

TRANSMITTAL SHEET FOR
NOTICE OF INTENDED ACTION

Control 335 Department or Agency Environmental Management

Rule No. 335-7-2-08

Rule Title: Radionuclide Standards and Monitoring Requirements

 New X Amend Repeal Adopt by Reference

Would the absence of the proposed rule significantly harm or endanger the public health, welfare, or safety? YES

Is there a reasonable relationship between the state's police power and the protection of the public health, safety, or welfare? YES

Is there another, less restrictive method of regulation available that could adequately protect the public? NO

Does the proposed rule have the effect of directly or indirectly increasing the costs of any goods or services involved and, if so, to what degree? NO

Is the increase in cost, if any, more harmful to the public than the harm that might result from the absence of the proposed rule? NO

Are all facets of the rulemaking process designed solely for the purpose of, and so they have, as their primary effect, the protection of the public? YES

Does the proposed rule have an economic impact? NO

If the proposed rule has an economic impact, the proposed rule is required to be accompanied by a fiscal note prepared in accordance with subsection (f) of section 41-22-23, Code of Alabama 1975.

Certification of Authorized Official

I certify that the attached proposed rule has been proposed in full compliance with the requirements of Chapter 22, Title 41, Code of Alabama 1975, and that it conforms to all applicable filing requirements of the Administrative Procedure Division of the Legislative Reference Service.

Signature of certifying officer Marilyn Elliott

Date March 20, 2012

Date Filed



APA-2
11/96

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION

NOTICE OF INTENDED ACTION

AGENCY NAME: DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

RULE NO. & TITLE: 335-7-2-.03 Inorganic Chemical Standards and Monitoring Requirement (Amend)
335-7-2-.04 Synthetic Chemical (SOCs) Standards and Monitoring Requirements (Amend)
335-7-2-.08 Radionuclide Standards and Monitoring Requirements (Amend)
335-7-2-.09 Maximum Residual Disinfection Levels and Monitoring Requirements (MRDLs) (Amend)
335-7-2-.12 Stage 2 Disinfection Byproducts (Amend)
335-7-2-.16 Operational Evaluation Level (Amend)


INTENDED ACTION: The Alabama Department of Environmental Management proposes to revise division 335-7, Public Water Supply.

SUBSTANCE OR PROPOSED ACTION: Revisions to rules 335-7-2-.03(4) (g), 335-7-2-.03 (5) (e), 335-7-2-.04(1) and 335-7-2-.08(1) are being proposed to make clarifications and administrative changes. Revisions to rules 335-7-2-.09(2) (a), 335-7-2-.12(a) 4, and 335-7-2-.16 (5) are being made for technical changes.

TIME, PLACE, MANNER OF PRESENTING VIEWS: Comments may be submitted in writing or orally at a public hearing to be held May 2, 2012, at 10:00 a.m. in the Main Hearing Room at the ADEM Central Office located at 1400 Coliseum Blvd., Montgomery, AL 36110.

FINAL DATE FOR COMMENT AND COMPLETION OF NOTICE: May 4, 2012 at 5:00 p.m.

CONTACT PERSON AT AGENCY: George M. Cox, Section Chief
Groundwater Section [334/271-7778]


Lance R. LeFleur
Director

335-7-2.08 Radionuclide Standards and Monitoring Requirements.

(1) To determine compliance with the MCLs for natural radionuclides in picocuries per liter (pCi/L) listed below, the averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the contaminant in question:

Contaminant	MCL
Gross alpha particle	15 pCi/L ¹ (including radium-226 but excluding radon & uranium)
Combined radium-226 & radium-228	5 pCi/L
Uranium	30 µg/L

¹ Includes radium 226 but excludes radon & uranium

(2) The MCLs for manmade radionuclides are:

Contaminant	MCL
Tritium	20,000 pCi/L
Strontium 90	8 pCi/L
Beta particle and photon	4 millirem/year radioactivity

(3) To determine compliance, the detection limits shall not exceed the concentrations listed below:

Contaminant	Detection Limit
Gross Alpha Particle Activity	3 pCi/L
Radium 226	1 pCi/L
Radium 228	1 pCi/L
Uranium	1 µg/L
Tritium	1,000 pCi/L
Strontium-89	10 pCi/L
Strontium-90	2 pCi/L
Iodin-131	1 pCi/L
Cesium 134	10 pCi/L
Gross Beta	4 pCi/L
Other Radionuclides	1/10 of the MCL

(4) Monitoring requirements for gross alpha particle activity, radium-226, radium-228 and Uranium in community water systems are as follows:

(a) Initial monitoring for all community system sources to determine compliance for naturally occurring radionuclides shall be completed by December 31, 2007. Community water systems utilizing surface and/or groundwater sources shall monitor at every entry point to the distribution system that is representative of each source of water used after any application of treatment. Community water systems using water from more than one source and blending prior to the entry point to the distribution system must sample at the entry point to the distribution system during periods of normal operating conditions. Sampling of raw water from each source may be required if a contaminant is detected. New community water systems or community water systems that use a new source of water must begin monitoring in the first quarter after initiating use of the source. Community water systems must conduct more frequent monitoring if there are conditions determined by the Department that may increase the concentration of radioactivity in finished water. All samples collected from each entry point must be collected at the same sampling point.

1. Systems without acceptable previous monitoring data must monitor for four consecutive quarters at all sampling points before December 31, 2007.

2. Appropriate monitoring data from each entry point for the last compliance monitoring period that began between June 2000 and December 8, 2003 may be used to satisfy initial monitoring requirements.

