ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 141

[EPA–HQ–OW–2005–0025; FRL–8551–3]

RIN 2040–AE84

National Primary Drinking Water Regulations: Drinking Water Regulations for Aircraft Public Water Systems

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency is proposing to amend and consolidate in one place the federal drinking water requirements (known as National Primary Drinking Water Regulations or NPDWRs) for aircraft public water systems under the Safe Drinking Water Act (SDWA). Aircraft public water systems are subject to the requirements of SDWA and the NPDWRs. The existing federal drinking water standards were primarily designed to regulate water quality in stationary public water systems and the application of these requirements to mobile water systems with the capability of flying throughout the world has created implementation challenges. The proposed requirements are intended to tailor existing health-based drinking water standards to the unique characteristics of aircraft public water systems for the enhanced protection of public health against illnesses attributable to microbiological contamination. This is accomplished through multiple-barrier protection and procedural control measures. EPA believes that the combination of these components will better protect public health while building upon existing aircraft operations and maintenance programs, better coordinate federal programs that regulate aircraft water systems, and minimize disruption of aircraft flight schedules.

DATES: Comments must be received on or before July 8, 2008. Under the Paperwork Reduction Act, comments on the information collection provisions must be received by OMB on or before May 9, 2008.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA–HQ–OW–2005–0025, by one of the following methods:

- *http://www.regulations.gov:* Follow the on-line instructions for submitting comments.
- E-mail: *ow-docket@epa.gov.*
- Mail: Water Docket, Environmental Protection Agency, Mailcode: 2822T, 1200 Pennsylvania Ave., NW., Washington, DC 20460. In addition, please mail a copy of your comments on the information collection provisions to the Office of Information and Regulatory Affairs, Office of Management and Budget (OMB), Attn: Desk Officer for EPA, 725 17th St., NW., Washington, DC 20503.
- Hand Delivery: EPA Docket Center, Public Reading Room, EPA Headquarters West Building, Room 3334, 1301 Constitution Ave., NW., Washington, DC 20460. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA–HQ–OW–2005–0025. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or e-mail. The *http://www.regulations.gov* Web site is an ''anonymous access'' system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through *www.regulations.gov* your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses.

Docket: All documents in the docket are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *http://www.regulations.gov* or in hard copy at the Water Docket, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Water Docket is (202) 566–2426.

FOR FURTHER INFORMATION CONTACT: Richard Naylor, Drinking Water Protection Division, Office of Ground Water and Drinking Water (MC–4606M), Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460; telephone number: (202) 564–3847; e-mail address: *naylor.richard@epa.gov*. For general information, contact the Safe Drinking Water Hotline, telephone number: (800) 426–4791. The Safe Drinking Water Hotline is open Monday through Friday, excluding legal holidays, from 10 a.m. to 4 p.m., Eastern time.

SUPPLEMENTARY INFORMATION:

I. General Information

A. Does This Action Apply to Me?

Entities potentially regulated by the proposed Aircraft Drinking Water Rule include air carriers that operate aircraft public water systems using finished surface water, finished ground water under the direct influence of surface water (GWUDI), or finished ground water. Regulated categories and entities include:

Category	NAICS code	Examples of regulated entities
Scheduled passenger air transportation.	481111	Air carriers.
Nonscheduled chartered passenger air transportation.	481211	Air carriers.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists the types of entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in this table could also be regulated. To determine whether your air carrier is regulated by this action, you should carefully examine the applicability criteria in section § 141.800 of this proposed rule. If you

have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding section entitled **FOR FURTHER INFORMATION CONTACT.**

B. What Should I Consider as I Prepare My Comments for EPA?

1. Submitting CBI. Do not submit this information to EPA through *http://www.regulations.gov* or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. Tips for Preparing Your Comments. When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible.
- Make sure to submit your comments by the comment period deadline identified.

C. Abbreviations Used in This Notice

ADWR: Aircraft Drinking Water Rule.
ANSI: American National Standards Institute.
AOC: Administrative Order on Consent.
ATA: Air Transport Association.
BMP: Best Management Practice.
CDC: Centers for Disease Control and Prevention.
CFR: Code of Federal Regulations.
CRMP: Comprehensive Representative Monitoring Plan.
CWS: Community Water System.
DBP: Disinfection Byproducts.
E. Coli: Escherichia coli.
EO: Executive Order.
EPA: United States Environmental Protection Agency.
FAA: United States Federal Aviation Administration.
FDA: United States Food and Drug Administration.
FR: Federal Register.
GWS: Ground Water System.
GWUDI: Ground Water Under the Direct Influence of Surface Water.
HACCP: Hazard Analysis and Critical Control Point.
HHS: Department of Health and Human Services.
HPC: Heterotrophic Plate Count.
ICC: Interstate Carrier Conveyance.
ICR: Information Collection Request.
IESWTR: Interim Enhanced Surface Water Treatment Rule.
LIMS: Laboratory Information Management System.
mL: Milliliters.
MCL: Maximum Contaminant Level.
MCLG: Maximum Contaminant Level Goal.
MDRL: Maximum Disinfectant Residual Level.
mg/L: Milligrams per Liter.
NASA: National Aeronautics and Space Administration.
NCWS: Non-Community Water System.
NDWAC: National Drinking Water Advisory Committee.
NPDWR: National Primary Drinking Water Regulation.
NSF: NSF International.
NTNCWS: Non-Transient Non-Community Water System.
NTTAA: National Technology Transfer and Advancement Act.
PWS: Public Water System.
OMB: Office of Management and Budget.
QAPP: Quality Assurance Project Plan.
RFA: Regulatory Flexibility Act.
SAB: Science Advisory Board.
SBA: Small Business Association.
SDWA: Safe Drinking Water Act.
SDWIS: Safe Drinking Water Information System.
SWTR: Surface Water Treatment Rule.
TC: Total Coliform.
TCR: Total Coliform Rule.
TNCWS: Transient Non-Community Water System.
TT: Treatment Technique.
UMRA: Unfunded Mandates Reform Act.
WHO: World Health Organization.
WSG: Water Supply Guidance.
WSP: Water Safety Plan.

D. Table of Contents

II. Background

A. Legal Authority

EPA is proposing this regulation under the authority of the Safe Drinking Water Act (SDWA), as amended, 42 U.S.C. 300f *et seq.*, primarily sections 1401, 1411, 1412 and 1450. Under SDWA, EPA establishes minimum requirements for tap water provided to the public, known as the National Primary Drinking Water Regulations or NPDWRs; these standards are applicable to ''public water systems.'' SDWA Section 1401 and EPA's regulations define a ''public water system'' (PWS) as a system for providing water for human consumption to the public through

pipes or other constructed conveyances and that regularly serves an average of a least twenty-five individuals daily, at least 60 days per year. 40 CFR 141.2.

All public water systems are subject to the NPDWRs unless they are excluded from regulatory requirements under SDWA Section 1411. Section 1411 excludes from regulation any public water system that receives all its water from another regulated public water system, does not sell or treat the water, and is not a ''carrier which conveys passengers in interstate commerce.'' The classes of interstate carrier conveyances (ICCs) include aircraft, trains, buses, and water vessels. As a result, all ICCs that regularly serve water to an average of at least twenty-five individuals daily, at least 60 days per year are public water systems and are currently subject to existing NPDWRs regardless of whether they treat or sell the water. Due to the unique characteristics of aircraft water systems and demonstrated implementation challenges, EPA has decided that a new NPDWR specifically tailored to aircraft water systems is necessary and an Agency priority. EPA may decide to tailor existing requirements to other classes of ICCs in the future.

B. Purpose of the Proposed Rule

The primary purpose of the proposed Aircraft Drinking Water Rule (ADWR) is to ensure that safe and reliable drinking water is provided to aircraft passengers and crew. This entails providing air carriers with a feasible way to comply with SDWA and the NPDWRs. The existing NPDWRs were designed primarily with traditional, stationary public water systems in mind. Some of these requirements have proven difficult to implement when applied to aircraft water systems, which are operationally very different. For example, aircraft must maintain rigorous operating schedules. They fly to multiple destinations throughout the course of any given day and may board drinking water from sources at any of these destinations. Aircraft board water from airport watering points via temporary connections. Aircraft drinking water safety depends on a number of factors including the quality of the water that is boarded from these multiple sources, the care used to board the water, and the operation and maintenance of the onboard water system and the water transfer equipment (such as water cabinets, trucks, carts, and hoses). These unique operational characteristics present different challenges, which EPA is addressing in this proposal.

EPA's NPDWRs establish different requirements based on the classification of the public water system (water system), including whether the system is a ''community,'' ''nontransient noncommunity,'' or ''transient noncommunity'' system and whether the system uses surface water or groundwater. Aircraft public water systems are considered transient noncommunity water systems (TNCWS), because they are not community water systems and they do not regularly serve at least 25 of the same persons over six months per year (See 40 CFR 141.2). Also, aircraft are regulated as surface water systems because they are likely to board finished drinking water from other public water systems that use surface water in whole or in part. EPA considers water for human consumption to include water for drinking and food preparation as well as water for brushing teeth and hand washing (see 63 FR 41941 (August 5, 1998)). Therefore, if an aircraft has a sink in the lavatory, then the water provided to that sink must be suitable for human consumption.

C. Scope of Proposed Rule

The proposed ADWR only addresses aircraft regulated under SDWA. SDWA does not regulate aircraft water systems operating outside the U.S.; however, EPA is supporting an international effort led by the World Health Organization (WHO) to develop international guidelines for aircraft drinking water. The proposed ADWR applies to the onboard water system only. EPA defers to the Food and Drug Administration (FDA) with respect to regulating watering points such as water cabinets, carts, trucks, and hoses from which aircraft board water. Aircraft that do not provide water for human consumption or those with water systems that do not regularly serve an average of at least twenty-five individuals daily at least 60 days out of the year do not meet the definition of a public water system; these aircraft are not regulated under the NPDWRs or covered under the new NPDWR proposed today. An estimated 63 air carriers and 7,327 aircraft public water systems are covered by this proposal.

D. Potential Health Concerns Associated With Aircraft Water Systems

The proposed ADWR assumes that only finished water is boarded on aircraft. Finished water means water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as necessary to maintain water quality in the distribution system (*e.g.*, supplemental disinfection, addition of corrosion control chemicals) (40 CFR 141.2). The assumption that only finished water is boarded on aircraft is based on a FDA requirement that only potable water may be provided for drinking and culinary purposes on interstate carrier conveyances (ICCs) (21 CFR 1240.80). Aircraft public water systems that are boarding water that is not finished water will continue to be subject to existing NPDWRs and will not be subject to the new NPDWR proposed today. However, even when the water boarded is finished water, the opportunity exists for microbiological organisms to be introduced during the act of transferring the water from the supplier truck, cabinet, or cart to the aircraft water system, or for biofilm to develop within the water system itself.

The proposed ADWR seeks to protect against disease-causing microbiological contaminants or pathogens through the required development and implementation of aircraft water system operation and maintenance plans that include best management practices, air carrier training requirements, and periodic sampling of the onboard drinking water. Testing drinking water for each individual pathogen is not practical, nor feasible. Instead, water quality and public health professionals use total coliform bacteria as an indicator organism. Total coliforms are a group of closely related, mostly harmless bacteria that live in soil and water as well as in the guts of animals. The presence of total coliforms in drinking water suggests that there may be disease-causing agents in the water or there has been a breach, failure, or other change in the integrity of the drinking water. Normally, total coliforms are not harmful to human health. However, if Escherichia coli (E. coli), a type of coliform bacteria, is present, it can be harmful to human health. Total coliforms are inactivated, or made harmless, by treatment or die off naturally in a manner similar to most bacterial organisms. However, if total coliforms are found in a water system, the system may be vulnerable to disease-causing bacteria (*i.e.*, pathogens), whether pathogens are actually present or not. If an aircraft water system is not disinfected and/or flushed on a routine basis, it may be at risk for biofilm or other bacterial growth.

Most of the bacteria in drinking water distribution systems are associated with biofilms. There are several studies showing that pathogenic organisms can survive longer and have greater resistance to chlorine when occurring in biofilms than in drinking water (Lehtola *et al.*, 2007). Most aircraft water tanks

are either topped off or drained on a daily basis. However, there are occasional situations when the water may become stagnant. Some examples are aircraft that are occasionally taken out of service for an extended maintenance period, or cold weather conditions that affect the ability to drain tanks (due to concerns about the drained water freezing on the tarmac). Additionally, aircraft with water in their tanks that experience long layovers or overnight stays in high temperature areas have a higher potential for rapid growth of organisms. There are no data on outbreaks of illness caused by drinking water on aircraft. That does not mean there is no illness because there is a high rate of underreporting of illnesses caused by drinking water contamination. Illness resulting from consuming contaminated aircraft water would be no exception to this because the population onboard disperses after a flight and even if passengers develop gastrointestinal symptoms within hours of deplaning, they are unlikely to associate the illness with the aircraft water or to contact the air carrier or any government agency to report the illness. The effects of waterborne disease are usually acute, resulting from a single or small number of exposures. Most waterborne pathogens cause gastrointestinal illness with diarrhea, abdominal discomfort, nausea, vomiting, or other symptoms. Most such cases involve a sudden onset and generally are of short duration in healthy people. Some pathogens (*e.g., Giardia* and *Cryptosporidium*), however, may cause extended illness, lasting weeks or longer in otherwise healthy individuals. Waterborne pathogens are particularly harmful to sensitive populations, such as the immuno-compromised, and can sometimes prove fatal.

E. Regulatory and Enforcement History

SDWA, including the amendments of 1986 and 1996, require EPA to promulgate NPDWRs to prevent tap water contamination that may adversely affect human health. As TNCWSs, aircraft are subject to certain NPDWRs specific to this category of systems. EPA published Water Supply Guidance 29 (WSG 29) in October 1986 to assist ICC operators, including air carriers, in complying with these standards (USEPA 1986). WSG 29 described an alternative under which the operator of an ICC water system could use an approved operation and maintenance program in lieu of monitoring requirements. However, this guidance did not alter the regulatory requirements for ICCs. Since then, EPA has determined that a new rule specifically adapted to aircraft water systems would provide a clearer and more implementable regulatory framework for aircraft water systems. EPA suspended the earlier guidance in 2003 and is no longer approving operation and maintenance programs in lieu of monitoring under WSG 29 while the ICC program is being revised.

