 224.1-400~~[224.01-400]~~, 224.16-050, 224.16-070,
8 224.70-100-224.70-140, 224.71-100-224.71-145, 224.73-100-224.73-120,

9 STATUTORY AUTHORITY: KRS 146.220, 146.241, 146.270, 146.410, 146.450,
10 146.460, 146.465, 224.10-100, 224.16-050, 224.16-060, 224.70-100, 224.70-110, 40 C.F.R. Part
11 131, 16 U.S.C. 1271-1287, 1531-1544, 33 U.S.C. 1311, 1313, 1314, 1341

12 NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100 requires the cabinet
13 to develop and conduct a comprehensive program for the management of water resources and to
14 provide for the prevention, abatement, and control of water pollution. This administrative
15 regulation and 401 KAR 10:001, 10:026, 10:029, and 10:030 establish procedures to protect the
16 surface waters of the Commonwealth, and thus protect water resources. This administrative
17 regulation establishes water quality standards that consist of designated legitimate uses of the
18 surface waters of the Commonwealth and the associated water quality criteria necessary to
19 protect those uses. These water quality standards are minimum requirements that apply to all
20 surface waters in the Commonwealth of Kentucky in order to maintain and protect them for
21 designated uses. These water quality standards are subject to periodic review and revision in

1 accordance with the Clean Water Act, 33 U.S.C. 1251-1387, 40 C.F.R. 131, and KRS Chapter
2 224.

3 Section 1. Nutrients Criterion. Nutrients shall not be elevated in a surface water to a level
4 that results in a eutrophication problem.

5 Section 2. Minimum Criteria Applicable to All Surface Waters. (1) The
6 ~~following~~ minimum water quality criteria established in this administrative regulation shall be
7 applicable to all surface waters including mixing zones, with the exception that toxicity to
8 aquatic life in mixing zones shall be subject to the provisions of 401 KAR 10:029, Section 4.
9 Surface waters shall not be aesthetically or otherwise degraded by substances that:

- 10 (a) Settle to form objectionable deposits;
- 11 (b) Float as debris, scum, oil, or other matter to form a nuisance;
- 12 (c) Produce objectionable color, odor, taste, or turbidity;
- 13 (d) Injure ~~or~~ are chronically or acutely toxic to or produce adverse physiological or
14 behavioral responses in humans, animals, fish, and other aquatic life;
- 15 (e) Produce undesirable aquatic life or result in the dominance of nuisance species; or
- 16 (f) ~~1.~~ Cause fish flesh tainting.

17 2. ~~2.~~ The concentration of phenol shall not exceed 300 µg/L as an instream value.

18 3. ~~2.~~ The water quality criteria for the protection of human health related to fish
19 consumption in Table 1 of Section 6 of this administrative regulation shall apply ~~are applicable~~
20 to all surface water at the edge of the assigned mixing zones except for those points where water
21 is withdrawn for domestic water supply use.

22 (a) The criteria are established to protect human health regarding ~~from~~ the consumption
23 of fish tissue ~~and~~ and shall not be exceeded.

1 (b) For those substances associated with a cancer risk, an acceptable risk level of not
2 more than one (1) additional cancer case in a population of 1,000,000 people, or 1×10^{-6} shall be
3 utilized to establish the allowable concentration.

4 Section 3. Use Designations and Associated Criteria. (1) Surface waters may be
5 designated as having one (1) or more legitimate uses established in 401 KAR 10:026 and
6 associated criteria protective of those uses. [~~Those uses are listed in 401 KAR 10:026.~~]Nothing
7 in this administrative regulation shall be construed to prohibit or impair the legitimate beneficial
8 uses of these waters. The criteria in Sections 2, 4, 6, and 7 of this administrative regulation
9 represent minimum conditions necessary to:

- 10 (a) Protect surface waters for the indicated use; and
- 11 (b) Protect human health regarding [~~from~~] fish consumption.

12 (2) On occasion, surface water quality may be outside of the limits established to protect
13 designated uses because of natural conditions. If this occurs during periods when stream flows
14 are below the flow that is used by the cabinet to establish effluent limitations for wastewater
15 treatment facilities, a discharger shall not be considered a contributor to instream violations of
16 water quality standards, if treatment results in compliance with permit requirements.

17 (3) Stream flows for water quality-based permits. The following stream flows shall be
18 utilized if deriving KPDES permit limitations to protect surface waters for the listed uses and
19 purposes:

- 20 (a) Aquatic life protection shall be $7Q_{10}$;
- 21 (b) Water-based recreation protection shall be $7Q_{10}$;
- 22 (c) Domestic water supply protection shall be determined at points of withdrawal as:
 - 23 1. The harmonic mean for cancer-linked substances; and

1 2. $7Q_{10}$ for noncancer-linked substances;

2 (d) Human health protection regarding [~~from~~]fish consumption and for changes in
3 radionuclides shall be the harmonic mean; and

4 (e) Protection of aesthetics shall be $7Q_{10}$.

5 Section 4. Aquatic Life. (1) Warm water aquatic habitat. The following parameters and
6 associated criteria shall apply for the protection of productive warm water aquatic communities,
7 fowl, animal wildlife, arboreous growth, agricultural, and industrial uses:

8 (a) Natural alkalinity as CaCO_3 shall not be reduced by more than twenty-five (25)
9 percent.

10 1. If natural alkalinity is below twenty (20) mg/L CaCO_3 , there shall not be a reduction
11 below the natural level.

