**Section 611.1052 Analytical Methods and Laboratory Certification**

a) Analytical Methodology

1) The standard sample volume required for analysis is 100 mL, regardless of analytical method the supplier uses.

2) A supplier needs only determine the presence or absence of total coliforms and E. coli; a supplier needs not determine density.

3) The time from sample collection to initiating test medium incubation may not exceed 30 hours. Suppliers should but need not hold samples below 10 ºC during transit.

4) If the supplier is to analyze water having residual chlorine (measured as free, combined, or total chlorine), the supplier must add sufficient sodium thiosulfate (Na2S2O3) to the sample bottle before sterilization to neutralize any residual chlorine in the water sample. Section 2 of SM 9060 A (97), incorporated by reference in Section 611.102, addresses dichlorination procedures.

5) The supplier must conduct total coliform and E. coli analyses in using certain analytical methods, each incorporated by reference in Section 611.102:

BOARD NOTE: The supplier must monitor and analyze only using the version of the approved method in this subsection (a) and incorporated by reference in Section 611.102. The methods listed are the only versions the supplier may use for compliance with this Subpart AA. Laboratories should carefully use only the approved versions of methods, as product package inserts may not be the same as the approved versions of the methods.

A) Total Coliforms, Lactose Fermentation Methods

i) Total Coliform Fermentation Technique. Sections 1 and 2 of SM 9221 B (94) (only the 20th ed.), SM 9221 B (99), SM 9221 B (06), or sections 1 through 4 of SM 9221 B (14).

BOARD NOTE: The supplier may use commercially available lactose broth in lieu of lauryl tryptose broth if the supplier conducts at least 25 parallel tests between lactose broth and lauryl tryptose broth using the water normally tested and this comparison demonstrates false-positive and false-negative rates for total coliforms are less than ten percent using lactose broth.

ii) Presence-Absence (P-A) Coliform Test. Sections 1 and 2 of SM 9221 D (94), SM 9221 D (99), or sections 1 through 3 of SM 9221 D (14).

BOARD NOTE: A supplier may use a multiple tube enumerative format, as SM 9221 D (94), SM 9221 D (99), or SM 9221 D (14) describes, for presence-absence determination under this Subpart AA.

B) Total Coliforms, Membrane Filtration Methods

i) Standard Total Coliform Membrane Filter Procedure Using Endo Medium. SM 9222 B (97), SM 9222 B (15), SM 9222 C (97), or SM 9222 C (15).

ii) Membrane Filtration Using MI Medium. USEPA 1604 (02).

iii) Hach 10029 (99) (m-ColiBlue24®).

BOARD NOTE: A supplier must begin all filtration series with membrane filtration equipment the supplier sterilized by autoclaving. Exposing filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, the supplier may expose the filtration equipment to UV light to sanitize the funnels between filtrations within a filtration series. Alternatively, the supplier may use manufacturer-pre-sterilized membrane filtration equipment (i.e., disposable funnel units).

iv) Chromocult® (00).

v) RAPID’E. coli (20).

BOARD NOTE: A supplier must begin all filtration series with membrane filtration equipment the supplier sterilized by autoclaving. Exposing filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, the supplier may expose the filtration equipment to UV light to sanitize the funnels between filtrations within a filtration series. Alternatively, the supplier may use manufacturer-pre-sterilized membrane filtration equipment (i.e., disposable funnel units).

C) Total Coliforms, Enzyme Substrate Methods

i) Colilert®. SM 9223 B (97), SM 9223 B (04), or SM 9223 B (16).

BOARD NOTE: A supplier may use multiple-tube and multi-well enumerative formats for this method in presence-absence determination under this Subpart AA.

ii) Colilert®-18. SM 9223 B (97), SM 9223 B (04), or SM 9223 B (16).

iii) Colisure®. SM 9223 B (97), SM 9223 B (04), or SM 9223 B (16).

BOARD NOTE: A supplier may use multiple-tube and multi-well enumerative formats for this method in presence-absence determination under this Subpart AA. A supplier may read ColisureTM Test results after an incubation time of 24 hours.

iv) E\*Colite® (98).

v) Readycult® (07).

vi) Modified Colitag™ (09) or Modified Colitag™ (20).

vii) Tecta (14) or Tecta (17).

D) E. coli (following lactose fermentation methods), EC-MUG Medium. Section 1 of SM 9221 F (94), section 1 of SM 9221 F (01), section 1 of SM 9221 F (06), or section 1 of SM 9221 F (14).

