Kansas Administrative Regulations

Department of Health and Environment

Article 29.—Solid Waste Management

28-29-113. Groundwater monitoring systems; detection and assessment monitoring.

(a) Detection monitoring program.

(1) Detection monitoring shall be required at each groundwater monitoring well as defined in K.A.R. 28-29-111. At a minimum, a detection monitoring program shall include the monitoring for the constituents listed in appendix I of this regulation. The owner or operator shall also conduct the following evaluations at each well at the time of sample collection and immediately before filtering, if applicable, and preserving samples for shipment:

(A) elevation of the water table;

(B) depth of the bottom of the well;

(C) pH of the sample;

(D) temperature of the sample;

(E) specific conductance of the sample; and

(F) observations of the physical characteristics of the sample.

(2) The monitoring frequency for each constituent listed in appendix I shall be semiannual during the active life of the facility, including closure, and the post-closure period except that monitoring shall be quarterly for the first year. At least one sample from each well, background and downgradient, shall be collected and analyzed. An appropriate alternative frequency for sampling and analysis may be specified by the director. However, the alternative frequency shall be no less than annually.

(3) If the owner or operator determines that there is a statistically significant increase over background for one or more of the constituents listed in appendix I at any monitoring well, the owner or operator shall:

(A) notify the director within 14 calendar days of this finding. The notification shall indicate which constituents have shown statistically significant changes from background levels; and

(B) within 30 calendar days of this finding, resample the wells showing the statistically significant increase to confirm the finding. If the statistically significant increase is not confirmed, the owner or operator shall return to the detection monitoring program specified in paragraph (a)(1) of this regulation.

(i) If the statistically significant increase is confirmed, the owner or operator shall conduct an assessment monitoring program meeting the requirements of subsection (b) of this regulation, and develop a release assessment plan to determine the nature and extent of the release within 90 days of confirming the statistically-significant increase.

(ii) Upon approval of the release assessment plan by the director, the owner or operator shall implement the release assessment plan, and prepare and submit a report summarizing all activities and findings according to the schedule specified in the plan and approved by the department.

(iii) In lieu of paragraph (a)(3)(B)(i) and (ii) above, the owner or operator may demonstrate to the department that a source other than a MSWLF unit caused the contamination, that the statistically significant increase resulted from a natural variation in groundwater quality, or that the statistically significant increase resulted from an error in sampling. A report documenting this demonstration shall be certified by a qualified groundwater scientist and placed in the operating record. If a successful demonstration is made to and approved by the department, the owner or operator may continue detection monitoring as specified in paragraph (a)(1) of this regulation. If after 90 days a successful demonstration is not made, the owner or operator shall conduct assessment monitoring as required in subsection (b) of this regulation, and develop a release assessment plan to determine the nature and extent of the release.

(b) Assessment monitoring.

(1) Assessment monitoring shall be required for:

(A) new municipal solid waste landfills or units, or existing municipal solid waste landfills or units which have established background groundwater concentrations for the

appendix I constituents, whenever a statistically significant increase over background has been detected for one or more of the constituents listed in appendix I; and

(B) existing municipal solid waste landfills or units that have not established background groundwater concentrations for the appendix I constituents if groundwater contamination exists that exceeds the maximum contamination limits (MCL's) for any organic constituent contained in appendix I.

(2) Within 90 days of triggering assessment monitoring, the owner or operator shall sample each downgradient well, or those wells specified by the director, and analyze the groundwater for:

(A) all constituents identified in appendix II; and

(B) the parameters listed in paragraph (a)(1) of this regulation.

(3) Within 180 days of the sampling event described in paragraph (b)(2), the owner or operator shall collect and analyze from each background and downgradient well a minimum of three independent samples to establish background concentrations for each appendix II constituent detected during paragraph (b)(2) analyses.

(4) (A) Within 90 days of the sampling event described in paragraph (b)(3), and on a semiannual basis thereafter, the owner or operator shall sample each downgradient well, or those wells specified by the director, and conduct analysis for all constituents in appendix I and for each constituent in appendix II that is detected during paragraph (b)(2) analyses.

(B) In addition, the owner or operator shall sample each downgradient well for each appendix II constituents on an annual basis.

(C) All analytical results shall be recorded in the facility operating record.

(5) Whenever a new constituent or constituents is detected in a downgradient well as a result of the sampling described in paragraphs (b)(2) or (4), above, the owner or operator shall:

(A) notify the director within 14 days of each appendix II constituent that has been detected;

(B) collect and analyze from each background and downgradient well a minimum of four independent samples to establish background concentrations for the new constituent or constituents; and

(C) include any new constituents detected in any subsequent monitoring.

