Proposed

State of Kansas
Department of Health and Environment

Notice of Hearing on Proposed Administrative Regulations

The Kansas Department of Health and Environment, Division of Environment, Bureau of Water, will conduct a public hearing at 10 a.m. Thursday, November 20, 2014, in the Azure Conference Room, fourth floor, Curtis State Office Building, 1000 S.W. Jackson, Topeka, to consider the adoption of proposed amended regulations K.A.R. 28-16-28b, 28-16-28c, 28-16-28d, 28-16-28e, 28-16-28f and 28-16-58 regarding Kansas surface water quality standards.

A summary of the proposed regulations and the estimated economic impact follows:

Summary of Regulations:

K.A.R. 28-16-28b. Definitions. Adds definitions for the terms digression, discharge design flow, duration of digression, EPA, excursion from numeric criteria, frequency of digression, numeric criteria value, and 30Q10 flow. Deletes the definition for fecal coliform bacteria because it is no longer used in the Kansas Surface Water Quality Standards.

K.A.R. 28-16-28c. General Provisions. Adds paragraph titles for clarity and consistent regulatory style in antidegradation, mixing zones, special conditions and treatment requirements. Revises and updates adoptions by reference. Deletes special conditions for high flow because the Environmental Protection Agency disapproved this part of the regulation in 2004.

K.A.R. 28-16-28d. Surface water classification and use designation. Adds titles to subsections (b) and (c) for clarity and consistency. Clarifies the term recreational use. Updates adoption by reference language for the Kansas Surface Water Register.

K.A.R. 28-16-28e. Surface water quality criteria. Adds new language specifying duration and frequency of numeric criteria for assessment purposes. Adds subsection titles to clarify content. Updates regulatory style. Revises adoptions by reference. Adopts the October 1

2012, "Kansas Surface Water Quality Standards: Tables of Numeric Criteria" in subsection (e) that updates the tables as follows: Updates Table 1a with a new table which adds Chemical Abstact Service (CAS) numbers for each parameter if available, adds national recommended criteria and maximum contaminant levels for parameters where criteria is adopted, adds criteria for toxic pollutants promulgated by EPA's National Toxic Rules that are applicable in Kansas but not adopted by KDHE, and regroups organic chemicals including pesticides for improved classification. Deletes equations for copper in Table 1b due to the adoption of the Copper Biotic Ligand Model for deriving acute and chronic aquatic life criteria of copper. Updates footnotes in Table 1g to modify and clarify application of the dissolved oxygen and temperature criteria. Updates Table 1h detailing the background concentrations as determined through Total Maximum Daily Loads (TMDL) development and approval. Adds new Table 1k detailing new chlorophyll-*a* criteria; the lesser value of 10 µg/l or the long-term chlorophyll-*a* average for lakes or reservoirs with active or reserve domestic water supply use. Adds new Table 1l listing lakes and reservoirs where the new chlorophyll-*a* criteria is applicable.

K.A.R. 28-16-28f. Administration of surface water quality standards. Updates language regarding variances and enforcement. Adds language to clarify the establishment of site-specific water quality criteria. Updates adoptions by reference and regulatory style.

K.A.R. 28-16-58. Definitions. Updates definitions of terms used in K.A.R. 28-16-57a through 28-16-63. Deletes the term industrial user. Revises adoptions by reference.

Economic Impact:

Costs to the agency: The proposed regulations will not result in any increased costs to the agency.

Costs to the regulated community: Default inputs or KDHE stream chemistry data will be utilized to run the Biotic Ligand Model (BLM) when a facility is required to monitor for copper. National Pollutant Discharge Elimination System (NPDES) facilities may incur additional costs for sample collection and analysis for the parameters required for the BLM model if the facility elects to utilize site specific water quality data. Additional costs for sampling and analysis will not likely be significant or burdensome to these facilities. Resulting effluent limitations for copper from the BLM model may be more stringent, less stringent or unchanged from limitations emanating from the existing hardness-based copper criteria. The new chlorophyll-*a* criteria for public drinking water supply lakes is not anticipated to increase costs to the regulated community. Chlorophyll-*a* reflects the productivity of plants and algae in lakes and is directly linked to nutrient loading, as excessive algal growth leads to undesirable eutrophic conditions. The new chlorophyll-*a* criteria, achieved through implementation of eutrophication TMDL, will likely reduce the operating costs of drinking water plants, having to treat to prevent taste and odor problems. The criteria also provide warning to public water suppliers of threatening source water conditions to allow for contingency planning. The benefits to the drinking water plants, consumers, and local communities will offset, and may outweigh the cost associated with nutrient reduction in the long term. Where nutrient reduction is imperative, any related costs are unchanged from the narrative criterion that is being replaced with the adoption of the numeric chlorophyll-*a* criteria. For all other proposed changes there are no known additional costs to the regulated communities or the public. Additional details are provided in the regulatory impact statement that is available, as listed below.

Costs to other governmental agencies or units: There are no known additional costs to other governmental agencies or units.

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The time period between publication of this notice and 5 p.m. on the day of the scheduled hearing serves as the required public comment period of at least 60 days for the purpose of receiving written public comments on the proposed amended regulations. At any time during the public comment period any interested parties may submit written comments to Trevor Flynn, Kansas Department of Health and Environment, Bureau of Water, 1000 S.W. Jackson, Suite 420, Topeka, 66612-1367; by e-mail to tflynn@kdheks.gov; or by fax to 785-296-0086. During the hearing, all interested parties will be given a reasonable opportunity to present their views orally on the proposed regulations as well as an opportunity to submit their written comments. In order to give each individual an opportunity to present their views, it may be necessary for the hearing officer to request that each presenter limit any oral presentation to an appropriate time frame.

Complete copies of the proposed regulations and the corresponding regulatory impact statement may be obtained on the Bureau of Water website at http://www.kdheks.gov/water/index.html or by contacting Trevor Flynn at the address above, 785-296-8791 or fax 785-296-0086. Questions pertaining to the proposed regulations should be directed to Trevor Flynn.

Any individual with a disability may request accommodation in order to participate in the public hearing and may request the proposed regulations and the regulatory impact statement in an accessible format. Requests for accommodation should be made at least five working days in advance of the hearing by contacting Trevor Flynn.

Robert Moser, M.D.

Secretary of Health and Environment

28-16-28b. Definitions. As used in ~~these regulations,~~ K.A.R. 28-16-28b through 28-16-28g, each of the following terms shall have ~~these meanings~~ the meaning specified in this regulation:

(a) "Alluvial aquifer" means the sediment that is associated with and deposited by a stream, and that contains water capable of being produced from a well.

(b) "Alternate low flow" means a low flow value, which is an alternate to the 7Q10 flow, that is based seasonally, hydrologically, or biologically, or a low flow determined through a water assurance district. Wherever used in this regulation in the context of mixing zones, the term shall refer to a minimum amount of streamflow occurring immediately upstream of a wastewater discharge and available, in whole or in part, for dilution and assimilation of wastewater discharges.

(c) "Antidegradation" means the regulatory actions and measures taken to prevent or minimize the lowering of water quality in surface waters of the state, including those streams, lakes, and wetlands in which existing water quality exceeds the level required for maintenance and protection of the existing uses.

(d) "Artificial sources" means sources of pollution that result from human activities and that can be abated by construction of control structures, modification of operating practices, complete restraint of activities, or any combination of these methods.

(e) "Background concentration" means the concentration of any elemental parameter listed in tables 1a, 1b, 1c, 1d, and 1e of the "Kansas surface water quality standards: tables of numeric criteria," which is adopted by reference in K.A.R. 28-16-28e~~(d)~~, or any elemental substance meeting the definition of pollutant in ~~subsection (tt)~~ this regulation, that occurs in a surface water immediately upstream of a point source or nonpoint source under consideration

and is from natural sources. The list of background concentration determinations for classified waterbodies of the state is contained in table 1h of the "Kansas surface water quality standards: tables of numeric criteria," ~~as adopted by reference in K.A.R. 28-16-28e(d).~~"

(f) "Base flow" means that portion of a stream's flow contributed by sources of water other than precipitation runoff. Wherever used in this regulation in the context of stream classification, the term shall refer to a fair weather flow sustained primarily by springs or groundwater seepage, wastewater discharges, irrigation return flows, releases from reservoirs, or any combination of these factors.

(g) "Bioaccumulation" means the accumulation of toxic substances in plant or animal tissue through either bioconcentration or biomagnification.

(h) "Bioassessment methods and procedures" means the use of biological methods of assessing surface water quality, including field investigations of aquatic organisms and laboratory or field aquatic toxicity tests.

(i) "Bioconcentration" means the concentration and incorporation of toxic substances into body tissues from ambient sources.

(j) "Biomagnification" means the transport of toxic substances through the food chain through successive cycles of eating and being eaten, and through the subsequent accumulation and concentration of these substances in higher-order consumers and predators.

(k) "Biota" means the animal and plant life and other organisms of a given geographical region.

(l) "Carcinogenic" means having the property of inducing the production of cancerous cells in organisms.

(m) "Classified surface water" means any surface water or surface water segment that supports or, in the absence of artificial sources of pollution, would support one or more of the designated uses of surface water defined in K.A.R. 28-16-28d~~(b)~~ or K.S.A. 82a-2001~~(c)~~, and amendments thereto, and that meets the criteria for classification given in K.A.R. 28-16-28d~~(a)~~.

(n) "Compliance schedule" means any provision in a discharge permit, license, or enforceable order issued by the department pursuant to the federal clean water act or K.S.A. 65-165 et seq., and amendments thereto, that, for the purposes of meeting water quality-based effluent limitations, technology-based limits, and effluent limitations determined by the ~~secretary's best professional judgement,~~ secretary or ~~other requirements~~ specified in ~~the~~ Kansas statutes and regulations, provides a specified period of time for the construction or renovation of a wastewater treatment facility and the completion of any related scientific or engineering studies, reports, plans, design specifications, or other submittals required by the department.

(o) "Condition of acute toxicity" means any concentration of a toxic substance that exceeds the applicable acute criterion for aquatic life support ~~presented~~ specified in K.A.R. 28-16-28e or, for substances not listed in K.A.R. 28-16-28e or for mixtures of toxic substances, any concentration that exceeds 0.3 acute toxic units (TU_a), where one TU_a is equal to 100 divided by the median lethal concentration (LC_{50}). The concentration at which acute toxicity exists shall be determined through laboratory toxicity tests conducted in accordance with the ~~United States~~

~~environmental protection agency's~~ EPA's "methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms~~," fifth edition, as published in October 2002, which is hereby adopted by reference~~."

(p) "Condition of chronic toxicity" means any concentration of a toxic substance that exceeds the applicable chronic criterion for aquatic life support ~~presented~~ specified in K.A.R. 28-16-28e or, for substances not listed in K.A.R. 28-16-28e or for mixtures of toxic substances, any concentration that exceeds 1.0 chronic toxic unit (TU_c), where one TU_c is equal to 100 divided by inhibition concentration 25 (IC_{25}). The concentration at which chronic toxicity exists shall be determined through laboratory toxicity tests conducted in accordance with the ~~United States environmental protection agency's~~ EPA's "short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms~~," fourth edition, as published in October 2002, which is hereby adopted by reference~~."

(q) "Criterion" means any numerical element or narrative provision ~~of the surface water quality standards representing~~ that represents an enforceable water quality condition specified in K.A.R. 28-16-28b through 28-16-28g.

(r) "Critical low flow" means the minimum amount of streamflow immediately upstream of a point source discharge that will be used to calculate the quantity of pollutants that the point source discharge may be permitted to discharge without exceeding water quality criteria ~~set out by these regulations~~ specified in K.A.R. 28-16-28b through 28-16-28g. The critical low flow may be the 7Q10 flow or the alternate low flow as defined in ~~subsection (b) of~~ this regulation.

(s) "Department" means ~~the~~ Kansas department of health and environment.

(t) "Designated use" means any of the uses specifically attributed to surface waters of the state in K.A.R. 28-16-28d~~(b)~~ or K.S.A. 82a-2001~~(e)~~, and amendments thereto.

(u) "Digression" means an actual ambient concentration of a pollutant that does not meet the numeric criteria value for that pollutant.

(v) "Discharge" means the release of effluent, either directly or indirectly, into surface waters of the state.

(w) "Discharge design flow" means either of the following:

(1) The anticipated wastewater flow for the next permit cycle determined by the department for an industrial wastewater treatment facility, as defined in K.A.R. 28-16-56c; or

(2) the wastewater treatment capacity of a facility approved by the secretary for other wastewater treatment facilities or systems.