3. The Department may waive the final two quarters of initial monitoring if the results of the monitoring from the previous two quarters are below the detection limit.

4. A gross alpha particle activity measurement may be substituted for the required radium-226 analyses, provided that the measured gross alpha particle activity does not exceed five pCi/L. A gross alpha particle activity measurement may be substituted for the required Uranium analyses, provided that the measured gross alpha particle activity does not exceed 15 pCi/L. A gross alpha measurement shall have a confidence level of 95 percent (1.65σ , where σ is the standard deviation of the net counting rate of the sample) for Radium 226 and Uranium. When a system uses a gross alpha particle activity measurement in lieu of a radium-226 and/or uranium measurement, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, one half the detection limit will be used to determine compliance and the future monitoring frequency.

(b) Community water systems may reduce monitoring for naturally occurring radionuclides after completing initial monitoring requirements.

1. If the average of the initial monitoring results for each contaminant (gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit, the system must monitor for that contaminant at that sampling point every nine years.

2. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below one half the MCL, the system must monitor for that contaminant at the sampling point every six years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below one half the MCL, the system must monitor for that contaminant at the sampling point every six years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above one half the MCL but at or below the MCL, the system must monitor for that contaminant at the sampling point every three years. For combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above one half the MCL but at or below the MCL, the system must monitor for that contaminant at the sampling point every three years.

4. Systems must use the analytical results from the previous reduced monitoring period to determine the monitoring frequency for subsequent monitoring periods (e.g., if a system's sampling point is on a nine year monitoring period, and the sample result is above on half the MCL, then the next monitoring period for that sampling point is three years).

5. If a system has a monitoring result that exceeds the MCL while on reduced monitoring, the system must monitor quarterly at that sampling point until the system has results from four consecutive quarters that are below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the Department.

(c) If the average annual MCL for gross alpha particle activity, Radium 226, Radium 228 or Uranium is exceeded, the supplier of a community water system shall notify the Department and provide public notification. The system shall monitor quarterly at the monitoring point until results from four consecutive quarters are at or below the MCL or until a monitoring schedule as a condition to an exemption or enforcement action shall become effective. Upon exceeding the MCL, the system must establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

(5) Monitoring requirements for man-made radioactivity in community and NTNC water systems are as follows:

(a) Community water systems determined by the Department to be vulnerable shall monitor for beta particle and photon radioactivity. Systems must monitor quarterly for beta emitters and annually for tritium and strontium-90 at each entry point to the distribution system beginning within one quarter after being notified by the Department.

1. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 50 pCi/L, the Department may reduce the frequency of monitoring at that sampling point to once every 3 years. Systems must collect all the samples required in the previous paragraph during the reduced monitoring period.

2. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance. Doses must also be calculated and combined for measured levels of tritium and strontium to determine compliance.

3. Community water systems designated by the Department to monitor for beta particle and photon radioactivity can not apply to the Department for a waiver from the specified listed above.

4. Community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level of 50 pCi/L is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

(b) Community water systems utilizing water contaminated by effluents from nuclear facilities shall monitor quarterly for gross beta particle and iodine-131 radioactivity and annually for strontium-90 and tritium at each entry point to the distribution system beginning within one quarter after being notified by the Department.

1. Quarterly monitoring for gross beta particle activity shall be based on the analyses of monthly samples.

2. For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the Department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

3. Annual compliance for strontium-90 and tritium shall be based on the analyses of four quarterly samples.

4. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to 15 pCi/L, the Department may reduce the frequency of monitoring at that sampling point to every 3 years. Systems must collect all the samples required in paragraph (b) during the reduced monitoring period.

5. The Department may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the supplier of water where the Department determines such data are applicable to a particular water system. In the event that there is a release from a nuclear facility, systems that are using surveillance data must begin monitoring at the community water system's entry point(s) in accordance with paragraph (5)(a) or (b) of this rule.

6. If the average annual MCL for man-made radioactivity is exceeded, the supplier of water shall give notice to the Department and to the public. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the MCL as established by a rolling average of three monthly samples, or until a monitoring schedule as a condition of an exemption or enforcement action shall become effective. Systems who establish that the MCL is being met must return to quarterly monitoring until they meet the requirements set forth in this rule. Upon exceeding the MCL, the system must establish a treatment process using the EPA approved best available technology to achieve compliance with the MCL or cease using the source of supply in conjunction with a Department issued compliance schedule.

(c) General monitoring and compliance requirements for radionuclides.

1. The Department may require more frequent monitoring than specified in this rule, or may require confirmation samples at its discretion. The results of the initial and confirmation samples will be averaged for use in compliance determinations.

2. Each public water system shall monitor at the time designated by the Department during each compliance period.

3. Compliance with radionuclide MCLs will be determined based on the analytical result(s) obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(i) For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.

(ii) For systems monitoring more than once per year, if any sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

(iii) Systems must include all samples taken and analyzed under the provisions of this rule in determining compliance, even if that number is greater than the minimum required.

(iv) If a system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

(v) If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 and/or uranium. If the gross alpha particle activity result is less than detection, one half the detection limit will be used to calculate the annual average.

(6) The Department has the discretion to delete results of obvious sampling or analytic errors.

Author: Joe Alan Power, Thomas S. DeLoach, Edgar K. Hughes, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-23-49, 22-22A-5, 22-22A-6.

History: May 23, 1977; Repealed and readopted: January 4, 1989; October 31, 1990; effective December 5, 1990; May 30, 2003; January 28, 2004. **Amended:** December 12, 2005; January 22, 2008; XXXXX, 21012.