12 2. Alkalinity shall not be reduced or increased to a degree that may adversely affect the
13 aquatic community;

14 (b) pH shall not be less than six and zero-tenths (6.0) nor more than nine and zero-tenths
15 (9.0) and shall not fluctuate more than one and zero-tenths (1.0) pH unit over a period of twenty-
16 four (24) hours;

17 (c) Flow shall not be altered to a degree that will adversely affect the aquatic community;

18 (d) Temperature shall not exceed thirty-one and seven-tenths (31.7) degrees Celsius
19 (eighty-nine (89) degrees Fahrenheit).

20 1. The normal daily and seasonal temperature fluctuations that existed before the addition
21 of heat due to other than natural causes shall be maintained.

22 2. The cabinet may determine allowable surface water temperatures on a site-specific
23 basis utilizing available data that shall be based on the effects of temperature on the aquatic biota

1 that utilize specific surface waters of the commonwealth and that may be affected by person-
2 induced temperature changes.

3 a. Effects on downstream uses shall also be considered in determining site-specific
4 temperatures.

5 b. Values in the following table are guidelines for surface water temperature.

Month/Date	Period		Instantaneous	
	Average		Maximum	
	(°F)	(°C)	(°F)	(°C)
January 1-31	45	7	50	10
February 1-29	45	7	50	10
March 1-15	51	11	56	13
March 16-31	54	12	59	15
April 1-15	58	14	64	18
April 16-30	64	18	69	21
May 1-15	68	20	73	23
May 16-31	75	24	80	27
June 1-15	80	27	85	29
June 16-30	83	28	87	31
July 1-31	84	29	89	32
August 1-31	84	29	89	32
September 1-15	84	29	87	31
September 16-30	82	28	86	30

October 1-15	77	25	82	28
October 16-31	72	22	77	25
November 1-30	67	19	72	22
December 1-31	52	11	57	14

1 3. A successful demonstration concerning thermal discharge limits carried out pursuant to
2 Section 316(a) of the Clean Water Act, 33 U.S.C. 1326, shall constitute compliance with the
3 temperature requirements of this subsection. A successful demonstration assures the protection
4 and propagation of a balanced indigenous population of shellfish, fish, and wildlife in or on the
5 water into which the discharge is made;

6 (e) Dissolved oxygen.

7 1.a. Dissolved oxygen shall be maintained at a minimum concentration of five and zero-
8 tenths (5.0) mg/L as a twenty-four (24) hour average in water with WAH use;

9 b. The instantaneous minimum shall not be less than four and zero-tenths (4.0) mg/L in
10 water with WAH use.

11 2. The dissolved oxygen concentration shall be measured at mid-depth in waters having a
12 total depth of ten (10) feet or less and at representative depths in other waters;

13 (f) Total dissolved solids or specific conductance. Total dissolved solids or specific
14 conductance shall not be changed to the extent that the indigenous aquatic community is
15 adversely affected;

16 (g) Total suspended solids. Total suspended solids shall not be changed to the extent that
17 the indigenous aquatic community is adversely affected;

18 (h) Settleable solids. The addition of settleable solids that may alter the stream bottom so
19 as to adversely affect productive aquatic communities shall be prohibited;

1 (i) Ammonia. The concentration of the un-ionized form shall not be greater than 0.05
2 mg/L at any time instream after mixing. Un-ionized ammonia shall be determined from values
3 for total ammonia-N, in mg/L, pH and temperature, by means of the following equation:

$$4 \quad Y = 1.2 (\text{Total ammonia-N}) / (1 + 10^{\text{pK}_a - \text{pH}})$$

$$5 \quad \text{pK}_a = 0.0902 + (2730 / (273.2 + T_c))$$

6 Where:

7 T_c = temperature, degrees Celsius.

8 Y = un-ionized ammonia (mg/L);

9 (j) Toxics.

10 1. The allowable instream concentration of toxic substances, or whole effluents
11 containing toxic substances, which are noncumulative or nonpersistent with a half-life of less
12 than ninety-six (96) hours, shall not exceed:

13 a. One-tenth (0.1) of the ninety-six (96) hour median lethal concentration (LC_{50}) of
14 representative indigenous or indicator aquatic organisms; or

15 b. A chronic toxicity unit of 1.00 utilizing the twenty-five (25) percent inhibition
16 concentration, or LC_{25} .

17 2. The allowable instream concentration of toxic substances, or whole effluents
18 containing toxic substances, which are bioaccumulative or persistent, including pesticides, if not
19 specified elsewhere in this section, shall not exceed:

20 a. 0.01 of the ninety-six (96) hour median lethal concentration (LC_{50}) of representative
21 indigenous or indicator aquatic organisms; or

22 b. A chronic toxicity unit of 1.00 utilizing the IC_{25} .

23 3. In the absence of acute criteria for pollutants listed in Table 1 of Section 6 of this

1 administrative regulation, for other substances known to be toxic but not listed in this
2 administrative regulation, or for whole effluents that are acutely toxic, the allowable instream
3 concentration shall not exceed the LC_1 or one-third ($1/3$) LC_{50} concentration derived from
4 toxicity tests on representative indigenous or indicator aquatic organisms or exceed three-tenths
5 (0.3) acute toxicity units.