(x) "Duration of digression" means the period of time over which pollutant concentrations can be averaged, including the time span during which aquatic life can be exposed to elevated levels of pollutants without harm.

~~(v)~~ (y) "Ecological integrity" means the natural or unimpaired structure and functioning of an aquatic or terrestrial ecosystem.

~~(w)~~ (z) "Effluent" means the sewage or other wastewater discharged from an artificial source.

(aa) "EPA" means United States environmental protection agency.

~~(x)~~ (bb) "*Escherichia coli*" means a subset of the coliform group that is part of the normal intestinal flora in humans and animals and is a direct indicator of fecal contamination in water.

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~~(y)~~ (cc) "Exceptional state waters" means any of the surface waters or surface water segments that are of remarkable quality or of significant recreational or ecological value, are listed in the surface water register as defined in ~~subsection (ddd)~~ this regulation, and are afforded the level of water quality protection under the antidegradation provisions of K.A.R. 28-16-28c~~(a)~~ and the mixing zone provisions of K.A.R. 28-16-28c~~(b)~~.

(dd) "Excursion from numeric criteria value" means the digression of a pollutant exceeding its numeric criteria value beyond the designated duration of digression.

~~(z)~~ (ee) "Existing use" means any of the designated uses described in K.A.R. 28-16-28d~~(b)~~ or K.S.A. 82a-2001~~(e)~~, and amendments thereto, known to have occurred in, or to have been made of, a surface water or surface water segment on or after November 28, 1975.

~~(aa) "Fecal coliform bacteria" means facultatively anaerobic, gram negative, non-spore forming, rod-shaped bacteria that, when cultured under specific laboratory conditions, will ferment lactose, thereby producing acid, gas, or both.~~

~~(bb)~~ (ff) "Federal clean water act" means the federal water pollution prevention and control act, 33 U.S.C. Section 1251 et seq., as ~~amended on February 4, 1987~~ in effect on January 1, 1998.

(gg) "Frequency of digression" means the number of times that an excursion from numeric criteria value can occur over time without impairing the designated uses of the water.

~~(ee)~~ (hh) "General purpose waters" means any classified surface water that is not classified as an outstanding national resource water or an exceptional state water.

~~(dd)~~ (ii) "Groundwater" means water located under the surface of the land that is or can be the source of supply for wells, springs, or seeps~~,~~ or that is held in aquifers or the soil profile.

~~(ee)~~ (jj) "Inhibition concentration 25 ~~(IC_{25})~~" ~~means~~ and "IC_{25}" mean a point estimate of the toxicant concentration that would cause a 25 percent reduction in a nonlethal biological measurement of the test organisms, including reproduction and growth.

~~(ff)~~ (kk) "Kansas antidegradation policy," dated August 6, 2001 and hereby adopted by reference, means the department's written ~~departmental~~ policy used to prevent or minimize the lowering of water quality in surface waters of the state.

~~(gg)~~ (ll) "Kansas implementation procedures: surface water quality standards," dated ~~April 28, 2004~~ October 1, 2012 and hereby adopted by reference, means the department's written ~~departmental~~ procedures used for carrying out specific provisions of surface water quality standards, available upon request from ~~KDHE's~~ the department's division of environment~~, which is hereby adopted by reference~~.

~~(hh)~~ (mm) "Maximum contaminant level" means any of the enforceable standards for finished drinking water quality ~~promulgated by the United States environmental protection agency pursuant to~~ specified in 40 C.F.R. 141.11 ~~through 141.16~~, 141.13, and ~~40 C.F.R. 141.60~~ 141.61 through 141.66, dated July 1, ~~2003, which is hereby adopted by reference~~ 2012.

~~(ii)~~ (nn) "Median lethal concentration" means the concentration of a toxic substance or a mixture of toxic substances calculated to be lethal to 50 percent of the population of test organisms in an acute toxicity test.

~~(jj)~~ (oo) "Microfibers per liter ~~(µfibers/L)~~" ~~means~~ and "µfibers/L" mean the number of microscopic particles with a length-to-width ratio of 3:1 or greater present in a volume of one liter.

~~(kk)~~ (pp) "Microgram per liter ~~(µg/L)~~" ~~means~~ and "µg/L" mean the concentration of a substance at which one one-millionth of a gram (10^{-6} g) of the substance is present in a volume of one liter.

~~(ll)~~ (qq) "Milligram per liter ~~(mg/L)~~" ~~means~~ and "mg/L" mean the concentration of a substance at which one one-thousandth of a gram (10^{-3} g) of the substance is present in a volume of one liter.

~~(mm)~~ (rr) "Mixing zone" means the designated portion of a stream or lake where a discharge is incompletely mixed with the receiving surface water and where, in accordance with K.A.R. 28-16-28e~~(d)~~, concentrations of certain pollutants may legally exceed chronic water quality criteria associated with the established designated uses that are applied in most other portions of the receiving surface water.

~~(nn)~~ (ss) "Mutagenic" means having the property of directly or indirectly causing a mutation.

~~(oo)~~ (tt) "Nonpoint source" means any activity that is not required to have a national pollutant discharge elimination system permit and that results in the release of pollutants to waters of the state. This release may result from precipitation runoff, aerial drift and deposition from the air, or the release of subsurface brine or other contaminated groundwaters to surface waters of the state.

(uu) "Numeric criteria value" means any of the values listed in tables 1a, 1b, 1c, 1d, 1e, 1g, 1h, 1i, 1j, and 1k of the "Kansas surface water quality standards: tables of numeric criteria."

~~(pp)~~ (vv) "Outstanding national resource water" means any of the surface waters or surface water segments of extraordinary recreational or ecological significance identified in the surface water register, as defined in ~~subsection (ddd)~~ this regulation, and afforded the highest level of water quality protection under the antidegradation provisions ~~of K.A.R. 28-16-28c(a)~~ and the mixing zone provisions of K.A.R. 28-16-28c~~(b)~~.

~~(qq)~~ (ww) "pH" means the common logarithm of the reciprocal of the hydrogen ion concentration measured in moles per liter, expressed on a scale that ranges from zero to 14, with values less than seven being more acidic and values greater than seven being more alkaline.

~~(rr)~~ (xx) "Picocurie per liter ~~(pCi/L)~~" ~~means~~ and "pCi/L" mean a volumetric unit of radioactivity equal to 2.22 nuclear transformations per minute per liter.

~~(ss)~~ (yy) "Point source" means any discernible, confined, and discrete conveyance including any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, ~~concentrated animal feeding operation~~ confined feeding facility with an animal unit capacity of 1,000 or more as defined in K.S.A. 65-171d and amendments thereto, ~~or~~ and floating craft, from which pollutants are or could be discharged. This term may include structures or site conditions that act to collect and convey stormwater runoff from roadways, urban areas, or industrial sites. This term shall not include agricultural stormwater discharges or return flows from irrigated agricultural land.

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~~(tt)~~ (zz) "Pollutant" means any physical, biological, or chemical conditions, substances, or combination of substances released into surface waters of the state that results in surface water pollution, as defined in ~~subsection (uu)~~ this regulation.

~~(uu) "Pollution" means any of the following:~~

~~(1) Contamination or other alteration of the physical, chemical, or biological properties of the surface waters of the state, including changes in temperature, taste, odor, turbidity, or color of the waters;~~

~~(2) discharges of gaseous, liquid, solid, radioactive, microbiological, or other substances into surface waters in a manner that may create a nuisance or render these waters harmful, detrimental, or injurious to any of the following:~~

~~(A) Public health, safety, or welfare;~~

~~(B) domestic, industrial, agricultural, recreational, or other designated uses; or~~

~~(C) livestock, domestic animals, or native or naturalized plant or animal life; or~~

~~(3) any discharge that will or is likely to exceed state effluent limitations predicated upon technology-based effluent standards or water quality-based standards.~~

~~(vv)~~ (aaa) "Potable water" means water that is suitable for drinking and cooking purposes in terms of both human health and aesthetic considerations.

~~(ww)~~ (bbb) "Precipitation runoff" means the rainwater~~,~~ or the meltwater derived from snow, hail, sleet, or other forms of atmospheric precipitation~~,~~ that flows by gravity over the surface of the land and into streams, lakes, or wetlands.

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~~(xx)~~ (ccc) "Presedimentation sludge" means a slurry or suspension of residual solid materials derived from an initial step in the production of potable water. ~~Presedimentation sludge shall also~~ This term shall include residual solids originating from the raw water supply used for industrial or other nonpotable water purposes, before the addition of any artificial materials not typically used in the production of potable water. The solid materials shall include sand, silt, and other easily settleable particles originating from the raw water supply.

~~(yy)~~ (ddd) "Private surface water" means any freshwater reservoir or pond that is both located on and completely bordered by land under common private ownership.

~~(zz)~~ (eee) "Public swimming area" means either of the following:

(1) Any classified surface water that is posted for swimming by a federal, state, or local government that has jurisdiction over the land adjacent to that particular body of water; or

(2) any privately owned or leased body of water that is open and accessible to the public and is intended for swimming.

~~(aaa)~~ (fff) "Seven-day, ten-year low flow ~~(7Q10 flow)~~" ~~means~~ and "7Q10 flow" mean the seven-day average low flow having a recurrence frequency of once in 10 years, as statistically determined from historical flow data. Where used in this regulation in the context of mixing zones, ~~the term~~ these terms shall refer to the minimum amount of streamflow occurring immediately upstream of a wastewater discharge and available, in whole or in part, for dilution or assimilation of wastewater discharges.

~~(bbb)~~ (ggg) "Site-specific criterion" means any criterion applicable to a given classified surface water segment and developed for the protection of the designated uses of that segment alone.

~~(eee)~~ (hhh) "~~Stream flow~~ Streamflow" means the volume of water moving past a stream cross-sectional plane per unit of time.

(iii) "Surface water pollution" means any of the following:

(1) Contamination or other alteration of the physical, chemical, or biological properties of the surface waters of the state, including changes in temperature, taste, odor, turbidity, or color of the waters;

(2) discharges of gaseous, liquid, solid, radioactive, microbiological, or other substances into surface waters in a manner that could create a nuisance or render these waters harmful, detrimental, or injurious to any of the following:

(A) Public health, safety, or welfare;

(B) domestic, industrial, agricultural, recreational, or other designated uses; or

(C) livestock, domestic animals, or native or naturalized plant or animal life; or

(3) any discharge that will or is likely to exceed state effluent limitations predicated upon technology-based effluent standards or water quality-based standards.

~~(ddd)~~ (jjj) "Surface water register" means a list of the state's major classified surface waters, including a listing of waters recognized as outstanding national resource waters or exceptional state waters, and the surface water use designations for each classified surface water, periodically updated and published by the department pursuant to ~~the requirements of~~ K.A.R. 28-

16-28d~~(d)(2)~~ and K.A.R. 28-16-28f~~(a)~~. The surface water register, published as the "Kansas surface water register," is adopted by reference in K.A.R. 28-16-28g.

~~(eee)~~ (kkk) "Surface water segment" means a delineated portion of a stream, lake, or wetland.

~~(fff)~~ (lll) "Surface waters" means ~~all of~~ the following:

(1) Streams, including rivers, creeks, brooks, sloughs, draws, arroyos, canals, springs, seeps, and cavern streams, and any alluvial aquifers associated with these surface waters;

(2) lakes, including oxbow lakes and other natural lakes and man-made reservoirs, lakes, and ponds; and

(3) wetlands, including ~~water bodies meeting the technical definition for jurisdictional wetlands given in the "corps of engineers wetlands delineation manual," as published in January 1987~~ swamps, marshes, bogs, and similar areas that are inundated or saturated by surface water or groundwater.

~~(ggg)~~ (mmm) "Surface waters of the state" means all surface waters occurring within the borders of the state of Kansas or forming a part of the border between Kansas and one of the adjoining states.

~~(hhh)~~ (nnn) "Teratogenic" means having the property of causing abnormalities that originate from impairment of an event that is typical in embryonic or fetal development.

(ooo) "Thirty-day, ten-year low flow" and "30Q10 flow" mean the 30-day average low flow having a recurrence frequency of once in 10 years, as statistically determined from

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historical flow data. Where used in this regulation in the context of mixing zones, these terms shall refer to the minimum amount of streamflow occurring immediately upstream of a wastewater discharge and available, in whole or in part, for dilution or assimilation of wastewater discharges.

~~(iii)~~ (ppp) "Toxic substance" means any substance that produces deleterious physiological effects in humans, animals, or plants.

