

(c) The coliform sampling plan must be included in the Aircraft Water System Operations and Maintenance Plan required in §141.804. Any subsequent changes to the coliform sampling plan must also be included in the Aircraft Water System Operations and Maintenance Plan required in §141.804.

§ 141.803 Coliform sampling.

(a) *Analytical methodology.* Air carriers must follow the sampling and analysis requirements under this section.

(1) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 mL.

(2) Air carriers need determine only the presence or absence of total coliforms and/or *E. coli*; a determination of density of these organisms is not required.

(3) Air carriers must conduct analyses for total coliform and *E. coli* in accordance with the analytical methods approved in §141.21(f)(3) and 141.21(f)(6) until March 31, 2016, and in accordance with the analytical methods approved in §141.852 beginning April 1, 2016.

(4) The time from sample collection to initiation of analysis may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10 °C during transit.

(5) The invalidation of a total coliform sample result can be made only by the Administrator in accordance with §141.21(c)(1)(i), (ii), or (iii) or by the certified laboratory in accordance with §141.21(c)(2) until March 31, 2016, or in accordance with §141.853(c) beginning April 1, 2016, with the Administrator acting as the State.

(6) *Certified laboratories.* For the purpose of determining compliance with this subpart, samples may be considered only if they have been analyzed by a laboratory certified by a State or

EPA. For the purposes of this paragraph, “State” refers to a State or Tribe that has received primacy for public water systems (other than aircraft water systems) under section 1413 of SDWA.

(b) *Routine monitoring.* For each aircraft water system, the sampling frequency must be determined by the disinfection and flushing frequency recommended by the aircraft water system manufacturer, when available, and as identified in the operations and maintenance plan in §141.804.

(1) Except as provided in paragraph (b)(2) of this section, the air carrier must collect two 100 mL total coliform routine samples at the frequency specified in the sampling plan in §141.802 and in accordance with paragraph (b)(3) of this section;

(2) The air carrier may collect one 100 mL total coliform routine sample at the frequency specified in the sampling plan in §141.802 for aircraft with a removable or portable tank that is drained every day of passenger service, and the aircraft has only one tap. Aircraft meeting the requirements of this paragraph do not have to comply with paragraph (b)(4) of this section.

(3) Air carriers must perform routine monitoring for total coliform at a frequency corresponding to the frequency of routine disinfection and flushing as specified in the Table b-1 (Routine Disinfection and Flushing and Routine Sample Frequencies). Air carriers must follow the disinfection and flushing frequency recommended by the aircraft water system manufacturer, when available. Where the aircraft water system manufacturer does not specify a recommended routine disinfection and flushing frequency, the air carrier must choose a frequency from Table b-1 (Routine Disinfection and Flushing and Routine Sample Frequencies):

TABLE B-1—ROUTINE DISINFECTION AND FLUSHING AND ROUTINE SAMPLE FREQUENCIES

Minimum routine disinfection & flushing per aircraft	Minimum frequency of routine samples per aircraft
At least 4 times per year = At least once within every three-month period (quarterly).	At least 1 time per year = At least once within every twelve-month period (annually).
At least 3 times per year = At least once within every four-month period.	At least 2 times per year = At least once within every six-month period (semi-annually).
At least 2 times per year = At least once within every six-month period (semi-annually).	At least 4 times per year = At least once within every three-month period (quarterly).

TABLE B–1—ROUTINE DISINFECTION AND FLUSHING AND ROUTINE SAMPLE FREQUENCIES—
Continued

Minimum routine disinfection & flushing per aircraft	Minimum frequency of routine samples per aircraft
At least 1 time per year or less = At least once within every twelve-month period (annually) or less.	At least 12 times per year = At least once every month (monthly).

(4) One sample must be taken from a lavatory and one from a galley; each sample must be analyzed for total coliform. If only one water tap is located in the aircraft water system due to aircraft model type and construction, then a single tap may be used to collect two separate 100 mL samples.

(5) If any routine, repeat, or follow-up coliform sample is total coliform-positive, the air carrier must analyze that total coliform-positive culture medium to determine if *E. coli* is present.

(6) Routine total coliform samples must not be collected within 72 hours after completing routine disinfection and flushing procedures.

(c) *Routine coliform sample results*—(1) *Negative routine coliform sample results.* If all routine sample results are total coliform-negative, then the air carrier must maintain the routine monitoring frequency for total coliform as specified in the sampling plan in § 141.802.