6 4. If specific application factors have been determined for a toxic substance or whole
7 effluent such as an acute to chronic ratio or water effect ratio, the specific application
8 factors[they] may be used instead of the one-tenth (0.1) and 0.01 factors listed in this subsection
9 upon demonstration by the applicant that the application factors are scientifically defensible.

10 5. Allowable instream concentrations for specific pollutants for the protection of warm
11 water aquatic habitat are listed in Table 1 of Section 6 of this administrative regulation. These
12 concentrations are based on protecting aquatic life from acute and chronic toxicity and shall not
13 be exceeded; and

14 (k) Total residual chlorine. Instream concentrations for total residual chlorine shall not
15 exceed an acute criteria value of nineteen (19) $\mu\text{g/L}$ or a chronic criteria value of eleven (11)
16 $\mu\text{g/L}$.

17 (2) Cold water aquatic habitat. The following parameters and criteria are for the
18 protection of productive cold water aquatic communities and streams that support trout
19 populations, whether self-sustaining or reproducing, on a year-round basis. The criteria adopted
20 for the protection of warm water aquatic life also apply to the protection of cold water habitats
21 with the following additions:

22 (a) Dissolved oxygen.

23 1. A minimum concentration of six and zero-tenths (6.0) mg/L as a twenty-four (24) hour

1 average and five and zero-tenths (5.0) mg/L as an instantaneous minimum shall be maintained.

2 2. In lakes and reservoirs that support trout, the concentration of dissolved oxygen in
3 waters below the epilimnion shall be kept consistent with natural water quality; and

4 (b) Temperature. Water temperature shall not be increased through human activities
5 above the natural seasonal temperatures.

6 Section 5. Domestic Water Supply Use. Maximum allowable in-stream concentrations for
7 specific substances, to be applicable at the point of withdrawal, as established in 401 KAR
8 10:026, Section 5(2)(b), Table B, for use for domestic water supply from surface water sources
9 are specified in Table 1 of Section 6 of this administrative regulation and shall not be exceeded.

10 Section 6. Pollutants. (1) Allowable instream concentrations of pollutants are listed as
11 water column values in Table 1 of this section unless otherwise indicated.

Pollutant	CAS ¹ Number	Water Quality Criteria µg/L ²			
		Human Health:		Warm Water Aquatic Habitat ³ :	
		DWS ⁴	Fish ⁵	Acute ⁶	Chronic ⁷
Acenaphthene	83329	670	990	-	-
Acrolein	107028	190	6	3	3
Acrylonitrile	107131	0.051	0.25	-	-
Aldrin	309002	0.000049	0.000050	3.0	-
alpha-BHC	319846	0.0026	0.0049	-	-
alpha-Endosulfan	959988	62	89	0.22	0.056
Anthracene	120127	8,300	40,000	-	-

Antimony	7440360	5.6	640	-	-
Arsenic	7440382	10.0	-	340	150
Asbestos	1332214	7 million fibers/L	-	-	-
Barium	7440393	1,000	-	-	-
Benzene	71432	2.2	51	-	-
Benzidine	92875	0.000086	0.00020	-	-
Benzo(a)anthracene	56553	0.0038	0.018	-	-
Benzo(a)pyrene	50328	0.0038	0.018	-	-
Benzo(b)fluoranthene	205992	0.0038	0.018	-	-
Benzo(k)fluoranthene	207089	0.0038	0.018	-	-
Beryllium	7440417	4	-	-	-
Beta-BHC	319857	0.0091	0.017	-	-
Beta-Endosulfan	33213659	62	89	0.22	0.056
bis(chloromethyl)ether	542881	0.00010	0.00029	-	-
bis(2-chloroethyl)ether	111444	0.030	0.53	-	-
bis(2-chloroisopropyl)ether	108601	1,400	65,000	-	-
bis(2-ethylhexyl)phthalate	117817	1.2	2.2	-	-
Bromoform	75252	4.3	140	-	-
Butylbenzyl phthalate	85687	1,500	1,900	-	-

Cadmium	7440439	5	-	e(1.0166 (ln Hard*)- 3.924)	e(0.7409 (ln Hard*)- 4.719)
Carbon tetrachloride	56235	0.23	1.6	-	-
Chlordane	57749	0.00080	0.00081	2.4	0.0043
Chloride	16887006	250,000	-	1,200,000	600,000
Chlorobenzene	108907	130	1600	-	-
Chlorodibromomethane	124481	0.40	13	-	-
Chloroform	67663	5.7	470	-	-
Chloropyrifos	2921882	-	-	0.083	0.041
Chromium	N/A	100	-	-	-
Chromium (III)	16065831	-	-	e(0.8190 (ln Hard*)+ 3.7256)	e(0.8190 (ln Hard*)+ 0.6848)
Chromium (VI)	18540299	-	-	16	11
Chrysene	218019	0.0038	0.018	-	-
Color	N/A	75 Platinum Cobalt Units	-	-	-
Copper	7440508	1,300	-	e(0.9422 (ln Hard*)- 1.700)	e(0.8545 (ln Hard*)- 1.702)