E) E. coli, Partition Methods (following membrane filtration methods)

i) EC Broth with MUG (EC-MUG). Section 1.c(2) of SM 9222 G (97) or SM 9222 H (15).

BOARD NOTE: The supplier must make certain changes to the EC broth with MUG (EC-MUG) formulation: 1.5 g potassium dihydrogen phosphate (KH2PO4) and 0.05 g 4-methylumbelliferyl-β-D-glucuronide.

ii) NA-MUG Medium. Section 1.c(1) of SM 9222 G (97) or SM 9222 I (15).

F) E. coli, Membrane Filtration Methods

i) Membrane Filtration Using MI Medium. USEPA 1604 (02).

ii) Hach 10029 (99) (m-ColiBlue24®).

BOARD NOTE: A supplier must begin all filtration series with membrane filtration equipment the supplier sterilized by autoclaving. Exposing filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, the supplier may expose the filtration equipment to UV light to sanitize the funnels between filtrations within a filtration series. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Alternatively, the supplier may use manufacturer-pre-sterilized membrane filtration equipment (i.e., disposable funnel units).

iii) Chromocult® (00).

iv) RAPID'E. coli (20).

BOARD NOTE: A supplier must begin all filtration series with membrane filtration equipment the supplier sterilized by autoclaving. Exposing filtration equipment to UV light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, the supplier may expose the filtration equipment to UV light to sanitize the funnels between filtrations within a filtration series. Exposure of filtration equipment to UV light is not adequate to ensure sterilization. Alternatively, the supplier may use manufacturer-pre-sterilized membrane filtration equipment (i.e., disposable funnel units).

G) E. coli, Enzyme Substrate Methods

i) Colilert®. SM 9223 B (97), SM 9223 B (04), SM 9223 B (16).

BOARD NOTE: Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this Subpart AA.

ii) Colilert®-18. SM 9223 B (97), SM 9223 B (04), SM 9223 B (16).

iii) Colisure®. SM 9223 B (97), SM 9223 B (04), SM 9223 B (16).

BOARD NOTE: A supplier may use multiple-tube and multi-well enumerative formats for this method in presence-absence determination under this Subpart AA. A supplier may read ColisureTM Test results after an incubation time of 24 hours.

iv) E\*Colite® (98).

v) Readycult® (07).

vi) Modified Colitag™ (09) or Modified Colitag™ (20).

vii) Tecta (14) or Tecta (17).

H) Simultaneous Detection of Total Coliforms and E. coli by Dual Chromogen Membrane Filter Procedure (using m-ColiBlue24® medium). SM 9222 J (15).

b) Laboratory Certification. A supplier must have a certified laboratory in one of the categories in Section 611.490(a) analyze all compliance samples this Subpart AA requires. The laboratory the supplier uses for compliance monitoring under this Subpart AA must be certified for each method (and associated contaminants).

c) This subsection (c) corresponds with 40 CFR 141.1052(c), a centralized listing of incorporations by reference for the purposes of subpart Y to 40 CFR 141. The Board has centrally located all incorporations by reference in Section 611.102. This statement maintains structural consistency with the federal rules.

BOARD NOTE: This Section derives from 40 CFR 141.852 and appendix A to subpart C of 40 CFR 141. The Board did not separately list approved alternative methods from Standard Methods Online that are the same version as a method appearing in a printed edition of Standard Methods. Using the Standard Methods Online copy is acceptable.

Standard Methods Online, Methods 9221 B-99 and 9221 D-99 appear in the 21st edition as Methods 9221 B and D. This appears in this Section as Methods 9221 B and 9221 D. In this Section, these appear as SM 9221 B (99) and SM 9221 D (99).

Standard Methods Online, Methods 9221 B-06, 9221 D-06, and 9221 F-06 appear in the 22nd edition as Methods 9221 B, D, and F. These appear in this Section as SM 9221 B (06), 9221 D (06), and SM 9221 F (06).

Standard Methods Online, Methods 9222 B-97, 9222 C-97, and 9222 G-97 appear in the 20th edition as Methods 9222 B, 9222 C, and 9222 G. These appear in this Section as SM 9222 B (97), 9222 C (97), and SM 9222 G (97).

Standard Methods Online, Method 9223 B-97 appears in the 20th and 21st editions as Method 9223 B. This appears in this Section as SM 9223 B (97).

Standard Methods Online, Method 9223 B-04 appears in the 22nd edition as Method 9223 B. This appears in this Section as SM 9223 B (04).

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