~~(jjj)~~ (qqq) "Turbidity" means the cloudiness of water as measured by optical methods ~~(~~ of nephelometry~~)~~ and expressed in standard nephelometric units.

~~(kkk)~~ (rrr) "Use attainability analysis" means a study conducted or accepted by the department that is designed to determine whether or not a surface water or surface water segment supports, or is capable of supporting in the absence of artificial sources of pollution, one or more of the designated uses defined in K.A.R. 28-16-28d~~(b)~~ or K.S.A. 82a-2001, and amendments thereto.

~~(lll)~~ (sss) "Variance" means the department's written approval and authorization of a proposed action that knowingly will result in a lack of conformity with one or more of the criteria of K.A.R. 28-16-28e but that is deemed necessary based on the provisions of 40 C.F.R. 131.10(g)~~(1) through (g)(6), as in effect on~~ dated July 1, ~~2003~~ 2012, which is hereby adopted by reference~~.~~ , except that the phrase "federal clean water" shall be inserted before the word "act." Variances shall be administered by the department in accordance with K.A.R. 28-16-28f~~(e)~~.

~~(mmm)~~ (ttt) "Water-effect ratio ~~(WER)~~" ~~means~~ and "WER" mean the numerical toxicity ~~(~~, including median lethal concentration ~~or~~ and inhibition concentration 25~~)~~, of a chemical

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pollutant diluted in water from a given stream, lake, or wetland divided by the numerical toxicity of the same pollutant diluted in laboratory water.

~~(nnn)~~ (uuu) "Water quality certification" means the department's written finding that a proposed action that impacts ~~upon~~ water quality will comply with the terms and conditions of the surface water quality standards.

~~(ooo)~~ (vvv) "Whole-effluent toxicity limitation" means any restriction imposed by the department on the overall acute or chronic toxicity of an effluent discharged to a surface water.

~~(ppp)~~ (www) "Zone of initial dilution" means the region of a surface water in the immediate vicinity of a discharge where acute and chronic criteria may be exceeded.

(Authorized by K.S.A. ~~2003~~ 2013 Supp. 65-171d and K.S.A. 65-171m; implementing K.S.A. 65-165, K.S.A. ~~2003~~ 2013 Supp. 65-171d, K.S.A. 65-171m, and K.S.A. 2003 2013 Supp. 82a-2001; effective May 1, 1986; amended Aug. 29, 1994; amended July 30, 1999; amended Nov. 3, 2000; amended Aug. 31, 2001; amended Jan. 3, 2003; amended Oct. 24, 2003; amended Jan. 28, 2005; amended P-_____.)

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28-16-28c. General provisions. (a) Antidegradation.

(1) General purpose waters.

(A) Levels of water quality in surface waters of the state shall be maintained to protect the existing uses of those surface waters.

(B) For all surface waters of the state, if existing water quality is better than applicable water quality criteria established in ~~these regulations~~ K.A.R. 28-16-28b through 28-16-28g, that existing water quality shall be fully maintained and protected.

Water quality may be lowered only if the ~~department~~ secretary finds, after full satisfaction of the intergovernmental coordination and public participation requirements on antidegradation contained in the "Kansas antidegradation policy," as ~~defined~~ adopted by reference in K.A.R. 28-16-28b~~(ff)~~, that a lowering of water quality is needed to allow for important social or economic development in the geographical area in which the waters are located.

In allowing the lowering of water quality, the maintenance and protection of existing uses shall be ensured ~~by the department~~, and the highest statutory and regulatory requirements for all new and existing point sources of pollution and all cost-effective and reasonable best management practices for nonpoint sources of pollution shall be achieved.

(2) Exceptional state waters. Wherever surface waters of the state constitute exceptional state waters, discharges shall be allowed only if existing uses and existing water quality are maintained and protected.

(3) Outstanding national resource waters. Wherever surface waters of the state constitute an outstanding national resource water, existing uses and existing water quality shall be

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ATTORNEY GENERAL
AUG 13 2014
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JUL 17 2014
DEPT. OF ADMINISTRATION

maintained and protected. New or expanded discharges shall not be allowed into outstanding national resource waters.

(4) Threatened or endangered species. No degradation of surface water quality by artificial sources of pollution shall be allowed if the degradation will result in harmful effects on populations of any threatened or endangered species of aquatic or semiaquatic life or terrestrial wildlife or its critical habitat as determined by the secretary of the department of wildlife, ~~and~~ parks, and tourism pursuant to K.S.A. 32-960, and amendments thereto, ~~and~~ K.A.R. 115-15-3, or ~~in~~ the federal endangered species act, 16 U.S.C. Section 1532 et seq., as ~~amended on October 7, 1988~~ in effect on July 1, 2012.

(5) Temporary discharges. Temporary sources of pollution ~~complying with~~ meeting the ~~provisions~~ requirements of subsection (d) of this regulation and K.A.R. 28-16-28e~~(b)~~, producing only ephemeral surface water quality degradation not harmful to existing uses, may be allowed by the department.

(6) Thermal discharges. Implementation of these antidegradation provisions for thermal discharges shall be consistent with the requirements of 33 U.S.C. Section 1326, as in effect on ~~January 1, 1989~~ July 1, 2012.

(7) Implementation. Implementation of these antidegradation provisions shall be consistent with ~~the guidelines provided in~~ the "Kansas antidegradation policy," available upon request from the department.

(b) Mixing zones.

(1) General limitations. Mixing zones shall not extend across public drinking water intakes, stream tributary mouths, or swimming or boat ramp areas, nor shall mixing zones exist in locations that preclude the normal upstream or downstream movement or migration of aquatic organisms. Mixing zones associated with separate discharges shall not overlap unless a department-approved demonstration indicates that the overlapping will not result in a violation of the general water quality criteria ~~set forth~~ specified in K.A.R. 28-16-28c~~(b)~~ or in an impairment of the existing uses of the receiving surface water. The zone of initial dilution for a mixing zone shall comprise, in terms of volume, not more than 10 percent of the mixing zone.

(2) Discharges into classified ~~streams~~ stream segments. No mixing zone within a classified stream segment, as defined in K.S.A. 2013 Supp. 82a-2001 and amendments thereto, shall extend beyond the middle of the nearest downstream current crossover point, where the main current flows from one bank to the opposite bank, or more than 300 meters downstream from the point of effluent discharge.

(3) Effluent-dominated streams. If the ratio of the receiving stream critical low flow to the discharge design flow is less than 3:1, then the mixing zone shall be the cross-sectional area or the volumetric flow of the stream during critical low flow conditions, as measured immediately upstream of the discharge during the critical low flow.

(4) Applications. Mixing zones shall be applied in accordance with paragraphs (b)(7) and (b)(8)~~(A), (B), (C), and (D) of this regulation~~, based on the classification and designated uses of a stream segment for individual pollutants. For surface waters classified as outstanding national

resource waters or exceptional state waters, or designated as special aquatic life use waters, mixing zones for specific discharges may be allowed by the secretary in accordance with paragraphs (b)(6), (b)(7), and (b)(8)(A) ~~of this regulation~~. Mixing zones also may be allowed if there are no aquatic life criteria for an individual pollutant.

(5) Restrictions. ~~Wherever site conditions preclude the rapid dispersion and dilution of effluent within the receiving surface water or if, in the judgment of the secretary, the presence of a mixing zone would unduly jeopardize human health or any of the existing uses of the receiving surface water,~~ The right to prohibit the use of mixing zones or to place more stringent limitations on mixing zones than those stipulated in paragraphs (b)(2), (3), and (13) ~~of this regulation~~ shall be reserved by the ~~department~~ secretary wherever site conditions preclude the rapid dispersion and dilution of effluent within the receiving surface water or if, in the judgment of the secretary, the presence of a mixing zone would unduly jeopardize human health or any of the existing uses of the receiving surface water.

(6) Outstanding national resource waters. Mixing zones may be allowed by the secretary for existing permitted discharges in ~~stream segments classified in the future~~ surface waters re-designated as outstanding national resource waters in the "Kansas surface water register" pursuant to K.A.R. 28-16-28g but shall be evaluated on an individual permit basis to prevent the degradation of the ~~stream segment~~ outstanding national resource waters.

(7) Exceptional state waters. If the ratio of the receiving stream critical low flow to the discharge design flow is equal to or greater than 3:1, the mixing zone shall not exceed 25 percent

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AUG 28 2014
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ATTORNEY GENERAL
AUG 13 2014
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JUL 22 2014
DEPT. OF ADMINISTRATION

of the cross-sectional area or volumetric flow of the receiving stream during critical low flow conditions, measured immediately upstream of the discharge during the critical low flow.

(8) General purpose waters.

(A) Special aquatic life use waters. If the ratio of the receiving stream critical low flow to the discharge design flow is equal to or greater than 3:1, the mixing zone shall not exceed 25 percent of the cross-sectional area or volumetric flow of the receiving stream during critical low flow conditions, measured immediately upstream of the discharge during the critical low flow.

(B) Expected aquatic life use waters. If the ratio of the receiving stream critical low flow to the discharge design flow is equal to or greater than 3:1, the mixing zone shall not exceed 50 percent of the cross-sectional area or volumetric flow of the receiving stream during critical low flow conditions, measured immediately upstream of the discharge during the critical low flow.

(C) Restricted aquatic life use waters. If the ratio of the receiving stream critical low flow to the discharge design flow is equal to or greater than 3:1, the mixing zone shall not exceed 100 percent of the cross-sectional area or volumetric flow of the receiving stream during critical low flow conditions, measured immediately upstream of the discharge during the critical low flow.

(D) Recreational uses. Mixing zones for classified surface waters designated for recreational uses may be allowed by the secretary on an individual permit basis in accordance with paragraph (b)(10) ~~of this regulation~~.

(9) Alternate low flows. Alternate low flows~~, as defined in K.A.R. 28-16-28b(b),~~ may be utilized by the department as the critical low flow in the calculation of the mixing zone cross-sectional area or volumetric flow for specific water quality criteria.

(A) The 30Q10 flow for ammonia or the guaranteed minimum flow provided by a water assurance district, if applicable, shall be used by the department in the calculation of the mixing zone cross-sectional area or volumetric flow.

(B) Other alternate low flows, with a specific recurrence frequency and averaging period, shall be considered by the department if those flows will not result in excursions above aquatic life criteria more frequently than once every three years.

(C) ~~The right to approve or disapprove any proposed alternate low flow shall be reserved by the department~~ Each proposed alternate low flow shall be subject to approval by the secretary.

(10) Alternate or site-specific mixing zones. Alternate mixing zones employing specific linear distances for mixing zones or alternate stream dilution volumes or cross-sectional areas, or both, may be allowed by the ~~department~~ secretary. Site-specific mixing zones may be allowed if data generated from a site-specific study supports the use of an alternate mixing zone, but ~~still~~ maintains a zone of passage for aquatic life.

(11) Discharges into classified lakes. Mixing zones shall ~~be prohibited by the department from extending~~ not extend into any lake classified as an outstanding national resource water or exceptional state water, or designated as a special aquatic life use water according to K.A.R. 28-16-28d~~(d)~~. Mixing zones in lakes designated as expected aquatic life use water or restricted

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AUG 13 2014
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JUL 17 2014
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aquatic life use waters may be allowed by the department if the mixing zones do not extend farther than 50 meters from the point of effluent discharge or do not comprise more than one percent of the total volume of the receiving lake as measured at the conservation pool.

(12) Discharges into classified ponds. Mixing zones ~~extending~~ shall not extend into any classified pond ~~shall be prohibited by the department~~.

(13) Discharges into classified wetlands. Mixing zones shall ~~be prohibited by the department from extending~~ not extend into any classified ~~lacustrine or palustrine~~ wetland ~~as defined in the "corps of engineers wetlands delineation manual," as published in January 1987~~.

(c) Special conditions. The following special conditions shall not remove the obligation to design, build, or use pollution control structures or methods to control point sources and nonpoint sources ~~of pollution as defined in K.A.R. 28-16-28b(ss) and (oo).~~ :

(1) Low flow. Any classified stream segment may be exempted by the secretary from the application of some or all of the numeric surface water criteria specified in K.A.R. 28-16-28e~~(d)~~ if streamflow is less than the critical low flow.