Cyanide, Free	57125	140	140	22	5.2
Demeton	8065483	-	-	-	0.1
Diazinon	333415			0.17	0.17
Dibenzo(a,h)anthracene	53703	0.0038	0.018	-	-
Dichlorobromomethane	75274	0.55	17	-	-
Dieldrin	60571	0.000052	0.000054	0.24	0.056
Diethyl phthalate	84662	17,000	44,000	-	-
Dimethyl phthalate	131113	270,000	1,100,000	-	-
Di-n-butyl phthalate	84742	2,000	4,500	-	-
Dinitrophenols	25550587	69	5300	-	-
Endosulfan sulfate	1031078	62	89	-	-
Endrin	72208	0.059	0.060	0.086	0.036
Endrin aldehyde	7421934	0.29	0.30	-	-
Ethylbenzene	100414	530	2100	-	-
Fluoranthene	206440	130	140	-	-
Fluorene	86737	1,100	5,300	-	-
Fluoride	N/A	4,000	-	-	-
Guthion	86500	-	-	-	0.01
Heptachlor	76448	0.000079	0.000079	0.52	0.0038
Heptachlor epoxide	1024573	0.000039	0.000039	0.52	0.0038
Hexachlorobenzene	118741	0.00028	0.00029	-	-
Hexachlorobutadiene	87683	0.44	18	-	-

Hexachlorocyclo-hexane- Technical	319868	0.0123	0.0414	-	-
Hexachlorocyclopentadiene	77474	40	1100	-	-
Hexachloroethane	67721	1.4	3.3	-	-
Ideno(1,2,3-cd)pyrene	193395	0.0038	0.018	-	-
Iron ⁸	7439896	300	-	4,000	1,000
Isophorone	78591	35.0	960	-	-
Lead	7439921	15	-	e(1.273 (ln Hard*)- 1.460)	e(1.273 (ln Hard*)- 4.705)
Lindane (gamma-BHC)	58899	0.98	1.8	0.95	
Malathion	121755	-	-	-	0.1
Mercury	7439976	2.0	0.051	1.4	0.77
Methylmercury	22967926		0.3 mg/Kg		
Methoxychlor	72435	100	-	-	0.03
Methylbromide	74839	47	1,500	-	-
Methylene Chloride	75092	4.6	590	-	-
Mirex	2385855	-	-	-	0.001
Nickel	7440020	610	4,600	e(0.8460 (ln Hard*)+ 2.255)	e(0.8460 (ln Hard*)+ 0.0584)

Nitrate (as N)	14797558	10,000	-	-	-
Nitrobenzene	98953	17	690	-	-
Nitrosamines, Other	N/A	0.0008	1.24	-	-
N-Nitrosodibutylamine	924163	0.0063	0.22	-	-
N-Nitrosodiethylamine	55185	0.0008	1.24	-	-
N-Nitrosodimethylamine	62759	0.00069	3.0	-	-
N-Nitrosodi-n-Propylamine	621647	0.0050	0.51	-	-
N-Nitrosodiphenylamine	86306	3.3	6.0	-	-
N-Nitrosopyrrolidine	930552	0.016	34	-	-
Nonylphenol	1044051			28	6.6
Parathion	56382	-	-	0.065	0.013
Pentachlorobenzene	608935	1.4	1.5	-	-
Pentachlorophenol	87865	0.27	3.0	19-[e(1.005 (pH)- 4.869)]	15-[e(1.005 (pH)- 5.134)]
Phenol	108952	21,000	860,000	-	-
Polychlorinated Biphenyls (PCBs)	N/A	0.000064	0.000064	-	0.014
Pyrene	129000	830	4,000	-	-
Selenium	7782492	170	4,200	[258 ⁹]	5.0 ⁹ 8.6 ^{10, 11} 19.3 ^{10,11[12]}

Silver	7440224	-	-	e(1.72 (ln Hard*)-6 .59)	-
Sulfate	N/A	250,000	-	-	-
Hydrogen Sulfide, Undissociated	7783064	-	-	-	2.0
Tetrachloroethylene	127184	0.69	3.3	-	-
Thallium	7440280	0.24	0.47	-	-
Toluene	108883	1300	15,000	-	-
Total Dissolved Solids	N/A	250,000	-	-	-
Toxaphene	8001352	0.00028	0.00028	0.73	0.0002
Tributyltin (TBT)				0.46	0.072
Trichloroethylene	79016	2.5	30	-	-
Vinyl Chloride	75014	0.025	2.4	-	-
Zinc	7440666	7,400	26,000	e(0.8473 (ln Hard*)+ 0.884)	e(0.8473 (ln Hard*)+ 0.884)
1,1-dichloroethylene	75354	330	7100	-	-
1,1,1-trichloroethane	71556	200	-	-	-
1,1,2-trichloroethane	79005	0.59	16	-	-
1,1,2,2-tetrachloroethane	79345	0.17	4.0	-	-

1,2-dichlorobenzene	95501	420	1300	-	-
1,2-dichloroethane	107062	0.38	37	-	-
1,2-dichloropropane	78875	0.50	15	-	-
1,2-diphenylhydrazine	122667	0.036	0.20	-	-
1,2-trans-dichloroethylene	156605	140	10,000	-	-
1,2,4-trichlorobenzene	120821	35	70	-	-
1,2,4,5-tetrachlorobenzene	95943	0.97	1.1	-	-
1,3-dichlorobenzene	541731	320	960	-	-
1,3-dichloropropene	542756	0.34	21	-	-
1,4-dichlorobenzene	106467	63	190	-	-
2-chloronaphthalene	91587	1,000	1,600	-	-
2-chlorophenol	95578	81	150	-	-
2-methyl-4,6-dinitrophenol	534521	13	280	-	-
2,3,7,8-TCDD (Dioxin)	1746016	5.0 E - 9	5.1 E - 9	-	-
2,4-D	94757	100	-	-	-
2,4-dichlorophenol	120832	77	290	-	-
2,4-dimethylphenol	105679	380	850	-	-
2,4-dinitrophenol	51285	69	5,300	-	-
2,4-dinitrotoluene	121142	0.11	3.4	-	-
2,4,5-TP (Silvex)	93721	10	-	-	-
2,4,5-trichlorophenol	95954	1,800	3,600	-	-
2,4,6-trichlorophenol	88062	1.4	2.4	-	-