In 2004, EPA found all aircraft water systems to be out of compliance with the NPDWRs. According to the air carriers, it is not feasible for them to comply with all of the monitoring that is required in the existing regulations. Subsequently, EPA tested 327 aircraft of which 15 percent tested positive for total coliform. In response to these findings, EPA embarked on a process to tailor the existing regulations for aircraft public water systems. In the interim, EPA placed 45 air carriers under Administrative Orders on Consent (AOC) that will remain in effect until tailored aircraft drinking water regulations are final. The air carrier AOCs combine sampling, best management practices, corrective action, public notification, and reporting and recordkeeping to ensure public health protection.

Many drinking water rules for systems using surface water or ground water under the direct influence of surface water (GWUDI) relate to the treatment of source water, but because aircraft board finished water, the responsibility for treating the water is borne by the water supplier from which aircraft obtain their water. This situation is comparable to traditional, stationary water systems that are consecutive systems (i.e., buy finished water from other PWSs). The proposed ADWR adapts to aircraft water systems the applicable requirements from the Total Coliform Rule, the suite of surface water treatment regulations, and the Public Notification Rule, the relevant sections of which are summarized as follows.

1. The 1989 Total Coliform Rule

The Total Coliform Rule (TCR) (USEPA, 1989) applies to all public water systems. Because monitoring water systems for every possible pathogenic organism is not feasible, coliform organisms are used as indicators of possible source water and distribution system contamination. Coliforms are easily detected in water and are used to indicate a water system's source and distribution system vulnerability to pathogens. In the TCR, EPA sets a Maximum Contaminant Level Goal (MCLG) of zero for total coliforms. EPA also sets a monthly Maximum Contaminant Level (MCL) for total coliforms and requires testing of total coliform-positive cultures for the presence of E. coli or fecal coliforms. E. coli and fecal coliforms indicate more immediate health risks from sewage or fecal contamination and are used as a trigger of acute contamination. In addition, the TCR requires sanitary surveys (i.e., onsite review of the water source, facilities, equipment, operation and maintenance of a PWS for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water). The TCR requires sanitary surveys by the State primacy agency every 5 years for systems that collect fewer than 5 total coliform samples per month (those serving 4,100 people or fewer). A TNCWS using surface water serving less than 1,000 persons daily would typically be required to take one total coliform sample per month for routine sampling requirements.

2. Surface Water Treatment Regulations

EPA has promulgated a suite of regulations to address microbiological contamination of surface water. These regulations include the Surface Water Treatment Rule (SWTR), the Interim Enhanced Surface Water Treatment Rule (IESWTR), the Filter Backwash Recycling Rule, and the Long Term 1 and Long Term 2 Enhanced Surface Water Treatment Rules. These rules apply monitoring and treatment technique requirements to protect the public from microbiological pathogens in drinking water such as bacteria, viruses, *Giardia lamblia,* and *Cryptosporidium.* The monitoring and treatment technique requirements must be met prior to water entering the distribution system. Aircraft which board only finished water are not required to provide source water treatment or to perform monitoring of source water because these activities are the responsibility of the public water system from which the aircraft obtains finished water for boarding. However, the SWTR includes provisions for maintaining a detectable distribution system disinfectant residual and for monitoring distribution system disinfectant residuals at the same time and location as used for total coliform monitoring. Because disinfectant residual monitoring is required in the distribution system, current regulations require aircraft to perform this monitoring. A TNCWS using surface water serving less than 1,000 persons daily would typically be required to take one disinfectant residual sample per month. Additionally, the IESWTR requires primary enforcement agencies to conduct sanitary surveys for all

surface water and GWUDI systems regardless of size, and specifies a frequency of every 5 years for noncommunity water systems.

3. The Public Notification Rule

Public water systems must give notice to persons served by the water system for violations of NPDWRs and for other situations posing a risk to public health from drinking water. The term ''NPDWR Violations'' is used in the public notification regulations to include violations of the MCL, Maximum Residual Disinfectant Level (MRDL), treatment technique (TT), monitoring, and testing procedure requirements. Public notice requirements are divided into three tiers, which take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. Due to the transient nature of the public served by TNCWSs, public notice is typically provided through posting of the notice at locations where the public may access drinking water from the water system.

4. Roles of the FAA and FDA in Regulating Aircraft Drinking Water

Drinking water safety on air carriers is jointly regulated by the EPA, the Food and Drug Administration (FDA), and the Federal Aviation Administration (FAA). EPA regulates the parent public water systems within the United States that supply water to the airports and the drinking water once it is onboard the aircraft. EPA is responsible for developing and implementing the NPDWRs for all public water systems, including public water systems on aircraft. FAA requires that air carrier companies submit operation and maintenance programs (14 CFR part 43, 14 CFR part 91, 14 CFR part 121) for all parts of the aircraft, including the water system. Under the current Memorandum of Understanding between EPA and FDA, the FDA takes the lead in regulating culinary water and the watering points where aircraft obtain water at the individual airports. FDA is responsible for approving all ICC watering points (21 CFR 1240.83(a)), (1) to ensure the water supply meets EPA's NPDWRs and (2) to ensure the methods (i.e., water transfer process) of and facilities (e.g., water cabinets, carts, trucks, containers, and hoses) for delivery of such water to the conveyance and the sanitary conditions surrounding such delivery prevent the introduction, transmission, or spread of communicable diseases.

In addition to the EPA and FDA requirements, air carriers have many different on-going programs and practices for assessing and correcting deficiencies and risks associated with the drinking water supply and related safety, security and sanitation issues. Such programs and practices may include FAA Airworthiness Standards: Transport Category Airplanes (airworthiness maintenance and inspection program) (14 CFR part 43, 14 CFR part 91, and 14 CFR part 121); vulnerability assessments/security programs; FDA regulations for Interstate Conveyance Sanitation (USFDA 2005); FDA sanitary surveys of watering points and servicing areas; and FDA certification of aircraft sanitation systems including potable (finished) water, sewage, and galleys. These programs may contribute valuable information related to the condition of the aircraft water system and water quality. EPA has worked closely with FDA and FAA to ensure that this proposal for aircraft water system regulation is integrated with these programs to avoid unnecessary duplication.

III. Proposed Rule Development

A. Stakeholder Involvement

In November 2004, when EPA announced that it had initiated a rulemaking process to develop regulations for aircraft public water systems, the Agency committed to working collaboratively with other federal agencies overseeing the air carrier industry, industry representatives, and interested stakeholders to identify appropriate requirements to ensure safe drinking water onboard aircraft. This collaborative rule development process has allowed EPA an opportunity to obtain information from, and hear the concerns and questions of stakeholders who would be affected by this rule in an organized and formal process prior to development of this proposed rule.

EPA has held three public meetings; these were held in June 2005, January 2006, and March 2007. All three events were well-attended by stakeholders representing a diverse group of interests including: Air carriers, airports, flight attendants, pilots, passengers, public health officials, environmental groups, states, public water systems, water treatment and equipment vendors, laboratories, foreign government agencies, and other federal agencies (e.g., FDA, FAA, and CDC).

EPA used a third-party skilled in conflict resolution to help facilitate the process and to involve the full range of interests. Given the number and complexity of issues associated with aircraft drinking water, EPA began with an assessment process to identify options to support and engage the full range of stakeholders in the regulatory development process.

In June 2005, EPA held a public information meeting to kick-off the rulemaking process. The meeting was followed by the development of a stakeholder assessment report, produced by the third-party facilitator, which is available in the docket for this rule. This report included recommendations for a series of joint education workshops to bring diverse stakeholders together to identify and understand the issues and to provide input and comment on regulatory approaches and options.

The first workshop was held on January 18–19, 2006. This workshop provided an opportunity for stakeholders to learn about aircraft water systems and watering points, current regulations, and other information relevant to the rulemaking. The stakeholders were encouraged to share their initial ideas about the issues that should be addressed in developing the proposed rule. EPA also presented for consideration by the stakeholders a conceptual approach for the rule, which draws on the principles of the Hazard Analysis and Critical Control Point (HACCP) and multiple barrier approaches. This systematic approach, known as the Water Safety Plan (WSP) approach, is described in greater detail in section III. C. Framework for Proposed Rule Development.

The second workshop was conducted on March 28–29, 2007. At this workshop, EPA presented for comment examples of the application of the Water Safety Plan approach to aircraft water systems. Also, EPA presented the preliminary monitoring data collected under the air carrier Administrative Orders on Consent. The majority of the workshop time was spent soliciting stakeholder input on topics critical to the development of the ADWR including monitoring, best management practices, public and crew notification, reporting and recordkeeping requirements, and program oversight and verification.

B. Data Collection Efforts

In developing the ADWR proposal, EPA analyzed preliminary monitoring results submitted under the Administrative Orders on Consent (AOCs) from 2005–2007. In addition, to gain a better understanding of the drinking water quality on domestic aircraft as indicated by total coliform, E.coli/fecal coliform, and chlorine residual, EPA drew upon the results of the following three studies: (1) A

voluntary monitoring study completed by the Air Transport Association (ATA) in Fall 2003; (2) an EPA study of aircraft NPDWR compliance completed in 2004; and (3) the Canadian Inspection Program monitoring results completed in 2006

The EPA data summaries presented here should not be used to draw any definitive conclusions. The AOC dataset is incomplete and therefore considered preliminary since it represents 15 out of 45 domestic air carriers under AOCs with EPA. The 45 domestic air carriers were placed under AOCs to resolve non-compliance with the Safe Drinking Water Act and the National Primary Drinking Water Regulations. The AOCs established interim aircraft water testing and disinfection protocols. Each of the air carriers, at a minimum, was required to implement the following regular monitoring and disinfection protocols for its entire fleet: Regular monitoring of aircraft water systems for coliforms and disinfectant residuals; regular disinfection of aircraft water systems and water transfer equipment; corrective action for total coliform-positive sample(s); analysis of any total coliform-positive culture media for the presence of fecal coliforms or E. coli; provision of public notice or restriction of water service when there is a total coliform-positive sample result; performance of a study of possible sources of contamination that exist outside of the aircraft; and inclusion of information regarding various aspects of its domestic and foreign water practices.

Specific to the AOC sampling data, air carriers were required to submit two documents for EPA approval that set the stage for monitoring and disinfection protocols/procedures: A Comprehensive Representative Monitoring Plan (CRMP) and a Quality Assurance Project Plan (QAPP). The CRMP describes the air carrier's sampling and disinfection processes and protocols for collecting samples within a 12-month period. The QAPP describes the air carrier's Quality Assurance/Quality Control processes to ensure good quality data and the methods for collecting and assessing data, such as use of State- or EPA-certified laboratories and EPA-approved analytical methods for analyzing drinking water samples. Once the plans were approved, air carriers were required to collect and submit their aircraft water system sampling data to EPA. As reflected in Table III–1, air carriers followed slightly different monitoring and disinfection protocols based on their fleet size.

TABLE III–1.—MONITORING AND DISINFECTION PROTOCOLS AS REQUIRED UNDER THE AOCS

	Air carriers with greater than 20 aircraft	Air carriers with less than or equal to 20 aircraft
MONITORING [1]		
For each sample event, collect at least one sample from a galley and one from a lavatory for Total Coliform (TC) and Disinfectant Residual (total residual chlorine)	✓	✓
Sample 25% of fleet quarterly	✓	
Sample all fleet quarterly		✓
DISINFECTING AND FLUSHING [2]		
Disinfect and flush each aircraft's water system no less than quarterly	✓	✓
Disinfect and flush watering points (e.g., water trucks, carts, cabinets, hoses) no less than monthly	✓	✓

[1] The air carrier was required to use State- or EPA-certified laboratories and EPA-approved analytical methods for analyzing drinking water samples.

[2] If the air carrier has a pre-AOC monitoring and disinfecting program requiring a higher frequency, the air carrier was required to continue in accordance with their program, unless modification was requested and approved by EPA.

As of May 31, 2007, of the 45 air carriers under AOCs, EPA has analyzed preliminary drinking water sampling data from 15 air carriers consisting of 2,316 aircraft out of an estimated total fleet size of 5,558. The total number of samples (routine and repeat) was 12,099. Of these samples, 3.1 percent (378 samples) were total coliform-positive. Of the 378 total coliform-positive samples, 2.4 percent (9 samples) were E. coli/fecal coliform-positive. Of a total of 7,489 routine chlorine residual samples taken, 26.1 percent (1,957) resulted in a non-detect. However, in relating the preliminary AOC sampling data to other aircraft water quality studies only the routine samples were used. Repeat samples were not used because they by nature have a higher probability of being total coliform-positive since repeats are taken after a routine sample is total coliform-positive. In addition, the other studies did not take repeat samples, therefore, the routine samples are most analogous to the data collected under the other studies.

Therefore, in determining an estimated baseline of domestic air carrier drinking water quality the following was observed in the preliminary AOC data: Out of 7,812 routine samples, 2.8 percent (222 samples) were total coliform-positive. Of the 222 total coliform-positive samples, 2.3 percent (5 samples) were E. coli/fecal coliform-positive. Of the 3,952 routine chlorine residual samples taken, 21.5 percent (848) resulted in a non-detect.

Under a voluntary study coordinated with EPA, ATA sampled 265 passenger aircraft operated by eight ATA-member U.S. air carriers. As noted by ATA, these eight air carriers represent the majority of the U.S. commercial passenger fleet, and serve both domestic and international routes. The aircraft were randomly selected and samples were generally collected from the galley, except in some cases where the galley faucets were equipped with filters, efforts were made to collect residual disinfectant samples from the lavatory. The samples were analyzed for total coliform (and in the case of a total coliform-positive result, the sample was tested for E. coli/fecal coliform), total residual chlorine, turbidity, total nitrate, and nitrite. Regarding microbiological testing, of the 265 aircraft sampled, 2.6 percent (7 aircraft) were total coliform-positive; there were no fecal coliform or E. coli-positive samples. Water samples from forty-one percent of the aircraft had non-detectable chlorine residuals (ATA 2003).

In the 2004 EPA NPDWR Compliance study, 327 passenger aircraft belonging to ATA and non-ATA members were randomly tested at 12 U.S. airports that served both domestic and international routes. EPA analyzed the drinking water samples from galleys and lavatories for total coliform (and in the case of a total coliform-positive result, the sample was tested for E. coli/fecal coliform), total

residual chlorine, heterotrophic plate count, total nitrate, and nitrite. In regard to microbiological presence, 15 percent (49/327) of the aircraft tested positive for total coliform, and 4.1 percent (2/49 aircraft) of these total coliform positive aircraft also tested positive for E. coli/fecal coliform. Twenty-one percent (69/327) of the aircraft tested had a non-detectable chlorine residual.