(2) ~~High flow. Any classified stream segment may be exempted by the secretary from the application of the numeric criteria for *E. coli* bacteria specified in tables 1i and 1j of the "Kansas surface water quality standards: tables of numeric criteria," which is adopted by reference in K.A.R. 28-16-28e(d), if any of the following conditions is met:~~

~~(A) The flow is equal to or greater than the flow that is exceeded 10 percent of the time for any classified stream segment with a mean flow of less than 30 cubic feet per second.~~

~~(B) The flow is equal to or greater than 50 percent of the two-year flood flow for any classified stream segment that has a mean flow of 30 or more cubic feet per second but less than 900 cubic feet per second.~~

~~(C) The flow is equal to or greater than the two-year flood flow for any classified stream segment that has a mean flow greater than 900 cubic feet per second.~~

~~(3)~~ Effluent-created flow.

(A) For any current classified stream segment in which continuous flow is sustained primarily through the discharge of treated effluent and the segment does not otherwise meet the requirements of a classified stream in K.A.R. 28-16-28d~~(a)(1)~~, the discharger shall ~~not be required to~~ provide treatment ~~beyond that treatment required~~ in accordance with the federal secondary treatment regulation, 40 C.F.R. 133.102, dated July 1, ~~2003~~ 2012~~, which is hereby adopted by reference~~.

(B) This discharge shall not violate the general surface water quality criteria listed in K.A.R. 28-16-28e~~(b)~~ or impair any of the existing or attained designated uses of a downstream classified stream segment.

(C) If a use attainability analysis demonstrates that the designated uses of a surface water segment are not attainable, then the new use designations for effluent-created flow shall be adopted as specified in K.A.R. 28-16-28d~~(d)(2)~~ and approved by the ~~environmental protection agency~~ EPA before serving as a basis for limitations in any new, reissued, or modified permit.

(d) Treatment requirements.

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AUG 28 2014
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ATTORNEY GENERAL
AUG 13 2014

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JUL 17 2014
DEPT. OF ADMINISTRATION

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(1) All effluent shall receive appropriate minimum levels of treatment ~~as required by~~ in accordance with 40 C.F.R. 122.44, dated July 1, ~~2003~~ 2012~~, which is hereby adopted by reference~~.

(2) Effluent shall receive a higher level of treatment than that stipulated in paragraph (d)(1) of this regulation, if the department determines that this higher level of treatment is needed to fully comply with the terms and conditions of subsection (a) of this regulation or K.A.R. 28-16-28e.

(e) Analytical testing. All methods of sample collection, preservation, and analysis used in applying ~~any of these regulations~~ K.A.R. 28-16-28b through 28-16-28g shall be in accordance with those methods prescribed by the department.

(f) Application of standards to privately owned reservoirs or ponds. The application of water quality standards to privately owned reservoirs or ponds shall be subject to the provisions of K.S.A. 65-171d, and amendments thereto. (Authorized by ~~and implementing~~ K.S.A. ~~2003~~ 2013 Supp. 65-171d, K.S.A. 2013 Supp. 82a-2010, and K.S.A. 65-171m; implementing K.S.A. 2013 Supp. 82a-2002, 82a-2003, 82a-2004, and 82a-2005; effective May 1, 1986; amended, T-87-8, May 1, 1986; amended May 1, 1987; amended Aug. 29, 1994; amended July 30, 1999; amended Aug. 31, 2001; amended Jan. 3, 2003; amended Jan. 28, 2005; amended P-_____.)

Proposed

28-16-28d. Surface water classification and use designation. (a) Surface water classification. Surface waters shall be classified as follows:

(1) Classified stream segments shall be those stream segments defined in K.S.A. 82a-2001~~(a)~~, and amendments thereto.

(2) Classified surface waters other than classified stream segments shall be defined as follows:

(A) Classified lakes shall be all lakes owned by federal, state, county, or municipal authorities and all privately owned lakes that serve as public drinking water supplies or that are open to the general public for primary or secondary contact recreation.

(B) Classified wetlands shall be the following:

(i) All wetlands owned by federal, state, county, or municipal authorities;

(ii) all privately owned wetlands open to the general public for hunting, trapping, or other forms of secondary contact recreation; and

(iii) all wetlands classified as outstanding national resource waters or exceptional state waters, or designated as special aquatic life use waters according to subsection (d) ~~of this regulation~~.

Wetlands created for the purpose of wastewater treatment shall not be considered classified wetlands.

(C) Classified ponds shall be all ponds owned by federal, state, county, or municipal authorities and all privately owned ponds that impound water from a classified stream segment as defined in paragraph (a)(1).

(b) Designated uses of classified surface waters other than classified stream segments. The designated uses of classified surface waters other than classified stream segments shall be defined as follows:

(1) "Agricultural water supply use" means the use of classified surface waters other than classified stream segments for agricultural purposes, including the following:

(A) "Irrigation," which means the withdrawal of classified surface waters other than classified stream segments for application onto land; and

(B) "livestock watering," which means the provision of classified surface waters other than classified stream segments to livestock for consumption.

(2) "Aquatic life support use" means the use of classified surface waters other than classified stream segments for the maintenance of the ecological integrity of lakes, wetlands, and ponds, including the sustained growth and propagation of native aquatic life; naturalized, important, recreational aquatic life; and indigenous or migratory semiaquatic or terrestrial wildlife directly or indirectly dependent on classified surface waters other than classified stream segments for survival.

(A) "Special aquatic life use waters" means either classified surface waters other than classified stream segments that contain combinations of habitat types and indigenous biota not found commonly in the state or classified surface waters other than classified stream segments that contain representative populations of threatened or endangered species.

(B) "Expected aquatic life use waters" means classified surface waters other than classified stream segments containing habitat types and indigenous biota commonly found or expected in the state.

(C) "Restricted aquatic life use waters" means classified surface waters other than classified stream segments containing indigenous biota limited in abundance or diversity by the physical quality or availability of habitat, due to natural deficiencies or artificial modifications, compared to more suitable habitats in adjacent waters.

(3) "Domestic water supply use" means the use of classified surface waters other than classified stream segments, after appropriate treatment, for the production of potable water.

(4) "Food procurement use" means the use of classified surface waters other than classified stream segments for obtaining edible forms of aquatic or semiaquatic life for human consumption.

(5) "Groundwater recharge use" means the use of classified surface waters other than classified stream segments for replenishing fresh or usable groundwater resources. This use may involve the infiltration and percolation of classified surface waters other than classified stream segments through sediments and soils or the direct injection of classified surface waters other than classified stream segments into underground aquifers.

(6) "Industrial water supply use" means the use of classified surface waters other than classified stream segments for nonpotable purposes by industry, including withdrawals for cooling or process water.

(7) "Recreational use" means the use of classified surface waters other than classified stream segments for primary contact recreation or secondary contact recreation.

(A) "Primary contact recreational use for classified surface waters other than classified stream segments" means the use of classified surface waters other than classified stream segments for recreation on and after April 1 through October 31 of each year, during which ~~the body~~ a person is immersed to the extent that some inadvertent ingestion of water is probable. This use shall include boating, mussel harvesting, swimming, skin diving, waterskiing, and windsurfing.

(i) "Primary contact recreational use: swimming beach" shall apply to those classified surface waters other than classified stream segments that have posted public swimming areas. These waters shall present a risk of human illness that is no greater than 0.8 percent.

(ii) "Primary contact recreational use: public access" shall apply to those classified surface waters other than classified stream segments where full body contact can occur and that are, by law or written permission of the landowner, open to and accessible by the public. These waters shall present a risk of human illness that is no greater than 1.0 percent.

(iii) "Primary contact recreational use: restricted access" shall apply to those classified surface waters other than classified stream segments where full body contact can occur and that are not open to and accessible by the public under Kansas law. These waters shall present a risk of human illness that is no greater than 1.2 percent.

(B) "Secondary contact recreational use for classified surface waters other than classified stream segments" means recreation during which the ingestion of classified surface waters other

than classified stream segments is not probable. This use shall include wading, fishing, trapping, and hunting.

(i) "Secondary contact recreational use: public access" shall apply to classified surface waters other than classified stream segments where the surface water is, by law or written permission of the landowner, open to and accessible by the public.

(ii) "Secondary contact recreational use: restricted access" shall apply to classified surface waters other than classified stream segments where the surface water is not open to and accessible by the public under Kansas law.

(c) Designated uses of classified stream segments. The designated uses of classified stream segments shall be those defined in K.S.A. 82a-2001~~(c)~~, and amendments thereto.

(d) Assignment of uses to surface waters.

(1) Classified surface waters shall be designated for uses based upon the results of use attainability analyses conducted in accordance with K.S.A. 82a-2005~~(a)~~, and amendments thereto. The provisions of the federal water quality standards regulation, 40 C.F.R. 131.10(g)~~(1) through (g)(6) as in effect on July 1, 2003 shall be followed and are~~, as adopted by reference in K.A.R. 28-16-28b~~(lll)~~(sss), shall be followed.

(2) ~~A register of surface water classifications and use designations shall be maintained by the department. This register shall identify the designated uses of all listed major classified streams, lakes, wetlands, and ponds and shall list those streams, lakes, wetlands, and ponds recognized by the department as outstanding national resource waters or exceptional state waters. The use designations of listed surface waters or water bodies recognized as outstanding national~~

~~resource waters or exceptional state waters shall be those identified in the department's "Kansas surface water register," as adopted by reference in K.A.R. 28-16-28g~~ Classified surface waters and their designated uses shall be identified and listed in the "Kansas surface water register," as adopted by reference in K.A.R. 28-16-28g.

(3) The use designations for classified streams, lakes, wetlands, and ponds not listed in the surface water register shall be determined by the secretary on a case-by-case basis in accordance with ~~the requirements of~~ paragraph (d)(1). (Authorized by K.S.A. ~~2003~~ 2013 Supp. 65-171d, 82a-2005, and 82a-2010; implementing K.S.A ~~2003~~ 2013 Supp. 65-171d ~~and K.S.A. 2003 Supp. 82a-2001~~, 82a-2002, 82a-2003, 82a-2004, and 82a-2005; effective May 1, 1986; amended, T-87-8, May 1, 1986; amended May 1, 1987; amended Aug. 29, 1994; amended July 30, 1999; amended Aug. 31, 2001; amended Jan. 3, 2003; amended Jan. 23, 2004; amended Jan. 28, 2005; amended P-_____.)

28-16-28e. Surface water quality criteria. (a) Criteria development guidance. The development of surface water quality criteria for substances not listed in these standards shall be guided by water quality criteria published by the ~~United States environmental protection agency~~ EPA. If the department finds that the criteria listed in this regulation are underprotective or overprotective for a given surface water segment, appropriate site-specific criteria may be developed and applied by the department, in accordance with K.A.R. 28-16-28f ~~(f)~~, using bioassessment methods or other related scientific procedures, including those procedures consistent with the ~~United States environmental protection agency's~~ EPA's "water quality standards handbook," second edition, as published in August 1994, or other department-approved methods.

(b) General criteria for surface waters. The following criteria shall apply to all surface waters, regardless of classification~~.~~ :

(1) Surface waters shall be free, at all times, from the harmful effects of substances that originate from artificial sources of pollution and that produce any public health hazard, nuisance condition, or impairment of a designated use.

(2) Hazardous materials derived from artificial sources, including toxic substances, radioactive isotopes, and infectious microorganisms derived ~~directly or indirectly~~ from point sources or nonpoint sources, shall not occur in surface waters at concentrations or in combinations that jeopardize the public health or the survival or well-being of livestock, domestic animals, terrestrial wildlife, or aquatic or semiaquatic life.

(3) Surface waters shall be free of all discarded solid materials, including trash, garbage, rubbish, offal, grass clippings, discarded building or construction materials, car bodies, tires, wire, and other unwanted or discarded materials. The placement of stone and concrete rubble for bank stabilization shall be acceptable to the department, if all other required permits are obtained before placement.

(4) Surface waters shall be free of floating debris, scum, foam, froth, and other floating materials directly or indirectly attributable to artificial sources of pollution.

(5) Oil and grease from artificial sources shall not cause any visible film or sheen to form upon the surface of the water or upon submerged substrate or adjoining shorelines, nor shall these materials cause a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines.

(6) Surface waters shall be free of deposits of sludge or fine solids attributable to artificial sources of pollution.

(7) Taste-producing and odor-producing substances of artificial origin shall not occur in surface waters at concentrations that interfere with the production of potable water by conventional water treatment processes, that impart an unpalatable flavor to edible aquatic or semiaquatic life or terrestrial wildlife, or that result in noticeable odors in the vicinity of surface waters.

(8) The natural appearance of surface waters shall not be altered by the addition of color-producing or turbidity-producing substances of artificial origin.