3,3'-dichlorobenzidine	91941	0.021	0.028	-	-
4,4'-DDD	72548	0.00031	0.00031	-	-
4,4'-DDE	72559	0.00022	0.00022	-	-
4,4'-DDT	50293	0.00022	0.00022	1.1	0.001

1 ¹CAS = Chemical Abstracts Service.

2 ²Water quality criteria in µg/L unless reported in different units.

3 ³Metal concentrations shall be total recoverable metals to be measured in an unfiltered
4 sample, unless it can be demonstrated that a more appropriate analytical technique is available
5 that provides a measurement of that portion of the metal present which causes toxicity to aquatic
6 life.

7 ⁴DWS = Domestic Water Supply Source.

8 ⁵Fish = protecting human health regarding fish consumption[Fish Consumption].

9 ⁶Acute criteria = protective of aquatic life based on one (1) hour exposure that does not
10 exceed the criterion for a given pollutant.

11 ⁷Chronic = protective of aquatic life based on ninety-six (96) hour exposure that does not
12 exceed the criterion of a given pollutant more than once every three (3) years on the average.

13 ⁸The chronic criterion for iron shall not exceed three and five tenths (3.5) mg/L (thirty-five
14 hundred µg/L) if aquatic life has not been shown to be adversely affected.

15 ⁹ If fish tissue data are available, fish tissue data shall take precedence over water column
16 data[~~the concentration of sulfate is less than forty-four (44) mg/L, the alternate acute water~~
17 ~~quality standard for selenium may be obtained by calculating the Criterion Maximum~~
18 ~~Concentration (CMC) using the concentrations of selenite and selenate as follows:~~

19 ~~CMC = 1/, where CMC1 is 258 µg/L for selenite and CMC2 is e^(0.5812 + 3.357) µg/L for selenate,~~

1 and f1 is the fraction of total selenium that is selenite and f2 is the fraction of total selenium that
2 is selenate].

3 ¹⁰This value is the concentration in µg/g (dry weight) of whole fish tissue.

4 ¹¹ A concentration of five and zero tenths (5.0) µg/L or greater selenium in the water
5 column shall trigger further sampling and analysis of whole-body fish tissue or alternately of fish
6 egg/ovary tissue.

7 [¹²This value is the concentration in µg/g (dry weight) of fish egg/ovary tissue.]

8 *Hard = Hardness as mg/L CaCO₃.

9 (2) The following additional criteria for radionuclides shall apply for Domestic Water
10 Supply use:

11 (a) The gross total alpha particle activity, including radium-226 but excluding radon and
12 uranium, shall not exceed fifteen (15) pCi/L;

13 (b) Combined radium-226 and radium-228 shall not exceed five (5) pCi/L. Specific
14 determinations of radium-226 and radium-228 are not necessary if dissolved gross alpha particle
15 activity does not exceed five (5) pCi/L;

16 (c) The concentration of total gross beta particle activity shall not exceed fifty (50) pCi/L;

17 (d) The concentration of tritium shall not exceed 20,000 pCi/l;

18 (e) The concentration of total Strontium-90 shall not exceed eight (8) pCi/L; and[ø#]

19 (f) The concentration of uranium shall not exceed thirty (30) µg/l.

20 Section 7. Recreational Waters. (1) Primary contact recreation water. The following
21 criteria shall apply to waters designated as primary contact recreation use during the primary
22 contact recreation season of May 1 through October 31:

23 (a) Fecal coliform content or Escherichia coli content shall not exceed 200 colonies per

1 100 ml or 130 colonies per 100 ml respectively as a geometric mean based on not less than five
2 (5) samples taken during a thirty (30) day period. Content also shall not exceed 400 colonies per
3 100 ml in twenty (20) percent or more of all samples taken during a thirty (30) day period for
4 fecal coliform or 240 colonies per 100 ml for Escherichia coli. Fecal coliform criteria listed in
5 subsection (2)(a) of this section shall apply during the remainder of the year;~~and]~~

6 (b) pH shall be between six and zero-tenths (6.0) to nine and zero-tenths (9.0) and shall
7 not change more than one and zero-tenths (1.0) pH unit within this range over a period of
8 twenty-four (24) hours; and[-]

9 (c) Fecal coliform content criteria listed in subsection (1)(a) of this section shall no longer
10 apply beginning November 1, 2019.

11 (2) Secondary contact recreation water. The following criteria shall apply to waters
12 designated for secondary contact recreation use during the entire year:

13 (a) Fecal coliform content shall not exceed 1,000 colonies per 100 ml as a thirty (30) day
14 geometric mean based on not less than five (5) samples; nor exceed 2,000 colonies per 100 ml in
15 twenty (20) percent or more of all samples taken during a thirty (30) day period; and

16 (b) pH shall be between six and zero-tenths (6.0) to nine and zero-tenths (9.0) and shall
17 not change more than one and zero-tenths (1.0) pH unit within this range over a period of
18 twenty-four (24) hours.

