**Section 611.732 Beta Particle and Photon** **Radioactivity**

Monitoring and Compliance for Manmade Radioactivity. To determine compliance with the maximum contaminant levels in Section 611.330(d) for beta particle and photon radioactivity, a supplier must monitor at a specified frequency:

a) If the Agency issues a SEP designating a CWS supplier (either a surface water or groundwater supplier) as vulnerable, the supplier must sample for beta particle and photon radioactivity. The supplier must collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each entry point to the distribution system (hereafter called a sampling point) beginning within one quarter after the Agency issued the SEP. A supplier the Agency designates must continue to sample until the Agency issues a new SEP removing the designation.

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 screening level), the Agency may reduce the monitoring frequency at that sampling point to once every three years. A supplier must collect all required samples during the reduced monitoring period.

2) For a supplier in the vicinity of a nuclear facility, the Agency may issue a SEP allowing the CWS supplier to use environmental surveillance data the nuclear facility collected in lieu of monitoring at the supplier's entry points upon determining the nuclear facility's data are pertinent to the supplier's system. If a release from a nuclear facility occurs, a supplier using surveillance data must begin monitoring at the CWS's entry points under subsection (b)(1).

b) A CWS supplier (either a surface water or groundwater supplier) the Agency designates in a SEP as using source water contaminated by effluent from a nuclear facility must sample for beta particle and photon radioactivity. The supplier must collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to its distribution system (a sampling point) beginning within one quarter after the Agency issues the SEP. A supplier already designated by the Agency as a supplier using waters contaminated by effluents from nuclear facilities must continue to sample until the Agency reviews and issues a SEP removing the designation.

1) The supplier must base quarterly monitoring for gross beta particle activity on analysis of monthly samples or the analysis of a composite of three monthly samples.

BOARD NOTE: In corresponding 40 CFR 141.26(b)(2)(i), USEPA recommends using composite samples.

2) For iodine-131, the supplier must analyze a composite of five consecutive daily samples once each quarter. The Agency must issue a SEP requiring more frequent monitoring for iodine-131 if analysis identifies iodine-131 in the finished water.

3) The supplier must annually monitor for strontium-90 and tritium using a composite of four consecutive quarterly samples or four quarterly samples.

BOARD NOTE: In corresponding 40 CFR 141.26(b)(2)(iii), USEPA recommends using four consecutive 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 Agency may issue a SEP reducing the frequency of monitoring at that sampling point to once every three years. The supplier must collect the samples subsection (b) requires during the reduced monitoring period.

5) For a supplier in the vicinity of a nuclear facility, the Agency may issue a SEP allowing the CWS to use environmental surveillance data the nuclear facility collected in lieu of monitoring at the system's entry points upon determining the nuclear facility’s the Agency a SEP that data are pertinent to the supplier's system. If a release from a nuclear facility occurs, a supplier using surveillance data must begin monitoring at the CWS's entry points under subsection (b)(1).

c) A CWS supplier the Agency designates to monitor for beta particle and photon radioactivity cannot apply to the Agency for a waiver from the monitoring frequencies in subsection (a) or (b).

d) A CWS supplier may analyze for naturally occurring potassium-40 beta particle activity using the same or an equivalent sample it used for the gross beta particle activity analysis. A supplier may subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if it exceeded the screening level. The supplier must calculate potassium-40 beta particle activity by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82 pCi/mg.

e) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate screening level, the supplier must analyze the sample to identify the major radioactive constituents present in the sample, as well as calculate and sum the appropriate doses to determine compliance with Section 611.330(d)(1) using the formula in Section 611.330(d)(2). The suppler must also calculate and combine doses for measured levels of tritium and strontium to determine compliance.

f) A supplier must monitor monthly at the sampling points exceeding the MCL in Section 611.330(d) beginning the month after the exceedance occurs. A supplier must continue monthly monitoring until the supplier has established that it meets the MCL by a rolling average of three monthly samples. A supplier establishing that it meets the MCL must return to quarterly monitoring until it complies with subsection (a)(1) or (b)(4).

BOARD NOTE: This Section derives from 40 CFR 141.26(b).

(Source: Amended at 47 Ill. Reg. 16486, effective November 2, 2023)