(9) In stream segments where background concentrations of naturally occurring substances, including chlorides and sulfates, exceed the water quality criteria listed in table 1a of the "Kansas surface water quality standards: tables of numeric criteria," as adopted by reference in subsection ~~(d) of this regulation~~ (e), at ambient flow, the existing water quality shall be maintained, and the newly established numeric criteria shall be the background concentration~~, as defined in K.A.R. 28-16-28b(e)~~. Background concentrations shall be established using the methods outlined in the "Kansas implementation procedures: surface water quality standards," as ~~defined~~ adopted by reference in K.A.R. 28-16-28b~~(gg)~~, and available upon request from the department.

(c) Application of criteria for designated uses of surface waters.

(1) The numeric criteria in tables 1a, 1b, 1c, 1d, and 1e of the "Kansas surface water quality standards: tables of numeric criteria~~,~~" ~~as adopted by reference in subsection (d) of this regulation,~~ shall not apply if the critical low flow is less than 0.03 cubic meter per second (1.0 cubic foot per second) for waters designated as expected aquatic life use waters and restricted aquatic life use waters, unless studies conducted or approved by the department show that water present during periods of no flow, or flow below critical low flow, provides important refuges for aquatic life and permits biological recolonization of intermittently flowing segments.

(2) The numeric criteria in tables 1a, 1b, 1c, 1d, and 1e~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" shall not apply if the critical low flow is less than 0.003 cubic meter per second (0.1 cubic foot per second) for waters designated as special aquatic life use waters, unless studies conducted or

approved by the department show that water present during periods of no flow, or flow below critical low flow, provides important refuges for aquatic life and permits biological recolonization of intermittently flowing segments.

(3) Each digression shall be assessed by the secretary for the purposes of section 303(d) of the federal clean water act, with consideration of acceptable duration and frequency of the digression and representation of actual ambient conditions by environmental monitoring data, as specified in the "Kansas implementation procedures: surface water quality standards."

(d) Criteria for designated uses of surface waters. The following criteria shall apply to all classified surface waters for the indicated designated uses~~.~~ :

(1) Agricultural water supply use. The water quality criteria for irrigation and livestock watering ~~set forth~~ specified in table 1a~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" shall not be exceeded outside of mixing zones due to artificial sources of pollution.

(2) Aquatic life support use.

(A) Nutrients. The introduction of plant nutrients into streams, lakes, or wetlands from artificial sources shall be controlled to prevent the accelerated succession or replacement of aquatic biota or the production of undesirable quantities or kinds of aquatic life.

(B) Suspended solids. Suspended solids added to surface waters by artificial sources shall not interfere with the behavior, reproduction, physical habitat, or other factors related to the survival and propagation of aquatic or semiaquatic life or terrestrial wildlife. In the application of this provision, suspended solids associated with discharges of presedimentation sludge from

water treatment facilities shall be deemed noninjurious to aquatic and semiaquatic life and terrestrial wildlife~~,~~ if these discharges ~~comply~~ fully ~~with~~ meet the requirements of paragraphs (b)(6) and (8) and paragraph ~~(c)(2)(D) of this regulation~~ (d)(2)(D).

(C) Temperature.

(i) Heat of artificial origin shall not be added to a surface water in excess of the amount that will raise the temperature of the water beyond the mixing zone more than 3° C above natural conditions. Additionally, a discharge to a receiving water shall not lower the temperature of the water beyond the mixing zone more than 3° C below natural conditions. The normal daily and seasonal temperature variations occurring within a surface water before the addition of heated or cooled water of artificial origin shall be maintained.

(ii) Temperature criteria applicable to industrial cooling water recycling reservoirs that meet the requirements for classification specified in K.A.R. 28-16-28d~~(a)(2)~~ shall be established by the secretary on a case-by-case basis to protect the public health, safety, or the environment.

(D) Toxic substances.

(i) Conditions of acute toxicity shall not occur in classified surface waters outside of zones of initial dilution, nor shall conditions of chronic toxicity occur in classified surface waters outside of mixing zones.

(ii) Acute criteria for the aquatic life support use specified in tables 1a, 1b, and 1c~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" shall apply beyond the zone of initial dilution. Chronic criteria for the aquatic life support use ~~given~~ specified in tables 1a, 1b, 1d, and 1e~~, as adopted in subsection (d)~~

~~of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" shall apply beyond the mixing zone.

(iii) If a discharge contains a toxic substance that lacks any published criteria for the aquatic life support use, or if a discharge contains a mixture of toxic substances capable of additive or synergistic interactions, bioassessment methods and procedures shall be specified by the department to establish whole-effluent toxicity limitations that are consistent with paragraph ~~(c)(2)(D)(i) of this regulation~~ (d)(2)(D)(i).

(3) Domestic water supply use.

(A) Except as provided in paragraph ~~(c)(3)(B)~~ (d)(3)(B), the criteria listed in table 1a~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" for domestic water supply use shall not be exceeded at any point of domestic water supply diversion.

(B) In stream segments where background concentrations of naturally occurring substances, including chlorides and sulfates, exceed the domestic water supply criteria listed in table 1a~~, as adopted in subsection (d) of this regulation, at ambient flow~~ of the "Kansas surface water quality standards: tables of numeric criteria," due to intrusion of mineralized groundwater, the existing water quality shall be maintained, and the newly established numeric criteria for domestic water supply shall be the background concentration~~, as defined in K.A.R. 28-16-28b(e)~~. Background concentrations shall be established using the methods outlined in the "Kansas implementation procedures: surface water quality standards," ~~as defined in K.A.R. 28-16-28b(gg),~~ available upon request from the department.

(C) Any substance derived from an artificial source that, alone or in combination with other synthetic or naturally occurring substances, causes toxic, carcinogenic, teratogenic, or mutagenic effects in humans shall be limited to nonharmful concentrations in surface waters. Unless site-specific water quality conditions warrant the promulgation of more protective criteria under the provisions of subsection (a) of this regulation and K.A.R. 28-16-28f~~(f)~~, maximum contaminant levels for toxic, carcinogenic, teratogenic, or mutagenic substances ~~promulgated by the United States environmental protection agency pursuant to~~ specified in 40 C.F.R. 141.11 ~~through 141.16~~, 141.13, and ~~40 C.F.R. 141.60~~ 141.61 through 141.66, dated July 1, ~~2003 and adopted by reference in K.A.R. 28-16-28b(hh)~~ 2012, shall be deemed nonharmful ~~by the department and adopted as domestic water supply criteria~~.

(D) The introduction of plant nutrients into surface waters designated for domestic water supply use shall be controlled to prevent interference with the production of drinking water.

(4) Food procurement use.

(A) Criteria listed in table 1a~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" for food procurement use shall not be exceeded outside of a mixing zone due to any artificial source of pollution.

(B) Substances that can bioaccumulate in the tissues of edible aquatic or semiaquatic life or wildlife through bioconcentration or biomagnification shall be limited in surface waters to concentrations that result in no harm to human consumers of these tissues. For bioaccumulative carcinogens, surface water concentrations corresponding to a cancer risk level of less than

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JUL 18 2014
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0.000001 (10^{-6}) in human consumers of aquatic or semiaquatic life or wildlife shall be deemed nonharmful by the department and adopted as food procurement criteria. Average rates of tissue consumption and lifetime exposure shall be assumed by the department in the estimation of the cancer risk level.

(5) Groundwater recharge use. In surface waters designated for the groundwater recharge use, water quality shall be such that, at a minimum, degradation of groundwater quality does not occur. Degradation shall include any statistically significant increase in the concentration of any chemical or radiological contaminant or infectious microorganism in groundwater resulting from surface water infiltration or injection.

(6) Industrial water supply use. Surface water quality criteria for industrial water supplies shall be determined by the secretary on a case-by-case basis to protect the public health, safety, or the environment.

(7) Recreational use.

(A) General. The introduction of plant nutrients into surface waters designated for primary or secondary contact recreational use shall be controlled to prevent the development of objectionable concentrations of algae or algal by-products or nuisance growths of submersed, floating, or emergent aquatic vegetation.

(B) Primary contact recreation for classified surface waters other than classified stream segments. A single sample maximum or a geometric mean of at least five samples collected during separate 24-hour periods within a 30-day period shall not exceed the criteria in table 1j~~, as~~

~~adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" beyond the mixing zone.

(C) Secondary contact recreational use for classified surface waters other than classified stream segments. A single sample maximum or a geometric mean of at least five samples collected during separate 24-hour periods within a 30-day period shall not exceed the criteria in table 1j~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" beyond the mixing zone.

(D) Primary contact recreation for classified stream segments. At least five samples shall be collected during separate 24-hour periods within a 30-day period. A geometric mean analysis of these samples shall not exceed the criteria in table 1i~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" beyond the mixing zone.

(E) Secondary contact recreation for classified stream segments. The following criteria shall be in effect from January 1 through December 31 of each year~~.~~ :

(i) At least five samples shall be collected during separate 24-hour periods within a 30-day period.

(ii) A geometric mean analysis of ~~these~~ the samples specified in paragraph (d)(7)(E)(i) shall not exceed the criteria in table 1i~~, as adopted in subsection (d) of this regulation,~~ of the "Kansas surface water quality standards: tables of numeric criteria" beyond the mixing zone.

(F) Wastewater disinfection. Wastewater effluent shall be disinfected if ~~it is determined by~~ the department determines that the discharge of nondisinfected wastewater constitutes an

actual or potential threat to public health. Situations that constitute an actual or potential threat to public health shall include instances in which there is a reasonable potential for the discharge to exceed the applicable criteria supporting the assigned recreational use designation or if a water body is known or likely to be used for either of the following:

(i) Primary or secondary contact recreation; or

(ii) any domestic water supply.

(8) Multiple uses. If a classified stream segment or classified surface water other than a classified stream segment is designated for more than one designated use according to K.A.R. 28-16-28d~~(d)~~, the water quality of the classified stream segment or classified surface water other than a classified stream segment shall ~~comply with~~ meet the most stringent of the applicable water quality criteria.

~~(d)~~ (e) Tables. The numeric criteria for the designated uses of classified surface waters shall be the numeric criteria specified in the department's "Kansas surface water quality standards: tables of numeric criteria," dated ~~December 6, 2004~~ October 1, 2012, which is hereby adopted by reference. (Authorized by K.S.A. ~~2003~~ 2013 Supp. 65-171d, K.S.A. 65-171m, and K.S.A. ~~2003~~ 2013 Supp. ~~82a-2001~~ 82a-2010; implementing K.S.A. ~~2003~~ 2013 Supp. 65-171d, K.S.A. 65-171m, and K.S.A. ~~2003~~ 2013 Supp. ~~82a-2001~~ 82a-2002, 82a-2003, 82a-2004, and 82a-2010; effective May 1, 1986; amended, T-87-8, May 1, 1986; amended May 1, 1987; amended Aug. 29, 1994; amended July 30, 1999; amended Nov. 3, 2000; amended Aug. 31, 2001; amended Jan. 3, 2003; amended Oct. 24, 2003; amended Jan. 28, 2005; amended P-_____.)

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28-16-28f. Administration of surface water quality standards. (a) ~~Review and revision. At least once every three years, a public hearing shall be held for the purpose of reviewing and, as appropriate, modifying the surface water quality standards and the surface water register.~~

~~(b)~~ Application of modified surface water quality standards. A modification to the surface water quality standards, the surface water register, or both, shall have no effect on the requirements of any existing enforceable discharge permit issued under K.S.A. 65-165, and amendments thereto, unless the discharge fails to meet the requirements of the permit or the ~~department has reason to believe~~ secretary determines that continuation of the discharge will result in a potential or actual public health hazard or in irreversible water use impairments.

~~(c)~~ (b) Water quality certification. No action identified in this subsection shall be taken unless the department has issued a water quality certification for the following:

(1) Any action requiring a federal license or permit pursuant to the federal clean water act;

(2) any action subject to the permitting provisions of K.S.A. 65-165, and amendments thereto;

(3) any water development project subject to the provisions of K.S.A. 82a-325 et seq., and amendments thereto; and

(4) any action undertaken by any Kansas state agency that~~, in the opinion of the secretary,~~ has a potential water quality impact.

~~(d)~~ (c) Compliance schedules.

(1) Except as provided in paragraph ~~(d)(2) in this regulation~~ (c)(2), compliance schedules contained in any discharge permit or license issued by the department pursuant to the federal

clean water act or K.S.A. 65-165, and amendments thereto, shall not extend more than three years beyond the date of permit issuance.

(2) Compliance schedules of up to five years in total duration may be granted if it is demonstrated that the strict application of paragraph ~~(d)(1) in this regulation~~ (c)(1) is not feasible due to construction scheduling constraints or other technical limitations.