Under the Canadian Inspection Program, Health Canada randomly inspected 431 aircraft for microbiological presence in drinking water. Of the 431 aircraft tested, 15.1 percent (65 aircraft) were total coliform-positive, and 7.7 percent (5/65 aircraft) of these total coliform positive aircraft were also E. coli positive. Most of the contamination (4 samples) was found in water from the lavatory faucets. The Canadian study did not test for chlorine residual (Canada 2007a and 2007b).

It is important to note that the intended purpose and use of the preliminary AOC and the other aircraft sampling results were to protect public health by providing an understanding of the quality of airline drinking water. Although they were not collected to drive the ADWR rulemaking process, these datasets provide important information for an estimated baseline of aircraft drinking water quality for total coliform, E. coli/fecal coliform, and residual chlorine.

Although it is difficult to complete a one-to-one comparison of the sampling results among the studies, observed differences may be attributed to several factors. For instance, best management practices and protocols (such as systematic sampling, disinfecting, and flushing procedures) established under the AOCs may have played a part in the varying results. These systematic protocols may have created a greater chance of consistency and effectiveness among the air carriers in implementing the operational and maintenance procedures of an aircraft water system. In addition, these findings suggest that best management practices are important for public health protection.

EPA will continue to collect and analyze the aircraft sampling data for the 45 air carriers under the AOCs. EPA will use the data to improve the Agency's understanding of aircraft drinking water quality relevant to microbiological controls. A summary of the final results will be released along with available sampling data from the 45 air carriers under AOCs. Docket ID No. EPA–HQ–OW–2005–0025.

C. Framework for Proposed Rule Development

For today's proposal, EPA has considered both the existing NPDWRs applicable to aircraft water systems—the Total Coliform Rule, the Surface Water Treatment Regulations and the Public Notification Rule—and a systematic risk management approach used for food and water safety by other agencies, which EPA believes can be particularly effective when dealing with mobile sources of drinking water. The resulting proposed rule is intended to consolidate the three existing NPDWRs into one new NPDWR and modify them, based on the Water Safety Plan approach described as follows, so that the drinking water standards can be more effectively implemented for aircraft water systems and better integrated with FDA and FAA programs and requirements.

1. HACCP and Water Safety Plan Approaches

EPA believes that an effective means of assuring safe drinking water onboard aircraft is through the application of a systematic risk management approach referred to as the Water Safety Plan (WSP) approach. The Water Safety Plan concept was developed by the World Health Organization (WHO) as part of the 3rd edition of its drinking water guidelines (WHO 2004). It is based on the Hazard Analysis and Critical Control Point (HACCP) concepts and the multiple barrier approach to protecting public health.

The basic HACCP concepts were originally developed in 1959 by the Pillsbury Company with cooperation and participation from the National Aeronautics and Space Administration (NASA), the Natick Laboratories of the U.S. Army, and the U.S. Air Force Space Laboratory Project Group. The purpose was to ensure food and beverage safety from microbiological hazards for the first NASA manned space missions. Since the 1980s, the HACCP system has been adopted by food and beverage industries world-wide, where it forms an important part of their ''food safety plans.'' For example, the FDA has adopted the HACCP system as an effective approach for its food safety program. FDA utilized the HACCP approach in the final rules for the seafood and juice industries. HACCP guidelines developed by WHO, known as Codex Alimentarius, have been adopted internationally as the primary recognized food safety methodology for risk management. The current HACCP guideline (WHO, 1997) was developed by the Codex Alimentarius Commission.

In the multiple barrier approach, technical and managerial barriers help prevent contamination at the source, treatment, distribution, and tap to provide a safe supply of drinking water for consumers. The barriers include risk prevention, risk management, monitoring and compliance, and individual action. As an enhancement of the HACCP approach, the Water Safety Plan approach identifies control measures not only at critical control points, as is done for HACCP, but also at the point of contamination where the hazardous event occurs as well as downstream of the potential contamination point. The intent is to enable the effect of the multiple barriers to be assessed together (Davison et al., 2005). The Water Safety Plan approach continues to evolve as the water industry gains experience by developing and implementing Water Safety Plans.

2. Proposed Rule Approach

The proposed approach for this rulemaking effort includes elements of the HACCP approach and WHO's Water Safety Plan approach and builds on the foundation of the controls established under the existing NPDWRs applicable to aircraft water systems. This proposed regulation does not require each air carrier to develop its own Water Safety Plan (WSP). Instead, the WSP approach was used to outline the priority hazards and the control measures that could be implemented to control these hazards in the entire aircraft water supply and transfer chain. By looking holistically at the entire process, EPA ensured a collaborative working relationship with other federal agencies overseeing the air carrier industry. This holistic approach will minimize duplication of effort and regulation by multiple federal agencies over the same segment of the process. It also helps minimize concerns of over-regulation in one segment of a process to address an issue that could be more effectively handled in another segment of the process. Once the hazards and potential control measures were identified, EPA could then focus on the specific area of its jurisdiction, the onboard water system.

3. Identified Hazard Events and Potential Control Measures

The following are examples of the primary hazard events and potential control measures for aircraft water systems identified through the WSP approach.

- *Water to be boarded does not meet NPDWRs applicable to TNCWSs.* The potential control measure is to prevent boarding of water, if operational needs (*e.g.*, flushing of toilets) can be met

without boarding additional water. If water must be boarded, appropriate control measures are to: Restrict public access, provide public notification, including posting notices at lavatory and galley taps stating that the water is not for consumption; provide bottled water for coffee making and drinking; providing antiseptic alcohol-based hand gels or wipes for handwashing; disinfecting and flushing the aircraft water system as soon as possible; and demonstrating satisfactory aircraft water quality through follow-up sampling before resumption of unrestricted public access to the aircraft water system.

• *Air carrier or aircraft crew is notified that water already boarded does not meet NPDWRs applicable to TNCWSs.* The potential control measures are to: Restrict public access, provide public notification, including posting notices at lavatory and galley taps stating that the water is not for consumption; providing bottled water for coffee making and drinking; providing antiseptic alcohol-based hand gels or wipes for handwashing; disinfecting and flushing the aircraft water system as soon as possible; and demonstrating satisfactory aircraft water quality through follow-up sampling before resumption of unrestricted public access to the aircraft water system.

• *Use of a watering point, including transfer and delivery systems, not approved by FDA.* The potential control measure is for the air carrier to obtain approval from FDA for new watering points or when changing watering points.

• *Contamination or cross contamination due to unsanitary practices.* The potential control measures are to: Clean and disinfect hoses, transfer pumps, water trucks, and other equipment; develop written standard operating procedures (SOPs) and provide training for sanitary water transfer practices and aircraft cleaning; conduct total coliform monitoring; restrict public access, provide public notification, including posting notices at lavatory and galley taps stating that the water is not for consumption; providing bottled water for coffee making and drinking; providing antiseptic alcohol-based hand gels or wipes for handwashing; disinfecting and flushing the aircraft water system as soon as possible; and demonstrating satisfactory aircraft water quality through follow-up sampling before resumption of unrestricted public access to the aircraft water system; and conducting audits or inspections.

• *Backflow from unprotected cross connection, failure of backflow prevention devices, or cross contamination from water line break.* The potential control measures are to: Identify possible cross connections and install backflow prevention devices as warranted; repair failed backflow prevention devices; repair water line breaks; disinfect and flush the aircraft water system as soon as possible; and resample aircraft water quality before returning to service.

• *Improperly designed aircraft water system.* The potential control measure is to obtain FDA review and approval of plans and specifications (Certificate of Sanitary Construction) for new aircraft water systems.

• *Bacterial growth in aircraft water system.* The potential control measures are to: Conduct routine total coliform monitoring; and routinely disinfect and flush the aircraft water system.

IV. Elements of the Proposed Aircraft Drinking Water Rule

The following sections describe the elements of the aircraft drinking water rule as proposed by EPA. The proposed rule has significant operational advantages over the other more prescriptive alternatives, which are described in section V. EPA specifically designed the proposed rule to allow air carriers to follow the manufacturer recommendations for disinfecting and flushing aircraft water systems, instead of prescribing the frequency, chemical type and concentration to be used. Another advantage of the proposed rule over the approaches described in the alternatives is that by utilizing the manufacturer recommendations for disinfection and flushing, the rule requirements will automatically evolve (another stakeholder recommendation) with technological improvements in aircraft water tank lining and piping materials and as new more effective disinfectants are developed.

EPA requests comment on all aspects of this rule. Please note, however, that EPA is not requesting, and will not consider, comments on any aspect of the TCR, surface water treatment regulations, Public Notification Rule or any other NPDWR other than as applied to aircraft water systems in this proposal. In addition to rule requirements, EPA identifies specific requests for comment on subject matters pertaining to the proposed rule.

A. Sampling Requirements

1. Coliform Sampling Plan

As discussed above, the existing TCR requires testing for total coliforms in water systems. Under this proposal, EPA is requiring each air carrier to develop a coliform sampling plan (within six months after the final rule is published in the **Federal Register**) for each aircraft that identifies the following: (1) Coliform sample collection procedures, (2) sample tap location(s) representative of the aircraft water system, including both galley and lavatory taps when available, (3) frequency and number of routine coliform samples to be collected (4) frequency of routine disinfection and flushing as specified in the operation and maintenance plan, and (5) procedures for communicating sample results promptly so that any required actions including repeat and follow-up sampling, corrective action, and notification of passengers and crew may be conducted in a timely manner. The development of a sampling plan will assist the air carrier in tracking regulatory requirements, identifying coliform detection trends, if any exist, and in maintaining compliance.

2. Coliform Sampling Requirements

In keeping with the current TCR, air carriers need only determine the presence or absence of total coliforms in water samples collected from aircraft water systems; a determination of total coliform density would not be required. EPA believes this aids in making the sampling process more efficient and avoids unnecessary analysis. In addition, this proposed rule specifies that only analytical methodologies approved by EPA are to be used for sampling. For routine monitoring, each aircraft water system water sample must be 100 mL. One sample must be taken from a lavatory and one sample from a galley; each must be analyzed for total coliform. EPA believes the selection of sample taps from both the lavatory and the galley is necessary since tap options throughout these types of water systems is limited. 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.

Routine coliform sampling should be representative of the general conditions of the aircraft water system. To ensure that results of routine samples are not inadvertently skewed by sampling too soon after a disinfection event, routine coliform samples must not be collected within 72 hours after completing disinfection and flushing procedures. EPA believes that spacing routine samples evenly across monitoring periods will help. This is necessary in order to capture a representative sample from normal aircraft water system operations. Additional, or special, coliform sampling is always encouraged and recommended by EPA.

Routine coliform monitoring frequencies are as follows:

- If the air carrier disinfects and flushes the entire water system at least quarterly, then coliform monitoring must occur at least annually;
- If the air carrier disinfects and flushes the entire water system one to three times per year, then coliform monitoring must occur at least quarterly; or
- If the air carrier disinfects and flushes the entire water system less than once per year, then coliform monitoring must occur at least monthly.

It should be noted that this is the first NPDWR that requires disinfection and flushing as a required extra barrier for the protection of public health. EPA understands that most of the air carrier maintenance programs employ water system disinfection and flushing; however, EPA believes that making three sampling frequency options available to air carriers for the aircraft water systems that they operate provides the flexibility to meet the evolving needs of the industry while still providing adequate barriers of protection.

This proposal uses calendar-based monitoring and reporting frequencies. This basis is also consistent with EPA's current methods of oversight and is compatible with the Agency's current data systems. EPA is aware that the air carrier industry typically schedules maintenance or other activities based on aircraft flight hours or flight days. Scheduling activities on a calendar basis could lead to incompatibility and challenges in creating regular maintenance schedules. On the other hand, if an aircraft is not in frequent operation, basing aircraft water system activities on a flight time basis could lead to an extended calendar period before any actions are taken, which would not be protective of public health. EPA requests comment on whether the proposed calendar basis could reasonably be integrated with the air carrier industry's flight time basis, or if not, how the Agency should transpose the proposed requirements to an equivalent standard on a flight time basis.

B. Response to Sampling Results

1. *All routine coliform samples are negative.* If all routine samples are total coliform-negative in a monitoring period, then the air carrier must continue to maintain its routine monitoring for coliform based on the frequency required under the rule.

2. *The sample yields a positive result for total coliform.* If any routine or repeat coliform sample is total coliform-positive, then that total coliform-positive culture medium must be analyzed to determine if fecal coliforms or E. coli are present.

3. *One of two routine water samples test positive for total coliform, but negative for E. coli or fecal coliforms.* In response to a single total coliform-positive sample result that is fecal/*E. coli* negative, the air carrier must perform at least one of the following:

- Disinfection and flushing no later than 72 hours after the laboratory notifies the air carrier of the positive result. Follow-up samples must be collected after disinfection and flushing is performed to ensure the effectiveness of the process. A complete set of post disinfection and flushing follow-up sample results (i.e., one from the lavatories and one from the galleys) must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform; or
- Repeat Sampling. Collect four 100 mL repeat samples within 24 hours of being notified of the positive result. Repeat samples must be collected and analyzed from four taps within the aircraft water system: the tap which resulted in the total coliform-positive sample, one other lavatory tap, one other galley tap, and one other tap; if less than four taps exist, then a total of four 100 mL samples must be collected and analyzed from the available taps within the aircraft water system. If no repeat sample is total coliform-positive, the system returns to its routine monitoring schedule and no further follow-up is required.

4. *Any sample test result is fecal coliform positive or E. coli-positive.* Since fecal coliform or E. coli bacteria indicate the potential presence of contaminants that can cause acute health risks, EPA believes it is necessary to take immediate corrective action for the protection of public health. The aircraft water system is not a traditional water system and the air carrier must therefore take additional measures to prevent any disease or illness. If any routine or repeat sample is fecal coliform-positive or E. coli-positive, then the air carrier must perform all of the following:

- Restrict public access to the aircraft water system which includes providing notification to passengers and crew as soon as possible but no later than 24 hours after being notified of the positive result.
- Conduct disinfection and flushing prior to resumption of unrestricted public access to the aircraft water system or no later than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers.
- Collect follow-up samples after disinfection and flushing is performed to ensure the effectiveness of the process. A complete set of post disinfection and flushing follow-up sample results must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform. Follow-up sample procedures must, at a minimum, follow routine coliform sample locations and procedures.