19 Section 8. Outstanding State Resource Waters. This designation category includes certain
20 unique waters of the commonwealth. (1) Water for inclusion.

21 (a) Automatic inclusion. The following surface waters shall automatically be included in
22 this category:

23 1. Waters designated pursuant to the Kentucky Wild Rivers Act, KRS 146.200-146.360;

1 2. Waters designated pursuant to the Federal Wild and Scenic Rivers Act, 16 U.S.C.
2 1271-1287;

3 3. Waters that support federally recognized endangered or threatened species pursuant to
4 the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544.

5 (b) Permissible consideration. Other surface waters shall be considered for inclusion in
6 this category if:

7 1. The surface waters flow through or are bounded by state or federal forest land, or are
8 of exceptional aesthetic or ecological value or are within the boundaries of national, state, or
9 local government parks, or are a part of a unique geological, natural, or historical area recognized
10 by state or federal designation; or

11 2. The surface water is a component part of an undisturbed or relatively undisturbed
12 watershed that can provide basic scientific data and possess outstanding water quality
13 characteristics, or fulfill two (2) of the following criteria:

14 a. Support a diverse or unique native aquatic flora or fauna;

15 b. Possess physical or chemical characteristics that provide an unusual and uncommon
16 aquatic habitat; or

17 c. Provide a unique aquatic environment within a physiographic region.

18 (2) Outstanding state resource waters protection. The designation of certain waters as
19 outstanding state resource waters shall fairly and fully reflect those aspects of the waters for
20 which the designation is proposed. The cabinet shall determine water quality criteria for these
21 waters as established in paragraphs (a) through (d) of this section.[follows:]

22 (a) At a minimum, the criteria of Section 2 and Table 1 of Section 6 of this administrative
23 regulation and the appropriate criteria associated with the stream use designation assignments in

1 401 KAR 10:026, shall be applicable to these waters.

2 (b) Outstanding state resource waters that are listed as Exceptional Waters in 401 KAR
3 10:030, Section 1(2) shall have dissolved oxygen maintained at a minimum concentration of six
4 and zero-tenths (6.0) mg/L as a twenty-four (24) hour average and an instantaneous minimum
5 concentration of not less than five and zero-tenths (5.0) mg/L.

6 (c)1. If the values identified for an outstanding state resource water are dependent upon
7 or related to instream water quality, the cabinet shall review existing water quality criteria and
8 determine if additional criteria or more stringent criteria are necessary for protection, and
9 evaluate the need for the development of additional data upon which to base the determination.

10 2. Existing water quality and habitat shall be maintained and protected in those waters
11 designated as outstanding state resource waters that support federally threatened and endangered
12 species of aquatic organisms, unless it can be demonstrated that lowering of water quality or a
13 habitat modification will not have a harmful effect on the threatened or endangered species that
14 the water supports.

15 (d) Adoption of more protective criteria in accordance with this section shall be listed
16 with the respective stream segment in 401 KAR 10:026.

17 (3) Determination of designation.

18 (a) A person may present a proposal to designate certain waters pursuant to this section.
19 Documentation requirements in support of an outstanding state resource water proposal shall
20 contain those elements outlined in 401 KAR 10:026, Section 3(3)(a) through (h).

21 (b)1. The cabinet shall review the proposal and supporting documentation to determine if
22 the proposed waters qualify as outstanding state resource waters within the criteria established by
23 this administrative regulation.

1 2. The cabinet shall document the determination to deny or to propose redesignation, and
2 a copy of the decision shall be served upon the petitioner and other interested parties.

3 (c) After considering all of the pertinent data, a redesignation, if appropriate, shall be
4 made pursuant to 401 KAR 10:026.

5 Section 9. Water Quality Criteria for the Main Stem of the Ohio River. (1) The following
6 criteria apply to the main stem of the Ohio River from its juncture with the Big Sandy River at
7 River Mile 317.1 to its confluence with the Mississippi River, and shall not be exceeded.

8 (2) These waters shall be subject to all applicable provisions of 401 KAR 10:001, 10:026,
9 10:029, 10:030, and this administrative regulation, except for those criteria in paragraphs (a) and
10 (b) of this subsection.

11 (a) Dissolved oxygen. Instream concentrations shall average at least five and zero-tenths
12 (5.0) mg/L per calendar day and shall not be less than four and zero-tenths (4.0) mg/L except
13 during the April 15 - June 15 spawning season when a minimum of five and one-tenth (5.1)
14 mg/L shall be maintained.

15 (b) Maximum allowable instream concentrations for nitrite-nitrogen for the protection of
16 human health shall be one and zero-tenths (1.0) mg/L and shall be met at the edge of the
17 assigned mixing zone.

18 Section 10. Exceptions to Criteria for Specific Surface Waters. (1) The cabinet may grant
19 exceptions to the criteria contained in Sections 2, 4, 6, 7, 8, and 9 of this administrative
20 regulation for specific surface water upon demonstration by an applicant that maintenance of
21 applicable water quality criteria is not attainable or scientifically valid but the use designation is
22 still appropriate.

23 (2) The analysis shall show that the water quality criteria cannot be reasonably achieved,

1 either on a seasonal or year-round basis due to natural conditions or site-specific factors differing
2 from the conditions used to derive criteria in Sections 2, 4, 6, 7, 8, and 9 of this administrative
3 regulation.