~~(e)~~ (d) Variances. If, upon written application by any person, the secretary finds that by reason of substantial and widespread socioeconomic impact the strict enforcement of the water quality criteria of K.A.R. 28-16-28e~~(e)~~(d) is not feasible, a variance may be permitted by the secretary.

(1) ~~The provisions of 40 C.F.R. 131.10(g), as adopted by reference in K.A.R. 28-16-28b(lll), shall be considered by the secretary in reviewing the need for a variance.~~ Each person requesting a variance shall demonstrate compliance with 40 C.F.R. 131.10(g), which is adopted by reference in K.A.R. 28-16-28b.

(2) In granting a variance, conditions and time limitations may be set by the secretary with the intent that progress be made toward improvements in surface water quality.

(3) ~~Each variance shall be granted only after public notification and opportunity for public comment. Each variance, once granted, shall be adopted into the regulations at the next systematic review or subsequent triennial review.~~

~~(4)~~ No action that impacts ~~upon~~ water quality shall be granted a variance from the ~~terms and conditions~~ requirements of K.A.R. 28-16-28e(b).

~~(f)~~ (e) Site-specific criteria. ~~Whenever the secretary proposes to use any site-specific criterion, a public notice stating the intention to use a site-specific criterion shall be issued by the department. The public notice shall include a description of the affected surface water or surface water segment and the reasons for applying the proposed criterion. If the secretary determines that there is significant public interest, a public hearing shall be held in the geographical vicinity of the affected surface water or surface water segment. A public notice of the final site-specific criterion shall be published in the Kansas register. Each site-specific criterion, once developed, shall be adopted into the regulations at the next systematic review or subsequent triennial review~~ Site-specific criteria shall be established using the methods outlined in the "Kansas implementation procedures: surface water quality standards," as adopted by reference in K.A.R. 28-16-28b.

~~(g)~~ (f) Enforcement. ~~Upon finding a violation of the surface water quality standards, an investigation to determine the cause of the violation shall be conducted by the department. If the department finds the violation to be caused by an artificial source of pollution, the~~ Each person ~~or persons responsible for the source of pollution~~ deemed by the department to be responsible for a violation of the surface water quality standards caused by an artificial source of pollution shall be required by the department to initiate corrective actions that restore the designated uses of the affected surface water or surface water segment impaired by the violation and provide for the return of the original surface water quality conditions. ~~Nothing in this regulation shall abridge the right of the department to proceed with enforcement actions as provided in other~~

~~Kansas statutes, regulations, or both.~~ (Authorized by K.S.A. ~~2003~~ 2013 Supp. 65-171d and K.S.A. 65-171m; implementing K.S.A. 65-164, K.S.A. ~~2003~~ 2013 Supp. 65-171d, and K.S.A. 65-171m; effective May 1, 1986; amended Aug. 29, 1994; amended July 30, 1999; amended Jan. 28, 2005; amended P-_____.)

28-16-58. Definitions. ~~These terms shall have the following meanings~~ As used in K.A.R. 28-16-57a through 28-16-63, each of the following terms shall have the meaning specified in this regulation: (a)(1) "Administrator" means ~~the~~ administrator of the United States environmental protection agency (EPA).

(2) "Application" means all documents required by the division of environment in the Kansas department of health and environment that are necessary for obtaining a permit.

(3) "Department" and "KDHE" mean ~~the~~ Kansas department of health and environment.

(4) "Director" means ~~the~~ director of the division of environment, ~~Kansas department of health and environment~~ KDHE.

(5) "Division" means ~~the~~ division of environment, ~~Kansas department of health and environment~~ KDHE.

(6) "Draft permit" means a permit that has not been issued as a final action of the ~~agency~~ secretary.

(7) "EPA" means ~~the~~ United States environmental protection agency.

(8) "Kansas implementation procedures: wastewater permitting" means the procedures dated ~~June 17, 2004~~ July 1, 2014 and written and used by the department for the development of national pollutant discharge elimination system permit limitations, available upon request from the division ~~of environment~~.

(9) "Minimum standards of design, construction, and maintenance" means effluent standards, effluent limitations, pretreatment standards, other performance standards, and other standards of design, construction, and maintenance for wastewater control facilities published by the department in 1978 as "minimum standards of design for water pollution control facilities."

(10) "Municipal system" means a system under the jurisdiction of a city, county, township, district, or other governmental unit.

(11) "National pollutant discharge elimination system" and "NPDES" mean the national system for the issuance of permits under 33 U.S.C. Section 1342 and shall include any state or interstate program that has been approved by the administrator, in whole or in part, pursuant to 33 U.S.C. Section 1342.

(12) "Refuse act application" means an application for a permit under 33 U.S.C. Section 407, commonly known as the refuse act, of 33 U.S.C. Chapter 9, "protection of navigable waters and of harbor and river improvements generally."

(13) "Regional administrator" means the regional administrator for region VII of the ~~United States environmental protection agency~~ EPA.

(14) "Secretary" means ~~the~~ secretary of ~~the Kansas department of health and environment~~ KDHE.

(15) "Water quality standards" means all water quality standards, as specified in K.A.R. 28-16-28b through K.A.R. 28-16-28g, to which a discharge is subject.

(16) "Waters of the state" means all surface and subsurface waters occurring within the ~~border~~ borders of the state~~,~~ or forming part of the border between Kansas and one of the adjoining states.

(b) The definitions of the following terms contained in 33 U.S.C. Section 1362, as amended ~~February 4, 1987~~ July 29, 2008 and hereby adopted by reference, shall be applicable to

~~these terms~~ the following terms as used in K.A.R. ~~28-16-57~~ 28-16-57a through K.A.R. 28-16-63, unless the context requires otherwise:

(1) "Biological monitoring";

(2) "effluent limitations";

(3) ~~"industrial user";~~

~~(4)~~ "municipality";

~~(5)~~ (4) "person";

~~(6)~~ (5) "state"; and

~~(7)~~ (6) "toxic pollutant." (Authorized by K.S.A. ~~2003~~ 2013 Supp. 65-171d; implementing K.S.A. 65-165, K.S.A. 65-166, and K.S.A. ~~2003~~ 2013 Supp. 65-171d; effective, E-74-32, June 14, 1974; effective May 1, 1975; amended May 1, 1987; amended Aug. 31, 2001; amended Jan. 28, 2005; amended P-_____.)

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Proposed

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

DIVISION OF ENVIRONMENT

REGULATORY IMPACT STATEMENT

PURSUANT TO K.S.A. 2013 SUPP. 77-416

Proposed Amendments to Regulations K.A.R. 28-16-28b through 28-16-28f and K.A.R. 28-16-58

JULY 7, 2014

Proposed

Regulatory Impact Statement
K.A.R. 28-16-28b through K.A.R. 28-16-28f and 28-16-58

TABLE OF CONTENTS

I. Executive Summary of Proposed Amendments

A. Introduction

K.A.R. 28-16-28b through 28-16-28g comprise what is referred to as the Kansas Surface Water Quality Standards (KSWQS). In accordance with section 303 of the Clean Water Act (CWA), states must review and revise their WQS once every three years, which is referred to as the triennial review. According to the CWA, the public must be involved in the triennial review process. The CWA does not state how this is to be done, but it was the intent of Kansas Department of Health and Environment (KDHE) to get the most public involvement as possible. K.A.R. 28-16-58 addresses wastewater permitting as it relates to the KSWQS.

In 2009, KDHE began the triennial review process by using the same methodology that had been used in the last triennial review. The methodology was intended to draw focus on a few principal issues that could be discussed in detail, while still allowing any part of the KSWQS to be reviewed and comments received. Key to this process was the formation of a small, diverse group of individuals who had previously shown a clear interest in the state's Water Quality Standards. The 13 person group was formed to provide a balanced membership representing: 1) the regulated community, 2) environmental advocacy groups, 3) technical groups, and 4) regulators. The group met three times over a 14-month period to identify key issues that they thought would be most valuable to discuss as KDHE held its public meetings around the state. The group identified six key issues (antidegradation, bacteria, chlorophyll-a, dissolved oxygen, duration and frequency, and temperature), which were discussed at seven public meetings throughout the state. Comments received on these key issues along with other public and internal KDHE comments have lead to the changes made in the KSWQS.

B. Summary of Proposed Amendments

There are many style and editorial changes to the regulations. But the major amendments proposed are:

- adopting the Biotic Ligand Model for copper aquatic life criteria;
- specifying duration and frequency of numeric criteria for assessment purposes;
- clarifying dissolved oxygen aquatic life criteria;
- adopting a number of criteria from the National Drinking Water Regulations, National Recommended Water Quality Criteria or the Clean Water Act 304(a) criteria, and the National Toxic Rules (40 CFR 131.36);
- adopting criteria for chlorophyll-a for active and reserve domestic water supply lakes or reservoirs;

II. Economic Impact Statement

1. Are the proposed regulations or amendments mandated by federal law as a requirement for participating in or implementing a federally subsidized or assisted program?

Yes. Section 303 of the Clean Water Act (CWA) requires States that have assumed authority and responsibility for water quality programs from the Environmental Protection Agency (EPA) to conduct a review of existing Water Quality Standards (WQS) from time to time, but at least once every three years. States are to amend their WQS following the triennial review in response to public participation, new available science, and/or newly adopted federal requirements. Following the adoption of the revised WQS, they must be submitted to the EPA for approval.

2. Do the proposed regulations or amendments exceed the requirements of applicable federal law?

No. The proposed WQS are set by federal regulations and EPA guidelines authorized by the CWA.

3. Description of costs to agencies, to the general public and to persons who are affected by, or are subject to, the regulations:

The core requirements of the WQS have not been changed substantially. There are a few of the proposed changes which have a potential cost associated with implementation. The cost of implementation would mostly be incurred by KDHE.

a. Capital and annual costs of compliance with the proposed regulations or amendments and the persons who will bear those costs.

Copper Aquatic Life Criteria – Biotic Ligand Model: The BLM is strongly supported by the copper industries. In Kansas, only a limited number of NPDES facilities have actual permit limits for copper. From KDHE's preliminary analyses, the BLM-based criteria are likely the same or even higher (less stringent) than the current hardness-based criteria for these facilities. The NPDES facilities may incur additional costs for sample collection and analysis for the parameters required for the BLM. But the additional costs for sampling and analysis will not likely be significant or burdensome to these facilities.

Chlorophyll-a Criteria for Public Drinking Water Supply Lakes or Reservoirs: Since most of the PWS reservoirs or lakes are located in rural areas, few wastewater dischargers are located above those lakes and reservoirs. Therefore, nonpoint sources are likely the major contributors of nutrients to these PWS reservoirs or lakes. The cost for controlling nutrient inputs from the non-point sources will depend on the size of the watershed, current management practices, and severity of the existing problem. However, the cost may be mitigated by cost-sharing programs available through Division of Conservation at Kansas Department of Agriculture, or the US Department of Agriculture's Natural Resources Conservation Service programs. Reduction in nutrient loads will likely reduce the operating costs of drinking water plants since fewer chemicals are needed to treat the water. In the long run, a local community may save a significant amount of money by not having to upgrade the drinking water plant in order to deal with nutrient enrichment issues. The benefits to the drinking water plants, consumers, and local communities will offset, and may outweigh the cost associated with nutrient reduction. Furthermore, adoption of criteria may provide warning to public water suppliers of threatening conditions developing in their source water, allowing for more orderly contingency planning to maintain service.

Changes in Numeric Table 1a (Excluding the Copper Aquatic Life Criteria): The proposed changes are listed in Appendix A. The impacts to the regulated communities will be minimal. The cost of implementation will be borne by KDHE.

Changes for Dissolved Oxygen Criteria: No additional capital cost is expected for the regulated communities. The cost of implementation will be borne by KDHE.

Duration and Frequency: No additional capital cost is expected for the regulated communities. The cost of implementation will be borne by KDHE.

Updated Natural Background Concentrations: The background concentrations are determined by Total Maximum Daily Loads (TMDLs). All the updates in the table are already in effect for Kansas. No additional capital cost is expected to the regulated communities. The cost of implementation will be borne by KDHE.

b. Initial and annual costs of implementing and enforcing the proposed regulations or amendments, including the estimated amount of paperwork, and the state agencies, other governmental agencies or other persons or entities who will bear the costs.