5. *More than one sample resulted in a total coliform-positive but was fecal coliform-negative or E. coli-negative.* If more than one of any routine, repeat, or a combination of samples is total coliform positive and fecal coliform-negative or E. coli negative, then the air carrier must perform all of the following:

- Restrict public access to the aircraft water system which includes providing notification to passengers and crew as soon as possible but no later than 24 hours after being notified of the positive result.
- Conduct disinfection and flushing prior to resumption of unrestricted public access to the aircraft water system, or no later than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers.
- Collect follow-up samples after disinfection and flushing is performed to ensure the effectiveness of the process. A complete set of post disinfection and flushing follow-up sample results must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform. Follow-up sample procedures must, at a minimum, follow routine coliform sample locations and procedures.

6. *Post disinfection and flushing follow-up sampling.* Follow-up samples are necessary to validate the effectiveness of the disinfection and flushing procedures. If one or more of the follow-up samples in a set of follow-up samples is total coliform-positive then, as a minimum, the air carrier must disinfect and flush again, then take a new set of follow-up samples. Both follow-up sample results must be total coliform-negative before the aircraft water system provides water to passengers and crew and the air carrier returns to the routine monitoring frequency for coliform.

7. *Failure to conduct routine coliform monitoring or analysis, or boarding water from a watering point not approved by the FDA*. If there was a failure to collect and analyze the required number of routine coliform samples, or water was boarded in the United States from a watering point not approved by the FDA, or outside the United States in a manner not in accordance with the air carrier's procedures for ensuring the water is safe, then the air carrier must perform all of the following:

- Provide notification to passengers and crew as soon as possible but in no case later than 24 hours after discovery of failure to collect required samples or after being notified by EPA of failure to collect required samples; or provide notification to passengers and crew as soon as possible but in no case later than 24 hours after boarding water from a watering point not approved by FDA.
- Conduct disinfection and flushing within 72 hours.
- Collect follow-up samples after disinfection and flushing is performed to ensure the effectiveness of the process. A complete set of post disinfection and flushing follow-up sample results must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform. Follow-up sample procedures must, at a minimum, follow routine coliform sample locations and procedures.

This situation does not require the same degree of restricted access because there is no specific indication that the water is not safe. However, to ensure public health protection, carriers must still warn passengers not to drink the water, and must provide a full explanation of the situation to the crew.

8. *Failure to conduct repeat or follow-up monitoring or analysis, or boarding water known to not meet NPDWRs applicable to TNCWSs*. If there was a failure to collect and analyze the required number of repeat or follow-up coliform samples, or water was boarded which is known to not meet NPDWRs, then the air carrier must perform all of the following:

- Restrict public access to the water system which includes providing notification to passengers and crew as soon as possible but no later than 24 hours after discovery of failure to collect required samples or after being notified by EPA of failure to collect required samples,
- Conduct disinfection and flushing prior to resumption of public access to the aircraft water system or no later than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers.
- Collect follow-up samples after disinfection and flushing is performed to ensure the effectiveness of the process. A complete set of post disinfection and flushing follow-up sample results must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform. Follow-up sample procedures must, at a minimum, follow routine coliform sample locations and procedures.

This situation, in contrast to the one above, is one in which there is a specific indication that the water is or may not be safe to drink. In this case, in order to protect public health, the same level of restricted access and public notice is required as for situations in which there has been a positive coliform detection.

Restricted Access to the Water System

In any situation where there is an affirmative indicator of actual or potential contamination (e.g., more than one coliform-positive sample, a single fecal coliform- or e-coli-positive sample, water boarded from a known contaminated source, etc.), the carrier is required to restrict access to the water system as expeditiously as possible, but in no case more than 24 hours after the event triggering the requirement (e.g., positive sample result). Ideally, access to all lavatory and galley taps, built in coffee/tea maker, etc. should be physically shut off, and this is required where feasible. The carrier must also make provisions for alternatives such as bottled water and antiseptic alcohol-based hand gels or wipes. In cases where it is not feasible to physically prevent access, the carrier must provide notice in each lavatory, galley tap, etc., which clearly indicates to passengers and crew that the water is non-potable and should not be used for drinking, food or beverage preparation, teeth-brushing, hand washing, or any other consumptive use. Additional information must also be provided to the crew (see Section D. Notification Requirements to Passengers and Crew).

Request for Comment on Sampling Requirements and Response

1. Microbiological Indicators

The Agency's primary interest is in crafting a regulation for aircraft water systems that is both implementable and fully protective of public health. While current methods and indicators exist to provide meaningful characterization of safe drinking water, this proposal relies on coliform bacteria as an indicator of microbiological quality. A second indicator commonly used to gain insight on water quality is heterotrophic plate count (HPC).

The Surface Water Treatment Rule (SWTR) includes a provision which allows a system to conduct heterotrophic plate counts in lieu of measuring for residual disinfectant concentrations. Finished water with heterotrophic bacteria concentration less than or equal to 500 per mL is deemed to have a detectable disinfectant residual concentration for purposes of determining compliance with the SWTR. HPC sampling could be done at the same time and place as routine coliform monitoring, or more routinely such as monthly as an additional check. If heterotrophic counts are greater than 500/ml, then corrective action could be required.

EPA requests comment on whether HPC should be allowed, required, or not considered as another indicator of water quality in addition to coliform monitoring.

2. Potential for Bacterial Growth

Water in the aircraft system which sits for an extended period of time or is otherwise not turned over could be at risk for biofilm or other bacterial growth, especially if a strong disinfectant residual is not present. Furthermore, total coliform as an indicator may not identify the presence of other organisms that may be present in biofilm such as mycobacterium and *Legionella*. Activities such as routine disinfection and flushing, as well as the presence of a disinfectant residual, may help reduce risk from organisms that are not detected via routine total coliform monitoring.

Most aircraft water tanks are either topped off or drained on an almost daily basis. However, there are occasional situations when the water may sit stagnant. Some examples are aircraft taken out of service for an extended maintenance period, or cold weather conditions that affect the ability to drain tanks (due to environmental concerns involving water disposal in addition to concerns about the drained water freezing on the tarmac). Additionally, aircraft that experience long layovers or overnight stays in high temperature areas have a higher potential for rapid growth of organisms. This proposal does not specifically address such situations; however, EPA requests comment on whether the final rule should include a provision to address extended stagnant periods, high water temperatures or

other situations that may augment concern regarding bacterial growth.

3. Temperature of Sample Taps

This proposal does not specify whether samples should be taken from hot or cold taps. Some concern exists about sampling from hot taps since hot water could kill microorganisms, masking whether there is a microbiological problem in the aircraft system. EPA requests comment on whether sampling should only be limited to cold taps when they are available. EPA also requests comment on whether the temperature of the hot taps should be measured to provide some indication of whether the temperature achieved is high enough to alter the microbiological results.

4. Statistical Sampling

As stated earlier, each aircraft water system is a unique system that draws water from a potentially large number and combination of sources and distribution systems, which may vary on a daily basis, or even more often. This proposal requires corrective action based on monitoring results for each individual system to directly address the risks to that system. Some stakeholders have suggested that a representative number of aircraft be sampled, resulting in a statistical sample of the air carrier fleet instead of all aircraft being sampled. Under current practices, the source(s) of water for an individual aircraft are so varied that it is difficult for a statistical sample to provide an accurate representation of all water being served on the aircraft. In addition, if the Agency did have enough evidence that allowed an extrapolation of the statistical sample to the entire fleet, the implication is that any positive coliform result in the statistical sample would trigger additional monitoring and/or corrective action in the entire fleet, as the statistical sample would be used as an indicator for a systemic problem.

EPA requests comment on the use of statistical sampling methodologies, specifically on what type of monitoring scheme would allow a statistical sample to be representative of the whole. EPA is especially interested in getting input on whether such methodologies, if allowed, should only be used in conjunction with onboard or other supplemental treatment such as adding a disinfectant or ultraviolet light. EPA also requests input regarding the support for such an option, given the cost and logistical implications of a positive result in the statistical sample triggering follow-up action in the entire fleet.

5. Option for Repeat Sampling

Under this proposal, an aircraft water system that has one total coliform-positive result under its routine monitoring sample, but no fecal coliform or E. coli-positive, can opt to either go directly to corrective action (disinfection and flushing) or perform repeat sampling. In some cases, by the time the air carrier is notified that the routine sample results are total coliform-positive it is likely that the original water in the aircraft water system has been changed. Under this scenario, the repeat samples may not be providing an accurate picture of the water quality since it is not characterizing the same water as the routine sample.

EPA requests comment on whether to disallow the option for repeat sampling in response to the original routine total coliform-positive if the aircraft has boarded water since the routine sample.

6. Disinfectant Residual Monitoring

This proposal relies on a combination of coliform bacteria monitoring with routine disinfection and flushing of the aircraft water system to ensure the safety and quality of water onboard aircraft. EPA's SWTR requires public water systems relying on surface water as their water source to maintain a detectable disinfectant residual in the distribution system to ensure that disinfection is maintained throughout the water system. Since aircraft may board water more than once per day from a variety of sources (some of which may be ground water that is not disinfected), EPA is uncertain whether monthly (or less frequent) disinfectant residual monitoring would be adequate to provide useful information for aircraft water systems. Instead, EPA believes that more frequent flushing and disinfection of the entire aircraft water system as a treatment technique combined with other barriers will ensure microbiologically safe tap water is provided on the aircraft in lieu of the residual disinfectant requirements applicable to stationary public water systems. However, EPA is also soliciting comment on an alternative which would add disinfectant residual monitoring to the proposed monitoring requirements.

The microbiological safety of drinking water supplied by public water systems in the United States relies heavily on disinfection of the water. This is especially the case for systems that use surface water as a source of water. Although some microorganisms are resistant to disinfection (e.g., *Cryptosporidium*), maintenance of a disinfection residual throughout the distribution system helps to inactivate many types of microorganisms in the distribution system and controls biofilm growth.

Not all water boarded onto aircraft at airports is necessarily disinfected or has disinfectant residuals. Domestic ground water systems do not necessarily disinfect nor have a disinfectant residual in the distribution system. Even if the water supplied to airports by regulated public water systems have disinfectant residuals at the airport taps, the process of getting the water into aircraft water tanks via water trucks, carts and hoses can provide enough mixing and aeration of the water to volatilize the disinfectant.

As noted above, EPA believes that this proposal adequately addresses concerns about disinfection through the coliform monitoring and disinfection and flushing requirements. However, EPA requests comment on whether it is appropriate to require routine monitoring for disinfectant residuals at aircraft water systems and if so, the frequency at which this monitoring should occur, and what corrective action(s) should be required if sufficient disinfectant residuals are not detected.

7. Time Frame for Disinfection and Flushing

The proposed rule requires disinfection and flushing to be conducted within 72 hours in certain situations, for example after receiving lab results indicating two total-coliform positive samples or a single fecal coliform- or e-coli positive sample (except where the water system is physically shut off). EPA understands that this will generally require bringing the aircraft to a designated maintenance facility equipped to perform disinfection and flushing. EPA requests comment on whether this time frame is appropriate.

C. Aircraft Water System Operations and Maintenance Plan

EPA is proposing to require each air carrier to develop and implement an aircraft water system operations and maintenance plan covering each type of aircraft operated by the air carrier. An effectively implemented plan is essential to ensure that safe and reliable drinking water is provided to aircraft passengers and crew. EPA believes that the most reliable way to ensure effective implementation is to require that the water system operations and maintenance plan be included in a Federal Aviation Administration approved or accepted aircraft operations and maintenance program. The FAA requires all maintenance and

operational procedures to be formally documented for each aircraft. Failure by an air carrier to perform the prescribed program requirements may result in forfeiture of air carrier operating certificates and/or fines. Furthermore, EPA is attempting to minimize duplication of effort between the two agencies in conducting routine oversight and review of water system operations and maintenance plans by requiring the air carriers to include these plans in the FAA approved or accepted operations and maintenance program. However, EPA will provide oversight of operation and maintenance plans through periodic compliance audits.

In order to ensure that the appropriate multiple barriers are in place, each aircraft water system operation and maintenance plan (referred to as the Plan) must include the following components:

- *Watering Point Selection Requirement.* The Plan must ensure that all water boarded within the United States is from an approved FDA watering point as required under 21 CFR 1240.80, and that water boarded outside the United States be in accordance with procedures designed to ensure that it is safe for human consumption. In no event should the air carrier knowingly serve water that violates NPDWRs.
- *Procedures for Disinfection and Flushing of Aircraft Water System.* The Plan must include a description of procedures for disinfection and flushing of aircraft water systems that are conducted in accordance with or are no less stringent than the manufacturer recommendations. Specifically, the frequency of disinfection must be no less than the minimum recommended by the manufacturer, though it may be more frequent. This allows for equipment-specific designs and for flexible implementation with the evolution of technology. Inclusion in the Plan of the specific disinfection frequency, disinfecting agent used, disinfectant concentration, disinfectant contact time, and flushing volume or flushing time allows for consistent implementation of these procedures. EPA understands that some manufacturers do not provide equipment disinfection and flushing recommendations. Where a recommended routine disinfection and flushing frequency is not specified by the aircraft water system manufacturer, the aircraft water system must be disinfected and flushed no less frequently than quarterly.
- *Procedures for Follow-up Sampling.* These must be included in the operation and maintenance plan to ensure consistency in the procedures.
- *Training Requirements.* The Plan must describe training protocols for all staff involved with the operation and maintenance provisions of this proposed regulation and those persons conducting or managing the microbiological requirements of this proposed regulation; all such staff are required to receive training. The NPDWRs require that each public water system using a surface water source or a ground water source under the direct influence of surface water must be operated by qualified personnel. It is vital that persons responsible for operating or maintaining aircraft water systems be adequately trained to ensure proper system operation. In order to ensure that persons who maintain aircraft public water systems are competent and efficient, training of qualified air carrier personnel specified in the Plan must include training on at least the following: water boarding procedures, sample collection procedures, disinfection and flushing procedures, and public health and safety reasons for the requirements of this proposed regulation.
- *Self-Inspection Procedures.* The Plan must describe the self-inspections to be conducted and documented by the air carrier (see Section IV.G for a description of self-inspection requirements under this rule). Documentation of the results of such inspection must be made available to EPA during compliance audits.
- *Water Boarding Procedures.* The Plan must ensure that water boarded within the United States is from a watering point approved by FDA, and describe procedures for ensuring that water boarded outside the United States is safe for human consumption. The Plan must also provide a description or a discussion of how the water will be transferred from the approved source to the aircraft. This information will be helpful for ground crews responsible for maintaining the equipment supplying the aircraft with finished water. EPA understands and recognizes that aircraft traveling overseas may board water from sources that are outside the jurisdiction of the United States. EPA is aware that a number of air carriers already have procedures in place to provide assurances on the quality of water boarded from such sources. The proposed rule requires that all carriers have such procedures and that they be documented in the Plan. The Agency is also aware that in limited circumstances, water of unknown quality is occasionally boarded to operate essential systems, such as toilets. When instances such as these occur, passengers and crew must be notified, and disinfection and flushing of the aircraft water system must occur within 72 hours. If water known to be in violation of NPDWRs applicable to TNCWSs must be boarded, the rule imposes the same requirements as for positive coliform detects (restricted access, public notice, and disinfection and flushing with follow-up sampling before unrestricted access is restored). EPA believes this will provide the best method of protection of public health by minimizing the risks of exposure to unknown contaminants. The Plan must also include a statement as to whether the aircraft water system can be physically disconnected/shut off to the crew and passengers.
- *Coliform Sampling Plan.* The aircraft operation and maintenance plan must also include the monitoring plan for coliforms developed by the air carrier for the specific aircraft.