4 (a) Site-specific criteria shall be developed by the applicant utilizing toxicity tests,
5 indicator organisms, and application factors that shall be consistent with those outlined in
6 Chapter 3 of Water Quality Standards Handbook, EPA, 1994.

7 (b) In addition, an applicant shall supply the documentation listed in 401 KAR 10:026,
8 Section 3.

9 (3) An exception to criteria listed in Table 1 of Section 6 of this administrative regulation
10 for the protection of human health from the consumption of fish tissue may be granted if it is
11 demonstrated that natural, ephemeral, intermittent, or low flow conditions or water levels
12 preclude the year-round support of a fishery, unless these conditions may be compensated for by
13 the discharge of sufficient volume of effluent discharges.

14 (4) Before granting an exception to water quality criteria, the cabinet shall ensure that the
15 water quality standards of downstream waters shall be attained and maintained.

16 (5) All exceptions to water quality criteria shall be subject to review at least every three
17 (3) years.

18 (6) Exceptions to water quality criteria shall be adopted as an administrative regulation
19 by listing them with the respective surface water in 401 KAR 10:026.

20 Section 11. Exceptions to Criteria for Individual Dischargers. (1) An exception to criteria
21 may be granted to an individual discharger based on a demonstration by the discharger, that
22 KPDES permit compliance with existing instream criteria cannot be attained because of factors
23 specified in 401 KAR 10:026, Section 2(4)(a) through (f).

1 (2) The demonstration shall include an assessment of alternative pollution control
2 strategies and biological assessments that indicated designated uses are being met.

3 (3) Before granting an exception, the cabinet shall ensure that the water quality standards
4 of downstream waters shall be attained and maintained.

5 (4) All exceptions shall be submitted to the cabinet for review at least every three (3)
6 years. Upon review, the discharger shall demonstrate to the cabinet the effort the discharger
7 made to reduce the pollutants in the discharge to levels that would achieve existing applicable
8 water quality criteria.

9 (5) The highest level of effluent quality that can be economically and technologically
10 achieved shall be ensured while the exception is in effect.

11 (6) The Kentucky Pollution Discharge Elimination System permitting program shall be
12 the mechanism for the review and public notification of intentions to grant exceptions to criteria.

13 Section 12. Incorporation by Reference. (1) The following material is incorporated by
14 reference:

15 (a) "Water Quality Standards Handbook-Chapter 3", EPA August 1994, Publication EPA-823-B-
16 94-005a, U.S. Environmental Protection Agency, Office of Water, Washington, D.C.; and

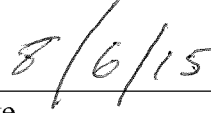
17 (b) "Interim Economic Guidance for Water Quality Standards Workbook", EPA March 1995,
18 Publication EPA-823-B-95-002, U.S. Environmental Protection Agency, Office of Water,
19 Washington, D.C.

20 (2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at
21 the Division of Water, 200 Fair Oaks Lane, Frankfort, Kentucky, Monday through Friday, 8 a.m.
22 to 4:30 p.m.

401 KAR 10:031 Surface water standards
approved for filing.



Leonard K. Peters, Secretary
Energy and Environment Cabinet



Date

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on Thursday, September 24, 2015 at 6:00 p.m. Eastern Time at the Department for Environmental Protection, Room 301D, 300 Fair Oaks Lane, Frankfort, Kentucky 40601. Individuals interested in being heard at this hearing shall notify this agency in writing by 5 workdays prior to the hearing of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be canceled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted through September 30, 2015. Send written notification of intent to be heard at the public hearing or written comments on the proposed administrative regulation to the contact person.

Contact person: Carole J. Catalfo, Internal Policy Analyst, RPPS, Division of Water, 200 Fair Oaks Lane, 4th Floor, Frankfort, Kentucky 40601, phone (502) 564-3410, fax (502) 564-9003.

REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Administrative Regulation #: 401 KAR 10:031 Contact Person: Peter Goodmann, Director

(1) Provide a brief summary of:

(a) What this administrative regulation does: This administrative regulation establishes water quality standards for surface waters of the Commonwealth and the associated water quality criteria necessary to protect designated uses.

(b) The necessity of this administrative regulation: This administrative regulation is necessary for the protection of public health, aquatic habitat, and designated uses of the surface waters of the Commonwealth.

(c) How this administrative regulation conforms to the content of the authorizing statutes: KRS 224.10-100 requires the cabinet to develop and conduct a comprehensive program for the management of water resources and the prevention, abatement, and control of water pollution. This administrative regulation and 401 KAR 10:001, 10:026, 10:029, and 10:030 establish procedures to protect the surface waters of the Commonwealth, and thus manage water resources and prevent water pollution. This administrative regulation describes the criteria applied in 401 KAR 10:026 to the surface waters of the Commonwealth and establishes water quality standards that consist of designated legitimate uses of the surface waters of the Commonwealth and the associated water quality criteria necessary to protect those uses.

(d) How this administrative regulation currently assists or will assist in the effective administration of the statutes: This administrative regulation assists in the administration of the statutes by providing specific criteria and water quality standards for the protection of surface waters of the Commonwealth as required by the authorizing statutes.

(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:

(a) How the amendment will change this existing administrative regulation: This amendment corrects statutory references and makes grammatical changes to comply with current requirements, updates water quality criteria for pentachlorophenol to correct an inadvertent error, and removes the acute selenium criterion which was not approved and an expiring fecal coliform standard for primary contact recreation beginning November 1, 2019.