(2) *Positive routine E. coli sample results.* If any routine sample is *E. coli*-positive, the air carrier must perform all of the following:

(i) *Restrict public access.* Restrict public access to the aircraft water system in accordance with paragraph (d) of this section as expeditiously as possible, but in no case later than 24 hours after the laboratory notifies the air carrier of the *E. coli*-positive result or discovery of the applicable failure as specified in paragraphs (g) and (h) of this section. All public access restrictions, including applicable public notification requirements, must remain in place until the aircraft water system has been disinfected and flushed and a complete set of follow-up samples is total coliform-negative; and

(ii) *Disinfect and flush.* Conduct disinfection and flushing in accordance with § 141.804(b)(2). If the aircraft water system cannot be physically disconnected or shut-off, or the flow of water

otherwise prevented through the tap(s), then the air carrier must disinfect and flush the system no later than 72 hours after the laboratory notifies the air carrier of the *E. coli*-positive result or discovery of the applicable failure as specified in paragraphs (g) and (h) of this section; and

(iii) *Follow-up sampling.* Collect follow-up samples in accordance with paragraph (e) of this section. A complete set of follow-up sample results must be total coliform-negative before the air carrier provides water for human consumption from the aircraft water system and returns to the routine monitoring frequency as specified in the sampling plan required by § 141.802.

(3) *Positive routine total coliform sample results.* If any routine sample is total coliform-positive and *E. coli*-negative, then the air carrier must perform at least one of the following three corrective actions and continue through with that action until a complete set of follow-up or repeat samples is total coliform-negative:

(i) *Disinfect and flush.* In accordance with § 141.804(b)(2), conduct disinfection and flushing of the system no later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive and *E. coli*-negative result. After disinfection and flushing is completed, the air carrier must collect follow-up samples in accordance with paragraph (e) of this section prior to providing water for human consumption from the aircraft water system. A complete set of follow-up sample results must be total coliform-negative before the air carrier returns to the routine monitoring frequency as specified in the sampling plan required by § 141.802; or

(ii) *Restrict public access.* In accordance with paragraph (d) of this section, restrict public access to the aircraft

water system as expeditiously as possible, but in no case later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive and *E. coli*-negative result or discovery of the applicable failure as specified in paragraphs (f), (g), and, (i) of this section. All public access restrictions, including applicable public notification requirements, must remain in-place until the aircraft water system has been disinfected and flushed, and a complete set of follow-up samples has been collected. The air carrier must conduct disinfection and flushing in accordance with §141.804(b)(2). After disinfection and flushing is completed, the air carrier must collect follow-up samples in accordance with paragraph (e) of this section prior to providing water for human consumption from the aircraft water system. A complete set of follow-up sample results must be total coliform-negative before the air carrier returns to the routine monitoring frequency as specified in the sampling plan required by §141.802; or

(iii) *Repeat sampling.* Collect three 100 mL repeat samples no later than 24 hours after the laboratory notifies the air carrier of the routine total coliform-positive and *E. coli*-negative result. Repeat samples must be collected and analyzed from three taps within the aircraft as follows: The tap which resulted in the total coliform-positive sample, one other lavatory tap, and one other galley tap. If fewer than three taps exist, then a total of three 100 mL samples must be collected and analyzed from the available taps within the aircraft water system.

(A) If all repeat samples are total coliform-negative, then the air carrier must maintain the routine monitoring frequency for total coliform as specified in the sampling plan in §141.802.

(B) If any repeat sample is *E. coli*-positive, the air carrier must perform all the corrective actions as specified in paragraphs (c)(2)(i), (c)(2)(ii), and (c)(2)(iii) of this section.

(C) If any repeat sample is total coliform-positive and *E. coli*-negative, then the air carrier must perform the corrective actions specified in paragraphs (c)(3)(i) or (c)(3)(ii) of this section, and continue through with that action

until a complete set of follow-up samples is total coliform-negative.

(d) *Restriction of public access.* Restriction of public access to the aircraft water system includes, but need not be limited to, the following:

(1) Physically disconnecting or shutting off the aircraft water system, where feasible, or otherwise preventing the flow of water through the tap(s);

(2) Providing public notification to passengers and crew in accordance with §141.805.

(3) Providing alternatives to water from the aircraft water system, such as bottled water for drinking and coffee or tea preparation; antiseptic hand gels or wipes in accordance with 21 CFR part 333—“Topical Anti-microbial Drug Products for Over-the-Counter Human Use” in the galleys and lavatories; and other feasible measures that reduce or eliminate the need to use the aircraft water system during the limited period before public use of the aircraft water system is unrestricted.