Request for Comment on Operation and Maintenance Plan Requirements

As far as EPA is aware, there are currently no procedures or requirements for recording information regarding where, how much, and when water is boarded. The boarding of water is usually done on an as needed and as requested basis. EPA believes that recording such information could help identify potential hazards from water source(s) in the event of a total coliform-positive sample. Once the potential source(s) are identified, further analysis could be done to determine whether the potential bacteriological contamination originated from the water source(s) or the aircraft water system. However, given the frequency with which aircraft currently board water, this could lead to a large amount of data being recorded, and therefore, EPA is not proposing to require aircraft to record this information. EPA requests comment on whether the potential benefit of recording information on water boarded outweighs the information collection burden. Also, EPA requests comment on whether follow-up sampling should be required to confirm the effectiveness of routine disinfection and flushing, and if so, the frequency at which this monitoring should occur. (As previously noted, the proposed rule already requires follow-up sampling for disinfection and flushing performed as corrective action.)

D. Notification Requirements to Passengers and Crew

A fundamental principle of SDWA is that consumers have a right to know in a timely manner whenever drinking

water violations occur. EPA believes that this includes knowing when situations require that public access to the aircraft water system is restricted. The public also has a right to know when the quality of the water cannot be assured, for example, when water has been boarded from a watering point not approved by FDA or in a manner that does not otherwise comply with the air carrier's procedures for ensuring safe water outside the United States; and about any other situation where the Administrator, air carrier or crew determines that notification is necessary to protect public health.

Due to the nature of violations, or other events that require the restriction of water service, and the transient nature of the population served, air carriers must provide notification to passengers and crew as expeditiously as possible, but no later than 24 hours after being informed of sample results which trigger notification, or within 24 hours of being informed by EPA to perform notification, whichever occurs first. Notification must be in a form and manner reasonably calculated to reach all passengers and crew while onboard the aircraft by using one or more of the following forms of delivery:

- Broadcast over public announcement system on aircraft;
- Posting of the notice in conspicuous locations throughout the area served by the water system. These locations would normally be the galleys and in the lavatories of each aircraft requiring posting;
- Hand delivery of the notice to passengers and crew;
- Another delivery method approved in writing by the Administrator.

The air carrier must continue to provide notification until all follow-up coliform samples are total coliform-negative. Each notice:

- Must be displayed in a conspicuous way when printed or posted;
- Must not contain overly technical language or very small print;
- Must not be formatted in a way that defeats the purpose of the notice;
- Must not contain language that nullifies the purpose of the notice;
- Must contain information in the appropriate language(s) regarding the importance of the notice reflecting a good faith effort to reach the non-English speaking population served, including where appropriate an easily-recognizable symbol for non-potable water.
- When public access to the aircraft water system is restricted the air carrier must provide the following public notification:
- A prominently-displayed, clear statement in each lavatory and galley indicating that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use; and
- A prominent notice in the galley directed at the crew which includes:
  - A clear statement that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use;
  - A description of the violation or situation triggering the notice, including the contaminant(s) of concern;
  - When the violation or situation occurred;
  - Any potential adverse health effects from the violation or situation;
  - The population at risk, including sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water;
  - What the air carrier is doing to correct the violation or situation; and
  - When the air carrier expects to return to compliance or resolve the situation;

If access to the water system by passengers is physically prevented through disconnecting or shutting off the water, or if water is supplied only to lavatory toilets, and not to any lavatory taps, then only the notice to the crew is required. This exception only applies when there is no possibility of the passengers accessing the water system for consumptive use.

Notice when water has been boarded from a watering point not approved by FDA or when required routine monitoring or disinfection and flushing was not conducted must include:

- A prominently-displayed, clear statement in each lavatory indicating that the water is non-potable and should not be used for drinking, food or beverage preparation, or teeth brushing (in this situation, hand washing need not be restricted, given that there is no affirmative indication of a problem with the water and hand washing generally reduces microbial risk); and
- A prominent notice in the galley directed at the crew which includes:
  - A clear statement that the water is non-potable and should not be used for drinking, food or beverage preparation, or teeth brushing;
  - An indication that water was boarded from a watering point that has not been approved by FDA, or when required monitoring or required disinfection and flushing was not conducted and it is not known whether the water is contaminated;
  - When and where the water was boarded from a watering point that has not been approved by FDA, or when the specific monitoring or disinfection and flushing requirement was not met;
  - Any potential adverse health effects from exposure to waterborne pathogens that might be in the water;
  - The population at risk, including sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water; and
  - A statement indicating when the system will be disinfected and flushed and returned to service if known;

EPA is proposing the following standard health effects language for air carriers to use in creating public notices to the crew:

- Health effects language to be used when notice was triggered by an event other than a coliform-positive sample, including where water was boarded from a watering point not approved by FDA:

> Because [required monitoring was not conducted], [required disinfection and flushing was not conducted], [water was boarded from a watering point not approved by FDA], or [other appropriate explanation], we cannot be sure of the quality of the drinking water at this time. However, drinking water contaminated with human pathogens can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems. This water may be used for hand washing, but not for drinking, food or beverage preparation, or teeth brushing.

- Health effects language to be used when more than one routine sample is total coliform-positive and fecal coliform-negative and E. coli-negative, or a repeat sample is total coliform-positive and fecal coliform-negative or E. coli-negative must include the following:

> Coliform are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in [insert number of samples detected] samples collected and this is a warning of potential problems. If human pathogens are present, they can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

- Health effects language to be used when any routine or repeat sample is fecal coliform positive or E. coli positive:

> Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal

wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

All notification required to be posted or announced must continue until all follow-up coliform samples are total coliform-negative.

E. Reporting Requirements

As for all public water systems, EPA believes it is essential for accountability and regulatory oversight that certain information be reported to EPA by the air carrier. At the same time, EPA believes that the type and amount of information should be carefully tailored to the purpose of reporting it, to avoid duplication, wasted resources, and unnecessary burdens for either industry or EPA. Therefore, the reporting requirements of the proposed rule are designed to capture only information that will be used for compliance and accountability.

For existing aircraft water systems, the air carrier must report to EPA the frequency for routine coliform sampling identified in the coliform sampling plan required for each aircraft public water system and that the air carrier has updated its operations and maintenance plan by six months after the final rule is published. For new aircraft water systems, the air carrier must report to EPA the frequency for routine coliform sampling as identified in the coliform sampling plan for each aircraft and that the air carrier has an approved operations and maintenance plan within the first calendar quarter of initial operation of the aircraft.

In addition, the air carrier must report the following information through electronic means as approved or established by EPA:

- The air carrier must report its complete inventory of aircraft that are PWSs to EPA no later than six months after publication of the final rule in the **Federal Register**. Inventory information includes: (1) The unique aircraft identifier number, (2) the status of the aircraft water system as active or inactive, (3) any water system treatment installed on the aircraft, and (4) whether access to the water system can be physically shut off or disconnected to passengers and crew.
- Changes in aircraft inventory no later than 10 days following the calendar month in which the change occurred. Changes include new aircraft, aircraft that are removed from service, and a change to any of the data items previously listed in (1) through (4) of this section.
- All sampling results no later than 10 calendar days following the monitoring period in which the sampling occurred.
- All events requiring notification of passengers and crew and non-routine disinfection and flushing must be reported within 10 days of the air carrier being informed of sample results. Because the corrective action requirements for aircraft water systems are contained directly in the rule (e.g., restricted access, disinfection and flushing, follow-up sampling), and do not require consultation with the primacy agency, EPA believes it is appropriate to allow a slightly longer time frame for reporting than would be required for land-based public water systems (*i.e.*, generally 24 hours).
- Evidence of self-inspection must be provided to EPA within 90 days of completion, including an indication that any deficiencies identified during the self-inspections have been addressed. Air carriers must also report within 90 days that deficiencies identified during a compliance audit have been addressed. If any deficiency identified during either self-inspection or a compliance audit has not been addressed within 90 days, the carrier must report details of the deficiency, why it has not yet been addressed, and a schedule for addressing it as expeditiously as possible.

Failure to provide this information within a timely manner will result in noncompliance with the rule and may result in an enforcement action, which may include the assessment of penalties.

The air carrier must report to EPA within 10 calendar days the failure to comply with the monitoring or disinfection and flushing requirements of this proposed regulation.

Reporting requirements begin six months after the final rule is published. As the primacy agency, EPA has to oversee reporting by air carriers. To facilitate collection and analysis of aircraft water system data, EPA is developing an internet based electronic data collection and management system. This approach is similar to that used under the EPA SDWIS/STATE (Safe Drinking Water Information System/State version) reporting program. Inventory and analytical results for microbiological testing will be reported directly to this database using web forms and software that can be downloaded free of charge. The data system will perform logic checks on data entered and calculate final results for accountability and regulatory oversight. This is intended to reduce the reporting errors and limit the time involved in investigating, checking, and correcting errors at all levels. Air carriers should instruct their laboratories to either manually enter sample analysis results into an EPA managed web-based data system, or to electronically upload data files from their laboratory information management systems (LIMS) to a web-based data file submission program. These data files must be in a format prescribed by EPA. If an air carrier believes that a result was entered into the data system erroneously, the air carrier may notify the laboratory to rectify the entry. The laboratory must be a state- or EPA-certified laboratory that adheres to the approved quality control procedures for checking analytical data for completeness and correctness. In addition, if an air carrier believes that a result is incorrect, they may submit the result as a contested result and petition EPA to invalidate the sample. If an air carrier contests a sample result, they must submit a rationale to EPA, including a supporting statement from the laboratory, providing a justification. The invalidation of a total coliform sample result can only be made by EPA in accordance with 40 CFR 141.21(c)(1)(i), (ii), or (iii) or by the state- or EPA-certified laboratory in accordance with 40 CFR 141.21 (c)(2). Also, if an air carrier determines that its laboratory does not have the capability to report data electronically, they can submit a request to EPA to use an alternate reporting format.

F. Recordkeeping Requirements

EPA is proposing that air carriers retain certain information for the aircraft that they own or operate. Records to be retained include the following:

- Records of bacteriological analyses must be kept for at least 5 years and must include the following information: date, time and place of sampling, and the name of the person who collected the sample; identification of the sample as a routine, repeat, follow-up or other special purpose sample; date of the analysis; laboratory and person responsible for performing the analysis; the analytical technique/method used; and the results of the analysis.
- Records of any disinfection and flushing must be kept at least 5 years.
- Records of a self inspection must be kept for at least 10 years.
- Sampling plans must be maintained by the air carrier and made available for review by EPA upon request, including during compliance audits.
- Aircraft water system operation and maintenance plans must be maintained

by the air carrier and made available for review by EPA in accordance with FAA requirements; such plans must be available for review by EPA upon request, including during compliance audits.

- Records of notices to passengers and crew issued as required by this proposal must be kept for at least 3 years after issuance.

G. Audit and Self-Inspection Requirements

SDWA sections 1413 and 1451 authorize EPA to approve States and Indian Tribes to be the primary implementation authority for federal drinking water standards; this is known as ''primacy.'' However, EPA regulations provide that State/Tribal primacy programs do not include public water systems on ICCs, such as aircraft (40 CFR 142.3). As a result, EPA remains responsible for implementation, including enforcement, of the ADWR.

EPA may conduct routine compliance audits as deemed necessary in providing regulatory oversight to ensure proper implementation of the requirements in the proposed rule. Compliance audits may include, but are not limited to, the following: bacteriological sampling of aircraft drinking water, reviews and audits of records as they pertain to water system operations and maintenance such as log entries, disinfection and flushing procedures, and sampling results; and observation of procedures involving the handling of finished water, watering point selection, boarding of water, operation, disinfection and flushing, and general maintenance of aircraft water systems.

In addition, instead of the sanitary survey required for other public water systems every 5 years, EPA is proposing that self-inspections be conducted by the air carrier for each aircraft water system no less frequently than once every 5 calendar years. The air carrier must address deficiencies found as a result of routine compliance audits or self-inspections within 90 days of identification of the deficiency or where such deficiency is identified during extended or heavy maintenance before the aircraft is put back into service. EPA notes that the air carrier industry conducts routine inspections for flight safety before each flight. The safety of all flight participants, pilot, flight attendants and passengers, is considered prior to take-off. EPA expects the same level of attention to be exhibited when air carriers conduct self-inspections of their aircraft public water systems. When conducting inspections of their water systems, air carriers should examine, but are not limited to, the storage tank, distribution system, supplemental treatment, fixtures, valves, and backflow prevention devices.

H. Supplemental Treatment

Onboard treatment units are not required for use with finished water but can provide a desirable additional barrier of protection. If used, they must be acceptable to FDA, must meet NSF International / American National Standards Institute (ANSI) Standards, and must be installed, operated, and maintained in accordance with the manufacturer's plans and specifications and approved or accepted by FAA (14 CFR Part 43, 14 CFR Part 91, 14 CFR Part 121). Water treatment and production equipment must produce water that meets the standards prescribed in 40 CFR Part 141.