KDHE will bear sole responsibility for implementing and enforcing the proposed regulations. The anticipated fiscal impact for SFY 14 and SFY 15 by the amended KSWQS will be negligible since the additional workload will be absorbed by existing KDHE Bureau of Water staff.

c. Costs which would likely accrue if the proposed regulations or amendments were not adopted; the persons who will bear the costs and those who will be affected by the failure to adopt the regulations.

The chlorophyll-a criteria should present cost savings for public drinking water plants. If nutrient enrichment is not adequately and promptly addressed in source waters, the cost of treatment for drinking water could potentially increase significantly. Adopting the criteria will allow earlier identifications of the problems through the 303(d) List. Appropriate mitigation strategies can then be developed through the Total Maximum Daily Loads (TMDLs). In recent years, the harmful algal blooms in lakes or reservoirs have cost state and local communities huge amounts of monetary damages. One of the main contributors for these harmful algal blooms in lakes or reservoirs is nutrient enrichment. Addressing nutrient problems in the domestic water supply lakes or reservoirs will also prevent or reduce the occurrences of the harmful algal blooms in these lakes or reservoirs.

For the dissolved oxygen (DO) criteria, continuation of the status quo could allow some waters to remain perpetually listed as impaired when the cause of DO depression is the result of naturally occurring conditions. The consequence of listing waters as impaired includes the implication that certain waters are polluted, thus lessening its value and potential uses that could be made of that water. Providing an allowance for naturally occurring conditions would allow waters to be assessed as unimpaired based on their natural state. Such a provision would direct state and federal resources toward true impairment issues, increasing the efficacy of water quality restoration efforts.

For duration and frequency, continuation of the status quo invites potential challenges to the KDHE's methodology for assessing and listing impaired waters. Challenges could result in prolonged and expensive legal proceedings. Adopting a modification to the Kansas Surface Water Quality Standards (KSWQS) that incorporates Kansas' methodology for interpreting duration and frequency as a part of the WQS Implementation Procedures should provide KDHE a strong defense from any such challenges. Securing a provision for allowance of the occasional digression from water quality standards also directs water quality restoration efforts toward waters that are truly impaired, thereby increasing the effectiveness of those efforts.

For copper and other numeric criteria, adopting the National Recommended Criteria (304(a)) is always recommended by EPA since the 304(a) criteria reflect the latest available data and scientific knowledge. EPA also recommends the 304(a) criteria be adopted within two Triennial Review cycles after the publication dates of the criteria. With consideration of potential costs to the regulated communities, KDHE has proposed to adopt a number of the National Recommended Criteria. If a state is taking too long to adopt the 304(a) criteria, EPA could potential promulgate the criteria on behalf of the state. For example, EPA promulgated the National Toxics Rules which applies to Kansas and a few other states.

d. A detailed statement of the data and methodology used in estimating the costs used in the statement.

The data used to estimate cost was based on current employee salaries, laboratory costs, and contractual obligations. The method used to determine cost was a simple estimation based on past experiences and costs incurred.

e. Description of any less costly or less intrusive methods that were considered by the agency and why such methods were rejected in favor of the proposed regulations.

KDHE is aware of the current economic conditions and has only proposed changes that are considered the most important and cost effective. Overall, the costs to implement the changes are considered minimal. KDHE bears the majority of the potential costs for implementation.

f. Consultation with League of Kansas Municipalities, Kansas Association of Counties, and Kansas Association of School Boards.

Copies of the proposed regulations, regulatory impact statement and notice of hearing were mailed electronically to these groups at the beginning of the public comment period.

III. Environmental Benefits Statement

1. Need for proposed amendments and environmental benefit likely to accrue.

a. Need

These regulations are being proposed to finish the triennial review in compliance with section 303 of the CWA.

b. Environmental benefit

The chlorophyll-a criteria should present cost savings for public drinking water plants and improve overall water quality for the public water supply lakes or reservoirs.

In accordance with section 304 of the CWA, EPA must from time to time develop, revise, and publish water quality criteria that accurately reflect the latest scientific knowledge. In 2009, EPA published a revised National Recommended Water Quality Criteria. KDHE has adopted a number of the National Recommended Water Quality Criteria to reflect these changes and is committed to protecting the environment and public health.

2. When applicable, a summary of the research or data indicating the level of risk to the public health or the environment being removed or controlled by the proposed regulations or amendments.

The U.S. EPA in accordance with section 304(a) of the CWA published the first national recommended water quality criteria with the "Blue Book" in 1973. Since that time, the EPA has made periodic updates to the national criteria through the "Red Book" in 1976, "Gold Book" in 1986, the 1998 Update, the 2002 update, and the latest update in 2009.

3. If specific contaminants are to be controlled by the proposed regulation or amendment, a description indicating the level at which the contaminants are considered harmful according to current available research.

Appendix A is a table of KDHE's proposed changes to the numeric criteria 1a based on EPA's 2009 National Recommended Water Quality Criteria for surface waters and the Maximum Contaminant Levels in drinking water standards:

Appendix A

Table 1a. Aquatic Life, Agriculture, And Public Health Designated Uses Numeric Criteria.

PARAMETER	CAS NUMBER	Use Category: AQUATIC LIFE ACUTE	AQUATIC LIFE CHRONIC	AGRICULTURE LIVESTOCK	AGRICULTURE IRRIGATION	PUBLIC HEALTH FOOD PROCUREMENT	PUBLIC HEALTH DOMESTIC WATER SUPPLY
RADIONUCLIDES (pCi/L)							
beta / photon emitters	a	a	a	a	a	a	50
gross alpha particles including radium-226,but not radon or uranium	a	a	a	a	a	a	15
radium 226 and 228 combined	a	a	a	a	a	a	5
strontium 90	a	a	a	a	a	a	8
tritium	a	a	a	a	a	a	20,000
METALS (µg/L)							
antimony, total	7440360	88	30	a	a	640	6
arsenic, total	7440382	340	150	200	100	20.5	10
arsenic (III)	a	360	50	a	a	~~b~~ 0.14	~~b~~ 0.018
arsenic (V)	a	850	48	a	a	a	a
barium, total	7440393	a	a	a	a	a	~~1000~~ 2000
beryllium, total	7440417	a	a	a	a	a	4
boron, total	7440428	a	a	5,000	750	a	a
cadmium, total	7440439	table 1b	table 1b	20	10	170	5
chromium, total	7440473	a	40	1,000	100	a	100
chromium (III)	16065831	table 1b	table 1b	a	a	3,433,000	50
chromium (VI)	18540299	16	11	a	a	3,400	50
copper, total	7440508	~~table 1b~~ BLM[d]	~~table 1b~~ BLM[d]	500	200	a	~~1300~~ 1000
lead, total	7439921	table 1b	table 1b	100	5,000	a	15
mercury, total	7439976	1.4	0.77	10	a	0.146	~~b~~ 2
nickel, total	7440020	table 1b	table 1b	500	200	4,600	610
selenium, total	7782492	20	5	50	20	4,200	~~170~~ 50
selenium (V)	a	11.2	a	a	a	a	a
silver, total	7440224	table 1b	a	a	a	a	~~50~~ 100
thallium, total	7440280	1,400	40	a	a	~~b~~ 6.3[b]	2
zinc, total	7440666	table 1b	table 1b	25,000	2,000	26,000	~~7400~~ 5000
OTHER INORGANIC SUBSTANCES (µg/L)							
ammonia	7664417	table 1c	table 1c	a	a	a	a
asbestos (fibers>10µm) (µmillon fibers/L)	12001295	a	a	a	a	a	~~7 000000~~

chloride	16887006	860,000	c	a	a	a	250,000
chlorine, total residual	7782505	19	11	a	a	a	a
cyanide (free)	57125	22	5.2	a	a	220,000	200
fluoride	16984488	a	a	2,000	1,000	a	2,000
nitrate (as N)	14797558	a	a	a	a	a	10,000
nitrite + nitrate (as N)	a	a	a	100,000	a	a	10,000
~~phosphorus, elemental (white)~~	~~7723140~~	~~a~~	~~0.1~~	a	~~a~~	~~a~~	a
sulfate	14808798	a	a	1,000,000	a	a	250,000
ORGANIC SUBSTANCES (µg/L) (EXCEPT PESTICIDES)							
A. Halogenated Ethers.....							
chloroalkyl ethers, total	a	238,000	a	a	a	a	a
bis(2-chloroethyl) ether	111444	238,000	a	a	a	0.53	~~b~~ 0.030
2-chloroethyl vinyl ether	110758	360	120	a	a	a	a
bis(2-chloroisopropyl) ether	108601	238,000	a	a	a	65,000	~~b~~ 1400
bis(chloromethyl) ether	542881	238,000	a	a	a	0.00029	0.0001
chloromethyl methyl ether	107302	238,000	a	a	a	0.00184	a
~~4,4'-dibromodiphenyl ether~~ 4,4-dibromodiphenyl ether	2050477	360	120	a	a	a	a
halogenated ethers, total	a	360	122	a	a	a	a
hexabromodiphenyl ether	36483600	360	120	a	a	a	a
nonabromodiphenyl ether	63936561	360	120	a	a	a	a
pentabromodiphenyl ether	32534819	360	120	a	a	a	a
tetrabromodiphenyl ether	40088479	360	120	a	a	a	a
tribromodiphenyl ether	49690940	360	120	a	a	a	a
B. Halogenated Aliphatic Hydrocarbons.....							
Chlorinated ethanes							
1,2-dichloroethane	107062	18,000	2,000	a	a	~~b~~ 99[b]	~~b~~ 0.38[b]
hexachloroethane	67721	980	540	a	a	3.3	~~b~~ 1.9[b]
pentachloroethane	76017	7,240	1,100	a	a	a	a
1,1,1,2-tetrachloroethane	630206	9,320	a	a	a	a	a
1,1,2,2-tetrachloroethane	79345	9,320	2,400	a	a	~~3.3~~ 4.0	~~b~~ 0.17
tetrachloroethanes, total	a	9,320	a	a	a	a	a
1,1,1-trichloroethane	71556	18,000	a	a	a	173,077	200
1,1,2-trichloroethane	79005	18,000	9,400	a	a	16	~~b~~ 0.6[b]
Chlorinated ethenes							
chlorinated ethylenes, total	a	11,600	a	a	a	a	a
chloroethylene (vinyl chloride)	75014	a	a	a	a	~~525~~ 2.4	2
1,1-dichloroethylene	75354	11,600	a	a	a	7,100	~~b~~ 7
cis-1,2-dichloroethylene	156592	11,600	a	a	a	a	70
trans-1,2-dichloroethylene	156605	11,600	a	a	a	~~140000~~ 10,000	100
tetrachloroethylene (PCE)	127184	5,280	840	a	a	3.3	~~5~~ 0.8[b]
trichloroethylene (TCE)	79016	45,000	21,900	a	a	30	~~5~~ 2.7[b]

Chlorinated propanes/propenes							
1,2-dichloropropane	78875	23,000	5,700	9	a	15	~~0.5~~ 5
1,3-dichloropropene	542756	~~6600~~ 6060	244	a	a	14.1	~~b~~ 10[b]
Halogenated methanes							
bromochloromethane	74975	11,000	a	a	a	15.7	a
bromodichloromethane (dichlorobromomethane)	75274	11,000	a	a	a	17	~~b~~ 0.55
bromotrichloromethane	75627	11,000	a	a	a	15.7	a
bis(2-chloroethoxy)methane	111911	11,000	a	a	a	15.7	a
dibromochloromethane (chlorodibromomethane)	124481	11,000	a	a	a	13	~~b~~ 0.4
dibromodichloromethane	594183	11,000	a	a	a	15.7	a
dichlorodifluoromethane	75718	11,000	a	a	a	15.7	a
dichloromethane (methylene chloride)	75092	11,000	a	a	a	590	~~4.7~~ 5
halogenated methanes, total	a	11,000	a	a	a	15.7	100
tetrachloromethane (carbon tetrachloride)	56235	35,200	a	a	a	~~b~~ 4.4[b]	~~5~~ 0.25[b]
tribromochloromethane	594150	11,000	a	a	a	15.7	a
tribromomethane (bromoform)	75252	11,000	a	a	a	140	~~b~~ 4.3
trichlorofluoromethane	75694	11,000	a	a	a	15.7	a
trichloromethane (chloroform)	67663	28,900	1,240	a	a	470	~~b~~ 5.7
Other halogenated aliphatic hydrocarbons							
hexachlorobutadiene	87683	90	9.3	a	a	18	~~b~~ 0.44
hexachlorocyclopentadiene	77474	7	5.2	a	a	~~206~~ 1,100	50
C. Monocyclic Aromatic Hydrocarbons except Phenols and Phthalates.....							
Benzenes							
aminobenzene (~~analine~~aniline)	62533	14	6.7	a	a	a	a
benzene	71432	5,300	a	a	a	51	~~5~~ 1.2[b]
ethylbenzene	100414	32,000	a	a	a	~~28712~~ 2,100	700
nitrobenzene	98953	27,000	a	a	a	690	~~b~~ 17
vinylbenzene (styrene)	100425	a	a	a	a	a	100
Chlorinated benzenes							
chlorobenzene	108907	250	50	a	a	1,600	~~130~~ 100
dichlorobenzenes, total	25321226	1,120	763	a	a	2,600	a
1,2-dichlorobenzene (o-dichlorobenzene)	95501	1,120	763	a	a	~~2600~~ 1300	600
1,3-dichlorobenzene (m-dichlorobenzene)	541731	1,120	763	a	a	960	~~b~~ 400[b]
1,4-dichlorobenzene (p-dichlorobenzene)	106467	a	a	a	a	~~2600~~ 190	75
hexachlorobenzene	118741	6	3.7	a	a	0.00029	~~b~~ 0.00075[b]
other chlorinated benzenes, total	a	250	50	a	a	a	a
pentachlorobenzene	608935	250	50	a	a	1.5	1.4
1,2,4,5-tetrachlorobenzene	95943	250	50	a	a	1.1	0.97