(b) The necessity of the amendment to this administrative regulation: The amendment to water quality criteria is necessary to protect human health and meet federal recommendations. For Kentucky to maintain its delegation authority of the NPDES permit program, the Clean Water Act requires that Kentucky review its water quality standards every three years and comply with the programmatic requirements of 40 C.F.R. Part 131. This administrative regulation is being amended as part of the Triennial Review.

(c) How the amendment conforms to the content of the authorizing statutes: KRS 224.10-100 requires the cabinet to develop and conduct a comprehensive program to manage water resources and provide for the prevention, abatement, and control of water pollution. This amendment updates water quality criteria for selenium and pentachlorophenol to protect designated uses of the surface waters of the Commonwealth.

(d) How the amendment will assist in the effective administration of the statutes: This amendment will assist in the administration of the statutes by providing clear and current criteria and water quality standards for the protection of surface waters of the Commonwealth in accordance with the authorizing statutes.

(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation: This administrative regulation applies to the surface waters of the Commonwealth. All individuals, businesses, organizations, and governments that use the Commonwealth's surface waters may be impacted by this regulation if they apply for a new or expanded discharge permit.

(4) Provide an analysis of how the entities identified in question (3) will be impacted by either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

(a) List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment: The revised water quality criteria will be implemented when the cabinet issues a new or expanded permit. Additional costs may be incurred when criteria are more stringent than before, or when new criteria are established. Fewer costs will be incurred when criteria have been lowered.

(b) In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3): The costs to comply with this administrative regulation will vary considerably depending on the site location, type of activity, and other factors. Therefore, it is not possible to quantify costs to implement this regulation.

(c) As a result of compliance, what benefits will accrue to the entities identified in question (3): Fewer costs may be incurred when criteria are less stringent. Direct and indirect savings will be realized through reduced drinking water treatment costs, maintenance of good agricultural water, maintenance of fisheries, and healthy recreational waters.

(5) Provide an estimate of how much it will cost the administrative body to implement this administrative regulation:

(a) Initially: There are no additional initial costs to implement this administrative regulation.

(b) On a continuing basis: Costs of implementation will remain the same.

(6) What is the source of the funding to be used for the implementation and enforcement of this administrative regulation? The source of revenue is a combination of General Funds appropriated by the Kentucky General Assembly and federal funds from the U.S. Environmental Protection Agency.

(7) Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment: An increase in fees will not be necessary to implement this amendment.

(8) State whether or not this administrative regulation established any fees or directly or indirectly increased any fees: This administrative regulation does not establish fees or directly or indirectly increase fees.

(9) TIERING: Is tiering applied? (Explain why or why not) Yes, tiering is applied in this administrative regulation. Water quality standards and associated criteria vary based on the designated use of the surface water.

FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

Regulation Number: 401 KAR 10:031

Contact Person: Peter Goodmann, Director
Phone Number: (502) 564-3410

1. What units, parts or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation? This administrative regulation will affect the wastewater treatment operations of local government if they have new or expanded discharges into surface waters of the Commonwealth.

2. Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation: KRS 146.220, 146.241, 146.270, 146.410, 146.450, 146.460, 146.465, 224.10-100, 224.16-050, 224.16-060, 224.70-100, 224.70-110, 40 C.F.R. Part 131, 16 U.S.C. 1271-1287, 1531-1544, 33 U.S.C. 1311, 1313, 1314, and 1341.

3. Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect.

(a) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year? This administrative regulation will not generate any revenue.

(b) How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years? This administrative regulation will not generate any revenue.

(c) How much will it cost to administer this program for the first year? The amendment to this administrative regulation will not increase administration costs.

(d) How much will it cost to administer this program for subsequent years? The amendment to this administrative regulation will not increase administration costs.

Note: If specific dollar estimates cannot be determined, provide a brief narrative to explain the fiscal impact of the administrative regulation.

Revenues (+/-):

Expenditures (+/-):

Other Explanation: Wastewater treatment costs may increase for those local governments that have new or expanded discharges into Exceptional Waters and High Quality Waters. Local governments withdrawing drinking water from these waters may have lower treatment costs because these waters should have lower pollutant loads.

FEDERAL MANDATE ANALYSIS COMPARISON

Administrative Regulation #: 401 KAR 10:031

Contact Person: Peter Goodmann, Director

1. Federal statute or regulation constituting the federal mandate: There is no federal mandate to implement a water pollution control program. For Kentucky to maintain its delegation authority over the NPDES permit program, the Clean Water Act requires that Kentucky review its water quality standards every three years (known as the "Triennial Review") and comply with the programmatic requirements of 40 C.F.R. Part 131, including the requirement for reviewing water quality criteria for appropriate revisions.

2. State compliance standards: KRS 146.220, 146.241, 146.270, 146.410, 146.450, 146.460, 146.465, 224.10-100, 224.16-050, 224.16-060, 224.70-100, and 224.70-110.

3. Minimum or uniform standards contained in the federal mandate: 40 C.F.R. Part 131, 16 U.S.C. 1271-1287, 1531-1544, 33 U.S.C. 1311, 1313, 1314, and 1341.

4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements than those required by the federal mandate? No

5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements: There are no stricter standards or additional or different responsibilities or requirements.