Request for Comment on Supplemental Treatment

A supplemental treatment protection barrier for water boarded onto aircraft water systems is not required by the proposed rule. However, the proposed rule includes other multiple barriers that ensure the protection of public health. These protection barriers include requirements that boarded water must meet all NPDWRs applicable to TNCWSs, must be obtained from an FDA-approved watering point, and that personnel involved in the water transfer process must receive adequate training on appropriate procedures to maintain water quality and prevent contamination. Furthermore, the proposed rule requires disinfection and flushing of aircraft water systems on a routine basis to ensure tanks and piping on each aircraft are clean. As proposed, the interval for routine disinfection and flushing of the aircraft water system may vary from four times per year (quarterly) to less than once per year based on manufacturer recommendations. Also, the proposed rule establishes compliance monitoring schedules for each aircraft water system at frequencies that increase or decrease in relation to the disinfection and flushing intervals. For example, if an aircraft water system is disinfected and flushed once per quarter, the air carrier is required to sample for microbiological presence annually. On the other hand, if an aircraft water system is disinfected and flushed less than once per year, the air carrier must sample monthly for microbiological presence. If compliance monitoring indicates a potential contamination problem, the proposed rule requires specific actions (e.g., sampling, disinfection and flushing, and notifying the passengers and crew) to be taken to address the problem.

While these barriers are specifically tailored to reduce risk, the possibility exists that microbiological contamination of the aircraft water system may occur. Traditional water systems often rely on maintenance of a distribution system disinfectant residual to help inactivate certain microorganisms and control biofilm growth. In situations where the disinfectant added at the water treatment plant is insufficient to maintain a residual throughout the distribution system, supplemental disinfection within the distribution system may be used to maintain a detectable disinfectant residual. For example, traditional systems frequently supplement or ''boost'' the disinfectant residual level by injecting a chlorine solution into the water in specific areas of a distribution system. However, the distribution system in a traditional water system may be very extensive compared to the very limited distribution system onboard an aircraft. Another critical consideration is that some of the chemical properties of chlorine (e.g., corrosive, volatile, toxic) may be problematic if stored in quantity for supplemental treatment purposes onboard aircraft.

Another option for providing a barrier against microbiological contamination is the use of ultraviolet light (UV) to provide a means of physical disinfection. Interest in using UV light to disinfect drinking water is growing among public water systems due to its ability to inactivate pathogenic microorganisms without forming regulated disinfection byproducts. UV light has also proven effective against some pathogens, such as *Cryptosporidium,* which are resistant to commonly used disinfectants like chlorine. EPA is aware that at least one manufacturer provides UV disinfection systems certified by the FAA to be retrofitted onto passenger aircraft. EPA is interested in obtaining information about this or other treatment system specifications with respect to cost, reliability, operation and maintenance, etc.

EPA requests comment on whether to require supplemental disinfection of water boarded onto aircraft and whether to require monitoring for disinfectant residuals either in addition to or in lieu of supplemental disinfection. EPA is interested in obtaining any other information that should be considered in evaluating this alternative, or if there are other alternatives that would be effective in providing additional safety of aircraft drinking water from

microbiological contamination. In addition, EPA is requesting comment on the feasibility of using other types of supplemental disinfection, such as UV treatment onboard aircraft, including providing incentives such as reduced routine monitoring or routine disinfection and flushing if an air carrier provides supplemental treatment.

I. Violations

For purposes of this proposed rule, the following situations will constitute a violation where an air carrier will be required to provide notification to passengers and crew on the aircraft that triggered the violation:

- Failure to disinfect and flush;
- Failure to monitor for total coliform and where required for fecal coliform/E. coli;
- Failure to take required corrective action;
- Has one or more fecal coliform positive or E. coli positive sample in any monitoring period (routine and repeat samples are used in this determination).

In addition, the following situations will constitute a violation, but does not trigger additional public notification requirements:

- Failure to comply with the proposed rule's public notice requirements;
- Failure to comply with reporting and recordkeeping requirements;
- Failure to conduct a self-inspection or address deficiencies;
- Failure to develop a coliform sampling plan; and develop and include an aircraft water system operations and maintenance plan in an FAA approved or accepted operations and maintenance program,

J. Compliance Date

EPA is proposing that the date for air carriers to comply with the requirements of this rule be six months from the date of promulgation for several reporting and planning requirements and one year from the date of promulgation for the rest of the rule requirements. Section 1412(b)(10) of SDWA directs EPA to establish a date for compliance that is three years after publication unless EPA determines that a shorter compliance date is practicable. EPA believes that the six months and one year timeframes are practicable for several reasons. First, this rule will be directly implemented by EPA so it will not be necessary to allow two years for States to obtain primary enforcement authority to implement the rule. Second, since air carriers were out of compliance with the existing NPDWRs, most have been placed under Administrative Orders on Consent, which have requirements similar to those of the proposed ADWR. Complying with the proposed requirements will not require significant changes in practice from the existing administrative orders. In addition, an earlier compliance date will allow the air carriers to be taken off of the AOCs and be brought into compliance with the NPDWRs sooner. EPA also believes it is practicable for air carriers to implement and report within six months of promulgation of the rule the following: (1) The development of a coliform sampling plan and the selected frequency of coliform sampling, (2) the development of operations and maintenance plans in accordance with the rule and (3) fleet inventory data. None of these three rule provisions require extensive planning or expenditures.

EPA is requesting comment on the compliance dates of the proposed ADWR.

V. Cost Analysis

This section summarizes EPA's estimates of the cost of this proposal, as well as the estimated costs of other regulatory alternatives that were considered but rejected.

A. Summary of Regulatory Alternatives Considered

In developing this proposed rule, EPA evaluated four options: The current regulations and three alternatives, one of which is the proposed rule. For each option, EPA estimated annualized costs and relative risks, and characterized anticipated benefits. The alternatives considered include the following:

(1) Existing Drinking Water Regulations.

(2) Regulatory Requirements Similar to the Air Carrier Administrative Orders on Consent (AOCs).

(3) Water Supply Guidance 29.

(4) Proposed Rule.

The following briefly summarizes the three alternatives plus the proposed rule. For the purposes of each alternative, aircraft are assumed to be boarding finished water. Finished water is defined in 40 CFR 141.2 as water that is introduced into the distribution system of a PWS and is intended for distribution and consumption without further treatment, except treatment necessary to maintain water quality in the distribution system. Prior to boarding the water, compliance with FDA and FAA requirements is expected to ensure that water from the supplier meets NPDWR standards and that the equipment used in transferring this water to the aircraft is maintained and operated so as to preserve that level of water quality.

Alternative 1—Existing Drinking Water Regulations

Alternative 1 assumes that all carriers with aircraft water systems subject to SDWA continue to be subject to the current requirements under the applicable NPDWRs for each aircraft water system. Alternative 1 includes the following regulatory components for compliance with existing NPDWRs:

- Monthly routine monitoring (single sample) for total coliform bacteria (TC);
- Repeat monitoring for TC after an initial TC positive sample;
- Analysis of TC positive culture media for the presence of fecal coliforms or E. coli);
- Additional routine TC samples in the month following a positive routine sample;
- Sanitary surveys conducted every 5 years: Includes an evaluation of the applicable components of a water system (source; treatment; distribution system; finished water storage; pumps, pump facilities, and controls; monitoring, reporting, and data verification; system management and operation; and air carrier compliance with state requirements);
- Monthly disinfection residual monitoring; and
- Public notification for violations.

Alternative 2—Regulatory Requirements Similar to the Air Carrier Administrative Orders on Consent

Alternative 2 describes requirements similar to those negotiated under the Administrative Orders on Consent (AOCs), and with which many air carriers must currently comply as an interim measure until the ADWR is finalized. Alternative 2 includes the following regulatory components:

- All maintenance personnel responsible for the operations and maintenance of aircraft water systems receive training. The training would be implemented by the air carrier responsible for the aircraft.
- Aircraft operations and maintenance plans and monitoring plans must be updated to reflect new schedules, procedures, and activities.
- Air carriers must monitor for total coliforms and disinfectant residual.
- If an aircraft water system tests positive for total coliforms, the TC positive culture medium must be analyzed for fecal coliform or E. coli.
- If an aircraft water system tests positive for fecal coliform or E. coli, or if it tests positive for total coliform in any sample, the air carrier must notify EPA within 24 hours and must conduct

corrective action disinfection and flushing procedures, including follow-up sampling, and must implement public notification activities.

- Copies of operations and maintenance plans, monitoring plans, and monitoring data must be maintained by the air carrier.
- Approximately 25 percent of the aircraft fleet must be monitored for coliforms and disinfectant residual quarterly, so that all aircraft are sampled at least annually.
- Routine disinfection and flushing must be performed at least quarterly.
- A self-certification that affirms that the aircraft water system was disinfected and flushed according to the operations and maintenance plan must be submitted to EPA each quarter.
- Air carriers must report monitoring results quarterly (within 10 business days of the end of a quarter of monitoring).

Alternative 3—Water Supply Guidance 29

Alternative 3 describes the requirements included in Water Supply Guidance 29, which described an alternative to the NPDWRs and was in effect from October 1986 until it was suspended by EPA in September 2003. WSG 29 described the implementation of an operations and maintenance program that included disinfection and flushing the aircraft in lieu of monitoring for those contaminants that pose an acute health threat based on short-term consumption by passengers and crew. These include turbidity, coliform, and nitrate. It is notable that WSG 29 was written prior to promulgation of the Total Coliform Rule, the Surface Water Treatment Rule, or the Phase II Chemical contaminant rule (which included revised requirements for nitrate). Alternative 3 includes the following components:

- Air carriers would comply with either the monitoring and reporting requirements or with their approved operations and maintenance plans.
- Minimum monitoring requirements would include daily turbidity monitoring, quarterly coliform monitoring, and annual nitrate/nitrite monitoring.
- Corrective action of disinfection and flushing the aircraft's water system would be required following a TC positive sample.
- Operations and maintenance requirements include quarterly disinfection and flushing of onboard water systems.

Proposed Rule

The proposed rule represents a hybrid approach that combines what EPA believes are the most practical elements of the other alternatives with flexibility for the air carriers in how they implement the regulatory requirements. This proposed approach allows compliance with regulatory components that are most tailored to the unique circumstances of aircraft drinking water systems and the operational needs of each air carrier. Key components of the proposal include the following:

- Routine disinfection and flushing of the aircraft water system based on manufacturer recommendations.
- Routine coliform monitoring using one of three monitoring frequency options determined by the frequency of disinfection and flushing of the aircraft water system.
- Two routine coliform samples collected at the frequency chosen, one sample from a lavatory and one sample from a galley. If one routine sample is total coliform-positive the air carrier chooses to either perform repeat sampling (collecting 4 samples) or conduct corrective action, which includes disinfection and flushing of the water system and follow-up monitoring.
- In the event of a fecal coliform/E. coli-positive sample or more than one total coliform-positive sample, corrective action disinfection and flushing is performed, access to water is restricted, and public notice is to be posted and/or announced until the water system is disinfected and flushed and all follow-up samples are total coliform-negative.
- Disinfectant residual monitoring is not required but is recommended as a means of indicating water quality and prompting voluntary corrective measures such as flushing and refilling the tank with water containing a residual.
- Specific training requirements of maintenance personnel are included in the aircraft operations and maintenance plan.
- Specific requirements for disinfection and flushing procedures are included in the aircraft operations and maintenance plans.
- Monitoring results and compliance status are reported to EPA.
- Water system operations and maintenance plans are incorporated into FAA approved/accepted aircraft operations and maintenance programs.
- EPA performs compliance audits as needed.
- Carriers perform self-inspections of the each aircraft water system every 5 years and certify completion of the self-inspections.

B. National Cost Estimates

EPA estimates that the annualized cost to the air carriers of carrying out the activities required in this proposed rule is $7.86 million at a 3 percent discount rate and $7.96 million at a 7 percent discount rate. EPA compares the costs of the regulatory alternatives in the next section. Also, Table V–2 presents total annualized present value costs by alternative. Because EPA is the primacy agency for aircraft water systems, EPA's costs to implement the proposed requirements have also been estimated. Table V–1 presents the total annualized costs to air carriers (airlines) and EPA for the proposed ADWR preferred alternative at 3 and 7 percent discount rates.

TABLE V–1.—TOTAL ANNUALIZED PRESENT VALUE COSTS FOR THE PROPOSED ADWR

[$Millions, 2006$]

	Air carriers	Agency	Total	Air carriers	Agency	Total
	3%			7%		
Implementation	$0.002	$0.01	$0.01	$0.003	$0.01	$0.01
Annual Administration	.....	0.25	0.25	.....	0.25	0.25
Sampling Plan	0.002	0.001	0.003	0.003	0.001	0.004
O&M Plan	0.01	0.000	0.01	0.02	0.000	0.02
Coliform Monitoring	5.32	0.04	5.36	5.39	0.04	5.43
Routine Disinfection and Flushing	2.37	.....	2.37	2.40	.....	2.40
Corrective Action Disinfection and Flushing	0.14	.....	0.14	0.14	.....	0.14
Compliance Audit	0.01	0.01	0.02	0.01	0.01	0.02

TABLE V–1.—TOTAL ANNUALIZED PRESENT VALUE COSTS FOR THE PROPOSED ADWR—Continued

[$Millions, 2006$]

	Air carriers	Agency	Total	Air carriers	Agency	Total
	3%			7%		
Total	7.86	0.30	8.16	7.96	0.31	8.27

C. Comparison of Cost of Regulatory Alternatives

Table V–2 provides a summary of the annualized present value costs for each regulatory alternative considered during the regulatory development process at 3 and 7 percent discount rates. EPA used the same process for developing cost estimates for all regulatory alternatives as was done for the proposed option. Unit costs were multiplied by the number of air carriers or aircraft performing various components of each alternative, and results were summed for all components.

Relative to the regulatory requirements currently in the *Code of Federal Regulations* (Alternative 1), the proposed rule (Alternative 4) represents a significant reduction in cost. The estimated total annualized present value cost of $8.16–$8.27 million for the proposed rule is only about one-fourth of the estimated cost of Alternative 1, as a result of tailoring the current regulations to the specific operational characteristics of aircraft drinking water systems. Relative to the Administrative Orders on Consent (Alternative 2), which is the current practice of aircraft water systems, the proposed rule represents a slight increase. However, the proposed rule offers operational advantages over the other alternatives including the slightly less costly, but more prescriptive, Alternative 2. EPA specifically designed the proposed rule to allow air carriers to follow the manufacturer recommendations for disinfecting and flushing aircraft water systems, instead of prescribing the frequency, chemical type and concentration to be used, which is the case in Alternative 2. The less prescriptive approach of the proposed rule addresses valuable stakeholder input, which recommended that EPA utilize the technical recommendations of the water system manufacturer rather than prescribe disinfection and flushing procedures that may not be appropriate for all aircraft water systems and may even be detrimental. Another advantage of the proposed rule over the approach used in Alternative 2 is that by utilizing the manufacturer recommendations for disinfection and flushing, the rule requirements will automatically evolve (another stakeholder recommendation) with technological improvements in aircraft water tank lining and piping materials and as new more effective disinfectants are developed.