1,2,4-trichlorobenzene	120821	250	a	a	a	~~940~~ 70	~~260~~ 70
Toluenes and xylenes							
2,4-dinitrotoluene	121142	330	230	a	a	3.4	~~b~~ 0.11
dinitrotoluenes, total	25321146	330	230	a	a	9.1	a
toluene	108883	17,500	a	a	a	~~b~~ 15,000	1,000
xylenes, total	1330207	a	a	a	a	a	10,000
D. Nitrogen Compounds Except Monocyclic Aromatics.....							
acrylonitrile	107131	7,550	2,600	a	a	0.25	~~b~~ 0.059[b]
benzideine	92875	2,500	a	a	a	0.0002	~~b~~ 0.00012[b]
3,3-dichlorobenzidine	91941	a	a	a	a	~~0.02~~ 0.028	~~b~~ 0.04[b]
1,2-diphenylhydrazine	122667	270	a	a	a	0.2	~~b~~ 0.04[b]
nitrosamines, total	a	5,850	a	a	a	1.24	0.0008
N-nitrosodibutylamine	924163	5,850	a	a	a	0.22	0.0063
N-nitrosodiethanolamine	1116547	5,850	a	a	a	1.24	a
N-nitrosodiethylamine	55185	5,850	a	a	a	1.24	0.0008
N-nitrosodimethylamine	62759	5,850	a	a	a	3	~~b~~ 0.00069
N-nitrosodiphenylamine	86306	5,850	a	a	a	6	~~b~~ 5[b]
N-nitrosodi-n-propylamine	621647	a	a	a	a	0.51	0.005
N-nitrosopyrrolidine	930552	5,850	a	a	a	34	0.016
E. Phenolic Compounds.....							
2,4-dimethyl phenol	105679	1,300	530	a	a	850	380
2,4-dinitrophenol	51285	a	a	a	a	5,300	~~b~~ 69
nitrophenols, total	a	230	150	a	a	a	a
phenol	108952	10,200	2,560	a	a	~~1,700,000~~ 860,000	~~b~~ 10,000
Chlorinated phenols							
2-chlorophenol	95578	4,380	2,000	a	a	150	81
3-chlorophenol	108430	a	a	a	a	29,000	a
2,4-dichlorophenol	120832	2,020	365	a	a	~~b~~ 790[b]	~~b~~ 93[b]
3-methyl-4-chlorophenol	59507	30	a	a	a	a	a
2,4,5-trichlorophenol	95954	100	63	a	a	3,600	1,800
2,4,6-trichlorophenol	88062	a	970	a	a	2.4	~~b~~ 2.1[b]
F. Phthalate Esters							
butylbenzyl phthalate	85687	a	a	a	a	1,900	1,500
dibutyl phthalate (di-n-butyl phthalate)	84742	940	3	a	a	~~b~~ 4,500	~~b~~ 2,000
diethyl phthalate	84662	a	a	a	a	~~b~~ 44,000	17,000
dimethyl phthalate	131113	940	3	a	a	1,100,000	~~b~~ 270,000
bisdi(2-ethylhexyl) phthalate (DEHP)	117817	400	360	a	a	~~b~~ 5.9[b]	~~b~~ 1.8[b]
phthalates, total	a	940	3	a	a	a	a
G. Polynuclear Aromatic Hydrocarbons (PAHs).....							
acenaphthene	83329	1,700	520	a	a	990	670
acenaphthylene	208968	a	a	a	a	0.0311	a

anthracene	120127	a	a	a	a	40,000	~~b~~ 9,600[b]
benzo(a)anthracene	56553	a	a	a	a	0.018	~~b~~ 0.0038
benzo(a)pyrene	50328	a	a	a	a	0.018	~~b~~ 0.0028[b]
benzo(b)fluoranthene	205992	a	a	a	a	0.018	~~b~~ 0.0038
benzo(g,h,i)perylene	191242	a	a	a	a	0.0311	a
benzo(k)fluoranthene	207089	a	a	a	a	0.018	~~b~~ 0.0038
2-chloronaphthalene	91587	a	a	a	a	1,600	1,000
chrysene	218019	a	a	a	a	0.018	~~b~~ 0.0038
dibenzo(a,h)anthracene	53703	a	a	a	a	0.018	~~b~~ 0.0038
fluoranthene	206440	3,980	a	a	a	~~b~~ 370[b]	~~b~~ 300[b]
fluorene	86737	a	a	a	a	5,300	~~b~~ 1,300[b]
indeno(1,2,3-cd)pyrene	193395	a	a	a	a	0.018	~~b~~ 0.0038
naphthalene	91203	2,300	620	a	a	a	a
phenanthrene	85018	30	6.3	a	a	0.0311	a
pyrene	129000	a	a	a	a	4,000	~~b~~ 960[b]
Polynuclear Aromatic Hydrocarbons, total (PAHs)	a	a	a	a	a	0.0311	0.2
H. ~~Miscellaneous~~ Other Organics (Except Pesticides).....							
di(2-ethylhexyl) adipate	103231	a	a	a	a	a	~~500~~ 400
Isosphorone	78591	117,000	a	a	a	~~b~~ 960	~~b~~ 35
polychlorinated biphenyls, total (PCBs)	a	2	0.014	a	a	0.000064	~~b~~ 0.00017[b]
~~dioxin (~~2,3,7,8-TCDD) (dioxin)	1746016	0.01	0.00001	a	a	~~0.000000005~~ 5.0E-9	~~b~~ 1.3E-8[b]
PESTICIDES (µg/L)							
acrolein	107028	68	21	a	a	290	190
acrylamide	79061	a	a	a	a	a	0.01
alachlor (Lasso)	15972608	760	76	100	a	a	2
aldicarb	116063	a	a	a	a	a	3
aldicarb sulfone	1646884	a	a	a	a	a	2
aldicarb sulfoxide	1646873	a	a	a	a	a	3
aldrin	309002	3	0.001	1	a	0.00005	~~b~~ 0.00013[b]
atrazine (Aatrex)	1912249	170	3	a	a	a	3
bromomethane (methyl bromide)	74839	11,000	a	a	a	1,500	~~b~~ 47
bromoxynil (MCPA)	1689845	a	a	20	a	a	a
carbaryl (Sevin)	63252	a	0.02	100	a	a	a
carbofuran (Furadan)	1563662	a	a	100	a	a	40
chlordane	57749	2.4	0.0043	3	a	0.00081	~~b~~ 0.00057[b]
chlorpyrifos	2921882	0.083	0.041	100	a	a	a
2,4-D	94757	a	a	a	a	a	~~100~~ 70
dacthal (DCPA)	1861321	a	14,300	a	a	a	a
dalapon	75990	a	110	a	a	a	200
~~DDT and Metabolites~~**.....**							

4,4-DDD (p,p=-DDD)	72548	a	a	a	a	0.00031	~~b~~ 0.00031
4,4-DDE (p,p=-DDE)	72559	1,050	a	a	a	0.00022	~~b~~ 0.00022
DDT, total	50293	1.1	0.001	50	a	~~0.000024~~ 0.00022	~~b~~ 0.00022
diazinon (spectracide)	333415	~~a~~ **0.17**	~~0.08~~ 0.17	100	a	a	a
dibromochloropropane (DBCP)	96128	a	a	a	a	15.7	0.2
1,2-dibromoethane	106934	a	a	a	a	a	0.05
dieldrin	60571	0.24	0.056	1	a	0.000054	~~b~~ 0.00014[b]
4,6-dinitro-o-cresol	534521	a	a	a	a	280	~~b~~ 13
dinoseb (DNBP)	88857	a	a	a	a	a	7
diquat	85007	a	a	a	a	a	20
disulfoton (Di-syston)	298044	a	a	100	a	a	a
endosulfan, total	115297	0.22	0.056	a	a	159	~~b~~ a
alpha-endosulfan	959998	0.22	0.056	a	a	89	62
beta-endosulfan	33213659	0.22	0.056	a	a	89	62
endosulfan sulfate	1031078	a	a	a	a	~~b~~ 89	~~b~~ 62
endothall	145733	a	a	a	a	a	~~110~~ 100
endrin	72208	0.086	0.036	0.5	a	~~0.81~~ 0.060	~~0.76~~ 2
endrin aldehyde	7421934	a	a	a	a	0.3	~~b~~ 0.76[b]
epichlorohydrin	106898	a	a	a	a	a	4
ethylene dibromide	106934	a	a	a	a	a	0.05
fenchlorfos (Ronnel)	299843	a	a	100	a	a	a
glyphosate (Roundup)	1071836	a	a	a	a	a	700
guthion	86500	a	0.01	100	a	a	a
heptachlor	76448	0.52	0.0038	0.1	a	0.000079	~~b~~ 0.00021[b]
heptachlor epoxide	1024573	0.52	0.0038	0.1	a	~~b~~ 0.00011[b]	~~b~~ 0.00010[b]
hexachlorocyclohexane (HCH or BHC)	61876	100	a	a	a	0.0414	0.0123
alpha-HCH (alpha-BHC)	319846	100	a	a	a	0.0049	~~b~~ 0.0039[b]
beta-HCH (beta-BHC)	319857	100	a	a	a	~~b~~ 0.046[b]	~~b~~ 0.014[b]
delta-HCH (delta-BHC)	319868	100	a	a	a	a	a
gamma-HCH (gamma-BHC, lindane)	58899	0.95	0.08	5	a	~~0.0625~~ 1.8	~~b~~ 0.2
technical-HCH (technical-BHC)	608731	a	a	a	a	0.0414	a
malathion	121755	a	0.1	100	a	a	a
methoxychlor	72435	a	0.03	1,000	a	a	40
methyl parathion	298000	a	a	100	a	a	a
metribuzin (Sencor)	21087649	a	100	a	a	a	a
mirex	2385855	a	0.001	a	a	0.000097	a
oxamyl (Vydate)	23135220	a	0.001	a	a	a	200
parathion	56382	0.065	0.013	100	a	a	a
pentachloronitrobenzene	82688	250	50	a	a	a	a
pentachlorophenol (PCP)	87865	table 1b	table 1b	a	a	3	~~b~~ 0.28[b]
picloram (Tordon)	1918021	a	a	a	a	a	500

propachlor (Ramrod)	1918167	a	8	a	a	a	a
simazine (Princep)	122349	a	a	10	a	a	4
2,4,5-T	93765	a	a	2	a	a	a
tributyltin (TBT) ~~oxide~~	56359	~~0.149~~ 0.46	~~0.026~~ 0.072	a	a	a	a
toxaphene	8001352	0.73	0.0002	5	a	0.00028	~~b~~ 0.00073[b]
2,4,5-TP (Silvex)	93721	a	a	a	a	a	~~10~~ 50

a - ~~Criterion not~~ Not available

b - US EPA has promulgated this criterion for Kansas under the Code of Federal Regulations, Title 40, part 131.36. KDHE has not adopted the criterion into the Kansas Surface Water Quality Standards. Nevertheless, the criterion is still applicable to Kansas.

c - Criterion under investigation

d - The Biotic Ligand Model (BLM) as in the "Aquatic Life Ambient Freshwater Quality Criteria-Copper 2007 Revision (EPA-822-R-07-001, February 2007)", which is adopted by reference.