(6) If it can be shown that the removed constituents are not reasonably expected to be contained in or derived from the waste contained in the unit, appendix II monitoring for a MSWLF unit may be modified by the director.

(7) An appropriate alternate frequency for repeated sampling and analysis for the full set of appendix II constituents during the active life, including closure, and post-closure care of the unit may be specified by the director.

(8) An appropriate subset of wells to be sampled and analyzed for appendix II constituents during assessment monitoring may be specified by the director.

(9) If the concentrations of all appendix II constituents are shown to be at or below background values, using the statistical procedures in K.A.R. 28-29-112, for two consecutive sampling events, the owner or operator shall notify the department of this finding and may return to detection monitoring, if approved by the department.

(10) If the concentrations of any appendix II constituents are above background values, but all concentrations are below the groundwater protection standard established under subsection (13) using the statistical procedures in section K.A.R. 28-29-112, the owner or operator shall continue assessment monitoring in accordance with this regulation. Based on an analysis of groundwater contamination trends, it may be requested by the director that the owner or operator proceed to the assessment of corrective measures, as described in K.A.R. 28-29-114.

(11) If one or more appendix II constituents are detected at statistically-significant levels above the groundwater protection standard in any sampling event, the owner or operator shall, within 14 days of this finding, notify the department and identify each appendix II constituent that has exceeded the groundwater protection standard.

(12) If a determination is made that contamination has migrated off-site, the owner or operator shall immediately notify all appropriate local government officials and all persons who own the land or reside on the land that directly overlies any part of the plume of contamination.

(13) A groundwater protection standard for each appendix II constituent detected in the groundwater shall be established by the department. The groundwater protection standard shall be:

(A) the maximum contaminant level (MCL) where an MCL has been promulgated under section 1412 of the safe drinking water act under 40 CFR part 141, as in effect on July 1, 1992;

(B) the background concentration for the constituent established from wells in accordance with paragraph (b)(5)(B) of this regulation; or

(C) the background concentration for the constituent established from wells in accordance with paragraph (b)(5)(B) if the background level is higher than:

(i) the MCL; or

(ii) the health-based levels identified under paragraph (b)(14).

(14) An alternative groundwater protection standard for constituents for which MCLs have not been established may be approved by the department. These groundwater protection standards shall be appropriate health-based levels that satisfy the following criteria:

(A) The level is derived in a manner consistent with environmental protection agency guidelines for assessing the health risks of environmental pollutants, 51 Federal Register 33992, 34006, 34014, 34028, dated September 24, 1986;

(B) the level is based on scientifically valid studies conducted in accordance with the toxic substances control act good laboratory practice standards, 40 CFR part 792, as in effect on July 1, 1992, or equivalent;

(C) for carcinogens, the level represents a concentration associated with an excess lifetime cancer-risk level, due to continuous lifetime exposure, within the 1×10^{-4} to 1×10^{-6} range; and

(D) for systemic toxicants, the level represents a concentration to which the human population, including sensitive subgroups, could be exposed on a daily basis which is likely to be without appreciable risk of deleterious effects during a lifetime. For purposes of this paragraph, systemic toxicants include toxic chemicals that cause effects other than cancer or mutation.

(15) A standard in lieu of paragraph (b)(13) may be designated by the director while an alternative standard is being developed pursuant to paragraph (b)(14).

(c) Appendices.

APPENDIX I

GEOCHEMICALS

Alkalinity

Calcium

Chemical Oxygen Demand (COD)

Chloride

Nitrogen (Ammonia)

Potassium, dissolved

Sodium, dissolved

Sulfate

Total Dissolved Solids (TDS)

VOLATILE ORGANICS

Acetone

Benzene*

Bromodichloromethane

Bromomethane

Bromoform

2-Butanone

Carbon Disulfide

Carbon tetrachloride

Chlorobenzene

Chloroethane

2-Chloroethylvinyl ether

Cloroform

Chloromethane

Dibromochloromethane

1,1-Dichloroethane

1,2-Dichloroethane*

1,1-Dichloroethene*

trans-1,2-Dichloroethene

1,2-Dichloropropane*

cis-1,3-Dichloropropene

trans-1,3-Dichloropropene

Ethylbenzene*

2-Hexanone

4-Methyl-2-pentanone

Methylene chloride

Styrene*

Tetrachloroethene*

Toluene*

Total Xylenes*

1,1,2,2-Tetrachloroethane

1,1,1-Trichloroethane*

1,1,2-Trichloroethane

Trichloroethene*

Vinyl acetate

Vinyl chloride*

*MCL promulgated

APPENDIX II

GEOCHEMICALS

Alkalinity

Calcium

Chemical Oxygen Demand (COD)