In addition to operational advantages, the less prescriptive approach taken by the proposed rule may translate into a lower cost than is reflected in Table V–2. First, the proposed rule allows air carriers to perform the disinfection and flushing of aircraft water systems on schedules that are based on (or more frequent than) the manufacturer recommended maintenance frequencies and are included in their FAA-approved or accepted operation and maintenance programs. To provide this flexibility, EPA designed the monitoring schedules for aircraft water systems around the manufacturer recommended disinfection and flushing frequencies. EPA believes this approach is less disruptive to airline operations, which reduces the overall cost of the proposed rule by some unquantified amount.

Under the proposed rule, the more frequently the aircraft water system is cleaned, the less monitoring is required. In estimating the cost of the proposed rule in Table V–2, EPA assumed for simplicity that 45% of the aircraft water systems would follow a schedule of quarterly disinfection and flushing and annual fleet monitoring, which is the same schedule as prescribed in Alternative 2. If more than 45% of the aircraft water systems covered by the proposed rule choose this frequency, then any difference in cost between the proposed rule and Alternative 2 will be reduced or possibly eliminated.

TABLE V—2.—TOTAL ANNUALIZED PRESENT VALUE COSTS, BY ALTERNATIVE

[$Millions, 2006$]

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 1	Alt 2	Alt 3	Alt 4
	3%				7%			
Implementation	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Annual Administration	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Monitoring Plan	0.003	0.003	0.001	0.003	0.004	0.004	0.002	0.004
O&M Plan	.....	.....	0.01	0.01	.....	.....	0.01	0.02
Coliform Monitoring	26.53	1.68	2.29	5.36	26.85	1.70	2.31	5.43
Disinfectant Residual Monitoring	3.65	0.75	.....	.....	3.69	0.76	.....	.....
Routine Disinfection and Flushing	.....	4.98	3.39	2.37	.....	5.04	3.43	2.40
Corrective Action Disinfection and Flushing	.....	0.05	0.05	0.14	.....	0.05	0.05	0.14
Sanitary Survey/Compliance Audit	0.72	.....	.....	0.02	0.73	.....	.....	0.02
Turbidity Monitoring	.....	.....	15.01	.....	.....	.....	15.19	.....
Total	31.16	7.72	21.00	8.16	31.54	7.82	21.26	8.27

D. Estimated Impacts of Proposed Rule to Air Carrier Passengers

EPA assumes that air carriers will pass on some or all of the costs of a new regulation to their passengers in the form of ticket price increases. EPA estimates that 708.4 million passengers travel each year on aircraft that are affected by the ADWR. The cost passed on to passengers can be roughly estimated by dividing the air carriers' annualized costs incurred by the number of passengers traveling each year. Based on this approximation, EPA estimates that passengers could face a relatively negligible increase of about one cent per ticket.

E. Non-quantified Costs and Uncertainties

1. Non-quantified Costs

Although EPA has estimated the majority of costs of the proposed ADWR, there are some costs that EPA was not able to quantify, such as:

- Air carrier costs for service interruptions due to unanticipated aircraft maintenance needs;
- Passenger costs due to flight cancellations or delays related to aircraft maintenance;
- Air carrier costs to provide bottled water due to lack of onboard tap water during a coliform violation;
- Air carrier customer service response to customer concerns following notification to passengers and crew.

EPA believes that the most significant non-quantified cost is the cost associated with the disruption to air carriers' flight schedules caused by monitoring and maintenance requirements. Table V–3 presents the estimated number of monitoring and disinfection and flushing events per year for all regulatory alternatives. Some fraction of these could cause disruption to air carrier schedules.

TABLE V–3.—SUMMARY OF MONITORING AND DISINFECTION/FLUSHING EVENTS FOR ALL ALTERNATIVES

Rule Alternative	Monitoring			Disinfection and Flushing		
	Routing monitoring coliform sampling events/year	Disinfectant residual monitoring sampling events/year	Total number of sampling events/year	Routine disinfection and flushing events/year	Corrective action disinfection and flushing events/year	Total number of disinfection and flushing events/year
	A	B	C = A + B	D	E	F = D + E
Alt 1	46,248	46,248	92,496	.....	.....	.....
Alt 2	7,708	7,708	15,416	29,308	454	29,762
Alt 3	7,708	.....	7,708	29,308	454	29,762
Alt 4	26,593	.....	26,593	20,516	1,175	21,691

Of the alternatives that require disinfection and flushing, the proposed rule has the least estimated number of disinfection and flushing events/year (21,691), and Alternative 2 and 3 have fewer estimated monitoring events than the proposed rule. EPA does not have sufficient data to quantify the number of events that would actually cause disruption to air carriers and the costs of such disruptions. However, EPA believes that the number of actual disruptions would be lower for the proposed rule compared to Alternatives 1–3 due to the flexibility offered to air carriers in choosing monitoring frequencies under the proposal. EPA assumes that the increased flexibility of the proposal would allow air carriers to schedule routine monitoring and disinfection and flushing to coincide with existing routine maintenance checks. This would in turn decrease potential disruption to air carrier flight schedules and thus decrease air carrier burden and cost for complying with the proposed ADWR monitoring and disinfection and flushing requirements. Therefore, if disruption costs were included in the quantified costs of the rule, the costs for the proposed rule option would likely decrease with respect to the other Alternatives.

2. Uncertainties in Cost Estimates

Many factors contribute to uncertainty in the national cost estimates including:

- Percent of aircraft that will be subject to each coliform monitoring option.
- Expected results from total coliform monitoring.
- Estimated time for air carrier management to read, understand, and decide how to best comply with the ADWR; and develop training, train staff, and oversee compliance.

For simplicity, EPA assumed for this analysis that all air carriers subject to the proposed ADWR would spend equal management time on ADWR requirements, regardless of fleet size or aircraft type. Assuming equal burden for all air carriers to comply with these proposed rule management and oversight requirements could result in an over- or under-estimate of the costs presented.

In developing costs for air carriers to comply with the proposed self-inspection requirements, EPA assumed that with the exception of reporting and recordkeeping burden, no additional costs for self-inspections are incurred by air carriers. Labor burden for self-inspections, which involve a thorough review and inspection of an aircraft water system, is already captured under current FAA requirements and therefore is not included in the cost estimate for this rule. This assumption potentially underestimates air carrier labor burden for self-inspections where deficiencies noted during self-inspections are not addressed during routine aircraft maintenance procedures.

VI. Relative Risk Analysis and Benefits

This section summarizes the risk (and benefit) tradeoffs between compliance with existing NPDWRs (baseline conditions) and the alternatives considered during the regulatory development process. Evaluations include a qualitative analysis that compares the risks for each regulatory alternative as compared to baseline conditions. The qualitative analysis uses the collective professional judgment of an EPA team that included scientists and engineers and representatives of FDA and FAA, not quantitative data, to establish a relative risk rating for each regulatory component. Potential benefits of compliance with the regulatory alternatives are also discussed. It is important to note that these analyses are only for comparing the alternatives relative to one another. EPA did not conduct a risk assessment, and the analyses are not intended to provide any insights into either the nature or the

magnitude of possible public health risks that are associated with the consumption of drinking water on aircraft, or with the expected reductions in those public health risks anticipated from implementation of this rule.

A. Relative Risks—Qualitative Analysis

The goal of the ADWR is to tailor existing NPDWRs to the unique characteristics of aircraft water systems. Because the requisite data on contaminant occurrence (both frequency and concentration), health effects, and water consumption are not available to support a quantitative analysis, EPA estimated the relative risks of the regulatory options considered for the proposed ADWR. The existing NPDWRs that apply to transient noncommunity water systems using purchased finished surface water were used as the baseline for comparison. The overall change in risks from each alternative relative to the Alternative 1 baseline are a result of the complex interaction of all regulatory components. EPA used best professional judgment to qualitatively estimate the relative risk of each regulatory alternative. This assessment was made with contributions from a range of experts, including public health scientists, engineers, administrators, and regulatory experts. The consensus opinions resulting from the qualitative assessment of risks for each alternative relative to the Alternative 1 baseline are presented here.

Alternative 2

Regulatory Alternative 2 mirrors the requirements set forth in the AOCs. In consideration of the regulatory components, the expert consensus is that the dominant factor affecting risk is the periodic disinfection and flushing of aircraft water systems. This type of periodic maintenance is important in an operating environment that is as variable as that of aircraft water systems. Though there is currently no data on how large the marginal effect of increasing disinfection and flushing frequency is, any increase in periodicity for this activity is expected to yield larger health risk reductions in comparison to other regulatory components such as periodic monitoring.

Based on all the considerations discussed above, the expert consensus is that the overall health risk remaining after Alternative 2 is most likely less than the baseline.

Alternative 3

The regulatory components of Alternative 3 are generally not as comprehensive as Alternative 2, yet are similar for those components that are included in both. In particular, the disinfection and flushing requirements are the same for a subset of aircraft in Alternative 3 (i.e., those that choose to comply with an O&M plan in lieu of monitoring). Based on the similarities between Alternatives 2 and 3, the same process and rationale was used to evaluate the two alternatives. Thus, the expert consensus is similar: the overall health risk posed by Alternative 3 is most likely less than the Alternative 1 baseline, though the magnitude of the difference is expected to be smaller compared to Alternative 2 due to the flexibility in choosing between monitoring and an O&M plan.

The Proposed Rule

The regulatory components of the proposed rule allow greater flexibility than Alternatives 2 and 3 with regard to disinfection and flushing. Thus, some aircraft will not perform disinfection and flushing as often as required under those alternatives. However, this is compensated for by requiring more routine monitoring in those situations. As a result, the expert consensus is that the overall health risk posed by the proposed rule is most likely less than the Alternative 1 baseline, and about the same as Alternative 2.

B. Assessment of Potential Quantitative Relative Risk Analyses

In addition to the qualitative relative risk analysis presented in section VI.A, EPA has considered analyses for incorporating quantitative data into a relative risk analysis. However, EPA is limited by the purpose, quality, and quantity of data available in developing meaningful analyses. Any comparison of risk between the Alternatives considered for the proposed rule requires robust data that would support: (1) Direct comparisons of the overall baseline conditions with the overall conditions under each of the Alternatives, or (2) comparisons of specific regulatory components (i.e., disinfection and flushing frequencies) that could be used to compare the baseline and all Alternatives. As of the time of proposal, only limited baseline data and partial data collected under the AOCs are available for analysis. Therefore, EPA has determined that it is not feasible to perform a quantitative relative risk analysis at this time. As additional AOC data are received, EPA will continue to assess the data and evaluate whether additional quantitative analyses are possible and can be used to inform the final ADWR. If EPA determines that additional quantitative analyses are feasible, we will provide the public with an opportunity to review the data prior to finalizing the ADWR.

C. Non-Quantified Benefits

Routine disinfection and flushing required under the proposed rule is expected to remove pathogens that may be living in biofilm in the aircraft distribution system and contributing to endemic disease. Disinfection and flushing associated with corrective action is also expected to inactivate or remove any pathogens that may have entered the distribution system, resulting in decreased chance of illness. By reducing the potential for illness contracted through exposure to aircraft drinking water, EPA expects that the implementation of the proposed rule will reduce the occurrence of illness passed through secondary spread. Furthermore, EPA expects the additional barriers to pathogens required under the proposed rule, disinfection and flushing combined with monitoring and air carrier training requirements, will reduce the likelihood of outbreaks associated with aircraft drinking water.

VII. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order (EO) 12866, (58 FR 51735, October 4, 1993), this action is a ''significant regulatory action'' since it raises novel legal or policy issues. Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

B. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act,* 44 U.S.C. 3501 *et. seq.* The Information Collection Request (ICR) document prepared by EPA has been assigned EPA ICR number 2279.01

EPA requires comprehensive and current information on total coliform monitoring and associated corrective action activities to implement its program oversight and enforcement responsibilities mandated by the Safe Drinking Water Act (SDWA). EPA will use the information collected as a result of this proposed Aircraft Drinking Water Rule (ADWR) to support the

responsibilities outlined in SDWA by strengthening the implementation of the proposed ADWR in the areas of monitoring and flushing and disinfecting, best management practices, and public notification, while decreasing the risk to public health. The rule requirements described in section IV of this notice are intended to improve the implementation from that of the Total Coliform Rule (TCR) by tailoring the proposed ADWR to fit the unique challenges in the maintenance and operation practices of air carriers, and do not alter the original maximum contaminant level goals or the fundamental approach to controlling total coliform in drinking water.

Section 1401(1)(D) of SDWA requires that there must be ''criteria and procedures to assure a supply of drinking water which dependably complies with such maximum contaminant levels; including accepted methods for quality control and testing procedures to insure compliance with such levels and to insure proper operation and maintenance of the system, * * *'' Furthermore, section 1445(a)(1) of SDWA requires that every person who is a supplier of water ''shall establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator may reasonably require by regulation to assist the Administrator in establishing regulations * * * in determining whether such person has acted or is acting in compliance'' with this title. Section 1412(b) of SDWA, as amended in 1996, requires the EPA to publish maximum contaminant level goals and promulgate NPDWRs for contaminants that may have an adverse effect on the health of persons, are known to or anticipated to occur in public water systems, and, in the opinion of the Administrator, present an opportunity for health risk reduction. The NPDWRs specify maximum contaminant levels or treatment techniques for drinking water contaminants (42 U.S.C. 300g–1). Section 1412(b)(9) requires that EPA, no less than every 6 years, review and if appropriate, revise existing drinking water standards. Currently, the Total Coliform Rule, which established the regulatory standards (i.e., maximum contaminant level goals and treatment techniques) by which this proposed ADWR is based, is being revised in accordance with the finding of the EPA's first Six-Year Review (68 FR 42907, July 18, 2003). Promulgation of the ADWR complies with these statutory requirements.

Burden Estimate

The universe of respondents for this Information Collection Request (ICR) is comprised of 63 air carriers that operate approximately 7,327 aircraft public water systems, classified as Transient Non-Community Water Systems and the ten EPA Regions. The burden per response for air carriers is about 0.3 hours with a cost per response of approximately $31. The average annual burden per air carrier respondent is 535 hours or about 5 hours per aircraft. The average annual cost per air carrier respondent is $61,968 or $534 per aircraft. The total burden incurred by air carriers during the 3-year period covered by this ICR is 101,155 hours which equates to about 1606 hours per air carrier and 14 hours per aircraft. The total estimated capital and start-up costs (including operation and maintenance) for the ICR are estimated to be $7,809,188.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9. When this ICR is approved by OMB, the EPA will publish a technical amendment to 40 CFR part 9 in the **Federal Register** to display the OMB control number for the approved information collection requirements contained in this final rule.