(e) *Post disinfection and flushing follow-up sampling.* Following corrective action disinfection and flushing, air carriers must comply with post disinfection and flushing follow-up sampling procedures that, at a minimum, consist of the following:

(1) For each aircraft water system, the air carrier must collect a complete set of total coliform follow-up samples consisting of two 100 mL total coliform samples at the same routine sample locations as identified in paragraphs (b)(2) and (b)(4) of this section.

(2) Follow-up samples must be collected prior to providing water to the public for human consumption from the aircraft water system.

(3) If a complete set of follow-up samples is total coliform-negative, the air carrier must return to the routine monitoring frequency for total coliform as specified in the sampling plan required by §141.802.

(4) If any follow-up sample is *E. coli*-positive, the air carrier must perform all the corrective actions as specified in paragraphs (c)(2)(i), (c)(2)(ii), and (c)(2)(iii) of this section.

(5) If any follow-up sample is total coliform-positive and *E. coli*-negative

the air carrier must restrict public access to the aircraft water system in accordance with paragraph (d) of this section as expeditiously as possible, but in no case later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive and *E. coli*-negative result. All public access restrictions, including applicable public notification requirements, must remain in-place until the aircraft water system has been disinfected and flushed in accordance with §141.804(b)(2) and a complete set of follow-up samples is total coliform-negative. The air carrier must collect follow-up samples in accordance with paragraph (e) of this section. A complete set of follow-up sample results must be total coliform-negative before the air carrier provides water for human consumption from the aircraft water system and returns to the routine monitoring frequency for coliform as specified in §141.802.

(f) *Failure to perform required routine disinfection and flushing or failure to collect required routine samples.* If the air carrier fails to perform routine disinfection and flushing or fails to collect and analyze the required number of routine coliform samples, the air carrier must perform all the corrective actions as specified in paragraph (c)(3)(ii) of this section.

(g) *Failure to collect repeat or follow-up samples.* If the air carrier fails to collect and analyze the required follow-up samples as a result of an *E. coli*-positive result, then the air carrier must perform all the corrective actions as specified in paragraphs (c)(2)(i), (c)(2)(ii), and (c)(2)(iii) of this section. If the air carrier fails to collect and analyze the required repeat samples or follow-up samples as a result of a total coliform-positive and *E. coli*-negative result, then the air carrier must perform all the corrective actions as specified in paragraph (c)(3)(ii) of this section.

(h) *Failure to board water from a safe watering point (E. coli-positive).* For the aircraft water system, the air carrier must perform all the corrective actions specified in paragraphs (c)(2)(i), (c)(2)(ii), and (c)(2)(iii) of this section when it becomes aware of an *E. coli*-positive event resulting from:

(1) Boarding water from a watering point not in accordance with FDA regulations (21 CFR part 1240 subpart E), or

(2) Boarding water that does not meet NPDWRs applicable to transient non-community water systems (§§141.62 and 141.63, as applied to TNCWS),

(3) Boarding water that is otherwise determined to be unsafe due to non-compliance with the procedures specified in §141.804(b)(6).

(i) *Failure to board water from a safe watering point (non-E. coli-positive).* For the aircraft water system, the air carrier must perform all the corrective actions specified in paragraphs (c)(3)(ii) of this section when it becomes aware of a non-*E. coli*-positive event resulting from:

(1) Boarding water from a watering point not in accordance with FDA regulations (21 CFR part 1240, subpart E),

(2) Boarding water that does not meet NPDWRs applicable to transient non-community water systems (§§141.62 and 141.63, as applied to TNCWS), or

(3) Boarding water that is otherwise determined to be unsafe due to non-compliance with the procedures specified in §141.804(b)(6).

[74 FR 53618, Oct. 19, 2009, as amended at 78 FR 10354, Feb. 13, 2013]

§ 141.804 Aircraft water system operations and maintenance plan.

(a) Each air carrier must develop and implement an aircraft water system operations and maintenance plan for each aircraft water system that it owns or operates. This plan must be included in a Federal Aviation Administration (FAA)-accepted air carrier operations and maintenance program (14 CFR part 43, 14 CFR part 91, 14 CFR part 121).

(b) Each aircraft water system operations and maintenance plan must include the following:

(1) *Watering point selection requirement.* All watering points must be selected in accordance with Food and Drug Administration (FDA) regulations (21 CFR part 1240, subpart E).

(2) *Procedures for disinfection and flushing.* The plan must include the following requirements for procedures for disinfection and flushing of aircraft water system.