Chloride

Nitrogen (Ammonia)

Potassium, dissolved

Sodium, dissolved

Sulfate

Total Dissolved Solids (TDS)

METALS

Antimony

Arsenic

Barium

Beryllium

Cadmium

Chromium

Cobalt

Copper

Lead

Nickel

Selenium

Silver

Thallium

Vanadium

Zinc

POLYNUCLEAR AROMATIC HYDROCARBONS

Acenaphthene

Acenaphthylene

Anthracene

Benzo(a)anthracene

Benzo(a)pyrene

Benzo(b)fluoranthene

Benzo(j)fluoranthene

Benzo(k)fluoranthene

Benzo(ghi)perylene

Chrysene

Dibenz(a,h)acridine

Dibenz(a,j)acridine

Dibenzo(a,h)anthracene

7H-Dibenzo(c,g)carbazole

Dibenzo(a,e)pyrene

Dibenzo(a,h)pyrene

Dibenzo(a,i)pyrene

Fluoranthene

Fluorene

Indeno(1,2,3-cd)pyrene

3-Methylcholanthrene

Naphthalene

Phenanthrene

Pyrene

CHLORINATED HYDROCARBONS

Benzal chloride

Benzotrichloride

Benzyl chloride

2-Chloronaphthalene

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

Hexachlorobenzene

Hexachlorobutadiene

Hexachlorocyclohexane

Hexachlorocyclopentadiene

Hexachloroethane

Tetrachlorobenzenes

1,2,4-Trichlorobenzene

Pentachlorohexane

ORGANOPHOSPHORUS PESTICIDES

Azinphos methyl

Bolstar

Chlorpyrifos

Coumaphos

Demeton-O

Demeton-S

Diazinon

Dichlorvos

Disulfoton

Ethroprop

Fensulfothion

Fenthion

Merphos

Mevinphos

Naled

Parathion methyl

Phorate

Ronnel

Stirophos (Tetrachlorvinphos)

Tokuthion (Prothiofos)

Trichloronate

CHLORINATED HERBICIDES

2,4-D

2,4-DB

2,4,5-T

2,4,5-TP (silvex)

Dalapon

Dicamba

Dichloroprop

Dinoseb

MCPA

MCPP

VOLATILE ORGANICS

Acetone

Benzene

Bromodichloromethane

Bromomethane

Bromoform

2-Butanone

Carbon Disulfide

Carbon tetrachloride

Chlorobenzene

Chloroethane

2-Chloroethylvinyl ether

Chloroform

Chloromethane

Dibromochloromethane

1,1-Dichloroethane

1,2-Dichloroethane

1,1-Dichloroethene

trans-1,2-Dichloroethene

1,2-Dichloropropane

cis-1,3-Dichloropropene

trans-1,3-Dichloropropene

Ethyl benzene

2-Hexanone

4-Methyl-2-pentanone

Methylene chloride

Styrene

Tetrachloroethene

Toluene

Total Xylenes

1,1,2,2-Tetrachloroethane

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

Vinyl acetate

Vinyl chloride

VOLATILE ORGANICS

Benzene

Bromobenzene

Bromochloromethane

Bromodichloromethane

Bromoform

Bromomethane

n-Butylbenzene

sec-Butylbenzene

tert-Butylbenzene

Carbon tetrachloride

Chlorobenzene

Chloroethane

Chloroform

Chloromethane

2-Chlorotoluene

4-Chlorotoluene

Dibromochloromethane

1,2-Dibromo-3-chloropropane

1,2-Dibromoethane

Dibromomethane

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

Dichlorodifluoromethane

1,1-Dichloroethane

1,2-Dichloroethane

1,1-Dichloroethene

cis-1,2-Dichloroethene

trans-1,2-Dichloroethene

1,2-Dichloropropane

1,3-Dichloropropane

2,2-Dichloropropane

1,1-Dichloropropene

Ethylbenzene

Hexachlorobutadiene

Isopropylbenzene

p-Isopropyltoluene

Methylene chloride

Naphthalene

n-Propylbenzene

Styrene

1,1,1,2-Tetrachloroethane

1,1,2,2-Tetrachloroethane

Tetrachloroethene

Toluene

1,2,3-Trichlorobenzene

1,2,4-Trichlorobenzene

1,1,1-Trichloroethane

1,1,2-Trichloroethane

Trichloroethene

Trichlorofluoromethane

1,2,3-Trichloropropane

1,2,4-Trimethylbenzene

1,3,5-Trimethylbenzene

Vinyl chloride

o,m,p-Xylene

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