To comment on the EPA's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this rule, which includes this ICR, under Docket ID No. EPA–HQ–OW–2005–0025. Submit any comments related to the ICR for this proposed rule to EPA and OMB. See **ADDRESSES** section at the beginning of this notice for where to submit comments to EPA. Send comments to OMB at the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW., Washington, DC 20503, Attention: Desk Officer for EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after April 9, 2008, a comment to OMB is best assured of having its full effect if OMB receives it by May 9, 2008. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

The RFA provides default definitions for each type of small entity. Small entities are defined under the RFA as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any ''not-for-profit enterprise which is independently owned and operated and is not dominant in its field.'' However, the RFA also authorizes an agency to use alternative definitions for each category of small entity, ''which are appropriate to the activities of the agency'' after proposing the alternative definition(s) in the **Federal Register** and taking comment. 5 U.S.C. 601(3)–(5). In addition, to establish an alternative small business definition, agencies must consult with SBA's Chief Counsel for Advocacy. For purposes of assessing the impacts of drinking water regulations on small entities under the RFA, EPA has defined small entities as public water systems serving 10,000 or fewer persons (see EPA's Consumer Confidence Reports regulation, 63 FR 44511, August 19, 1998).

However, for purposes of assessing the economic impacts of this proposed rule on small entities, EPA is proposing to define ''small entity'' using the SBA

standard as air carriers (NAICS codes 481111 and 481211) having fewer than 1,500 employees (13 CFR 121.201) rather than using the definition EPA has used for small stationary public water systems (''a public water system that serves 10,000 or fewer people''). As discussed in section II.B, many of the requirements under the existing NPDWR have proven difficult to implement when applied to mobile aircraft water systems that are operationally very different from traditional water systems. Under the proposed ADWR, the air carrier is the business entity rather than the individual aircraft water system. Therefore, EPA is proposing to use the SBA standard based on the number of air carrier employees instead of population served by each aircraft water system. The Agency is interested in receiving comments on the use of this alternative definition of small entity.

In addition, the Agency has consulted with the SBA Chief Counsel for Advocacy on using the SBA small business definition of fewer than 1500 employees for purposes of assessing the economic impacts of this rule on small entities. As a result of this consultation, SBA agrees with the Agency's approach to the small entity definition for air carriers for this proposed rule. However, SBA did request that EPA verify that they have captured the entire universe of small entities that may be impacted by the proposed rule. SBA recommended that EPA contact two additional aviation and air transportation associations to determine whether there may be additional entities that may experience a significant economic impact as a result of this proposed rule, which were not accounted for in the Agency's earlier analysis. EPA contacted those associations and they confirmed the Agency's earlier findings from other sources, including the FAA, that EPA had taken into account all available information on the universe of small entities during the Agency's earlier analysis.

EPA also is proposing to use this alternative definition of ''small entity'' for purposes of its regulatory flexibility assessments under the RFA for this rule, revisions to this rule, and any future drinking water regulations that address air carriers.

After considering the economic impacts of this proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. EPA has determined that the following businesses would be affected by the proposed Aircraft Drinking Water Rule: scheduled passenger air transportation (NAICS 481111) and nonscheduled chartered passenger air transportation (481211). Of the 63 air carriers estimated to be affected by this rule, 30 are small businesses; however, this represents less than one percent of total service to the U.S. population. We have determined that 1 small business air carrier could experience an impact of 1.4 percent of its average annual revenue. This represents 3.3 percent of all small air carriers.

Although this proposed rule will not impact a substantial number of small entities, we continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation as to why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this proposed regulatory action does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. Annual costs to air carriers include the costs of administration, monitoring, corrective action, self-inspection and compliance audits. EPA estimates the annualized compliance cost to air carriers of $7.9 million (3 percent discount rate) and $8.0 million (7 percent discount rate). States, local, and Tribal governments, however, will not incur annual costs associated with this proposed rule, since oversight of air carriers (i.e., interstate commerce carriers) is directly implemented by EPA and EPA will incur costs associated with this rulemaking. Thus, this rule is not subject to the requirements of sections 202 and 205 of the UMRA. For these reasons, EPA has also determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. States are not directly affected by any requirements in this rule, since oversight of air carriers (i.e., interstate commerce carriers) is implemented by EPA. Thus, Executive Order 13132 does not apply to this rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

F. Executive Order 13175: Consultation and Coordination With Indian Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' This proposed rule does not have tribal implications, as specified in Executive Order 13175. It does not significantly or uniquely affect the communities of Indian tribal governments, nor does it impose substantial direct compliance costs on those communities. The provisions of this proposed rule apply to all aircraft transient non-community water systems. At present, EPA has not identified any Tribal governments that may be owners/air carriers of such systems. Thus, Executive Order 13175 does not apply to this rule.

G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

Executive Order 13045 ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

While this proposed rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, we nonetheless have reason to believe that the environmental health or safety risk addressed by this action can have an effect on children. This proposed rule does not change the core Total Coliform Rule requirements in place to assure the protection of children from the effects of contaminants in drinking water. Rather this proposed rule, which is tailored to meet the specific challenges in the maintenance and operations of aircraft water systems, will improve the implementation of the current provisions under the Total Coliform Rule for aircraft water systems, and thereby, is expected to ensure and enhance more effective protection of public health, including the health of children who are aircraft passengers.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This proposed rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The proposed rule addresses the unique implementation challenges facing aircraft water systems.

This proposed rule does not affect the supply of energy as it does not regulate power generation. The proposed rule does not regulate any aspect of energy distribution as the aircraft covered by the proposed ADWR already have their own power source. Finally, these regulatory revisions do not adversely affect the use of energy as EPA does not anticipate that a significant number of air carriers will add treatment technologies that use electrical power to comply with these regulatory revisions. As such, EPA does not anticipate that this proposed rule will adversely affect the use of energy.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

The proposed rule may involve voluntary consensus standards in that it would require monitoring for total coliform, and monitoring and sample analysis methodologies are often based on voluntary consensus standards. However, the proposed rule does not change any methodological requirements for monitoring or sample analysis as are indicated in the Total Coliform Rule; only, in some cases, the required frequency and number of samples. Also, EPA's approved monitoring and sampling protocols generally include voluntary consensus standards developed by agencies such as the American National Standards Institute (ANSI) and other such bodies wherever EPA deems these methodologies appropriate for compliance monitoring.

EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (EO) 12898 (59 FR 7629 (Feb. 16, 1994)) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this proposed rule will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

K. Consultations With the Science Advisory Board, National Drinking Water Advisory Council, and the Secretary of Health and Human Services

In accordance with sections 1412(d) and 1412(e) of the Safe Drinking Water Act (SDWA), the Agency consulted with the National Drinking Water Advisory Council (NDWAC or the Council); the Secretary of Health and Human Services; and requested a consultation with the Science Advisory Board, which will take place in 2008.

The Agency consulted with NDWAC during the Council's May 25–27, 2007, semi-annual meeting. In general, NDWAC recommended that EPA consider and request public comment on best management practices (BMPs) and public notification requirements, which may be feasible alternatives for

the air carrier industry while providing greater public health protection. EPA has incorporated these recommendations into the proposed ADWR by providing flexible BMP alternatives and timely notification requirements which have been tailored specifically to meet the unique operational characteristics of aircraft public water systems and the air carrier industry. EPA has expressly requested public comment in these areas of the proposed ADWR.

On August 8, 2007, EPA consulted with the Department of Health and Human Services (HHS). EPA received a favorable response to the Agency's novel approach and development of the proposed ADWR and no issues were raised as a result of the consultation.

L. Plain Language

Executive Order 12866 encourages Federal agencies to write rules in plain language. EPA invites comments on how to make this proposed rule easier to understand. For example: Has EPA organized the material to suit commenters' needs? Are the requirements in the rule clearly stated? Does the rule contain technical language or jargon that is not clear? Would a different format (*e.g.*, grouping and ordering of sections, use of headings, paragraphs) make the rule easier to understand? Could EPA improve clarity by adding tables, lists, or diagrams? What else could EPA do to make the rule easier to understand?

VIII. References

ATA (Air Transport Association of America, Inc.) 2003. Air Transport Association: Aircraft Drinking Water Sampling Program, Final Report: December 31, 2003. *http://www.airlines.org.*

Canada. 2007a. Health Canada. Healthy Living. Aircraft Inspection Program—Frequently Asked Questions. *http://www.hc-sc.gc.ca/hl-vs/travel-voyage/general/inspection/airplane-aeronefs_e.html.*

Canada. 2007b. Health Canada. Healthy Living. Advisory. Health Canada cautions air travelers with compromised immune systems regarding water quality on aircraft. *http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2006/2006_53_e.html.*

Davison, A., Howard, G., Stevens, M., *et al.* 2005. Water, Sanitation and Health Protection and the Human Environment, World Health Organization, Geneva. Water Safety Plans: Managing drinking-water quality from catchment to consumer. *http://www.who.int/water_sanitation_health/.*

Lehtola, M., Torvinen, E., Kusnetsov, J., *et al.* 2007. Survival of Mycrobacterium avium, Legionella pneumophila, Escherichia coli, and Caliciviruses in Drinking Water-Associated Biofilms Grown under High-Shear Turbulent Flow. Applied and Environmental Microbiology, 73:2854–2859.

USEPA. 1986. Water Supply Guidance 29: Plan for Implementation of the Safe Drinking Water Act on Interstate Carrier Conveyance.

USEPA. 1989. National Interim Primary Drinking Water Regulations; Total Coliform Rule; Final Rule. Part III. **Federal Register**, 54:124:27544. (June 29, 1989).

USEPA. 2008. Economic and Supporting Analyses; Proposed Aircraft Drinking Water Rule. EPA 816–D–08–002.

USEP. 2008. DRAFT Information Collection Request for the National Primary Drinking Water Regulations: Proposed Aircraft Drinking Water Rule. EPA 816–D–08–001.

USFDA. 2005. Title 21—Food and Drugs, Chapter 1—Food and Drug Administration, Part 1250—Interstate Conveyance Sanitation. *http://www.accessdata.fda.gov/.*

WHO. 1997. HACCP—Introducing the Hazard Analysis and Critical Control Point System. Geneva, Switzerland: WHO.

WHO. 2004. Guidelines for Drinking-Water Quality. 3rd Edition, Volume 1—Recommendations, Chapter 4 Water Supply Plans. Geneva, Switzerland: WHO.

List of Subjects in 40 CFR Part 141

Environmental protection, Chemicals, Indians-lands, Intergovernmental relations, Radiation protection, Reporting and recordkeeping requirements, Water supply.

Dated: March 28, 2008.

Stephen L. Johnson,

Administrator.

For the reasons set out in the preamble, title 40, chapter 1 of the Code of Federal Regulations is proposed to be amended as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

1. The authority citation for part 141 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

2. Part 141 is amended by adding a new subpart X to read as follows:

Subpart X—Aircraft Drinking Water Rule

Sec.

Subpart X —Aircraft Drinking Water Rule

§ 141.800 Applicability and compliance date.

The requirements of this subpart constitute the National Primary Drinking Water Regulations for aircraft that are public water systems, which board only finished water for human consumption. To the extent there is a conflict between the requirements in this subpart and the regulatory requirements established elsewhere in this part, this subpart governs. Compliance Date. Aircraft public water systems must comply, unless otherwise noted, with the requirements of this subpart beginning [DATE 12 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**].

§ 141.801 Definitions.

As used in this subpart, the term:

Administrator means the Administrator of the United States Environmental Protection Agency or his authorized representative.

Air carrier means a person who undertakes directly by lease, or other arrangement, to engage in air transportation. The air carrier is responsible for ensuring all of the aircraft it owns or operates that are public water systems comply with all provisions of this subpart.

Aircraft means a device that is used or intended to be used for flight in the air.

Aircraft water system means an aircraft that qualifies as a public water system under the Safe Drinking Water Act and the National Primary Drinking Water Regulations. The components of an aircraft water system include the water service panel, the filler neck of the aircraft finished water storage tank, and all finished water storage tanks, piping, treatment equipment, and plumbing fixtures within the aircraft that supply water to passengers or crew.

Aircraft water system operation and maintenance plan means the schedules and procedures for operating, monitoring, and maintaining an aircraft water system that is included in an aircraft operation and maintenance program approved or accepted by the Federal Aviation Administration. (14 CFR Part 43, 14 CFR Part 91, 14 CFR Part 121).

Finished water means water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as treatment necessary to maintain water quality in the distribution system (e.g., supplemental disinfection, addition of

corrosion control chemicals). (40 CFR 141.2). *Human consumption* means drinking, bathing, showering, hand washing, teeth brushing food preparation, dishwashing, and maintaining oral hygiene.

Self inspection means an onsite review of the aircraft water system, including the water service panel, the filler neck of the aircraft finished water storage tank; all finished water storage tanks, piping, treatment equipment, and plumbing fixtures; and a review of the aircraft operations, maintenance, monitoring, and recordkeeping for the purpose of evaluating the adequacy of such water system components and practices for providing safe drinking water to passengers and crew.

Watering point means a facility where finished water is transferred from a water supply to the aircraft. These facilities may include water trucks, carts, cabinets, and hoses.

§ 141.802 Coliform sampling plan.

(a) Each air carrier under this subpart must develop a coliform sampling plan covering each aircraft water system owned or operated by the air carrier that identifies the following:

(1) Coliform sample collection procedures.

(2) Sample tap location(s) representative of the aircraft water system per § 141.803(b)(2) and (b)(3).

(3) Frequency and number of routine coliform samples to be collected.

(4) Frequency of routine disinfection and flushing as specified in the operation and maintenance plan under § 141.804.

(5) Procedures for communicating sample results promptly so that any required actions including repeat and follow-up sampling, corrective action, and notification of passengers and crew may be conducted in a timely manner.

(b) Aircraft with a water system meeting the definition of a PWS, must be covered by a coliform sampling plan by [DATE 6 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**].

(c) The coliform sampling plan must be included in the Aircraft Water System Operation and Maintenance Plan required in § 141.804.

§ 141.803 Coliform sampling.

(a) *Analytical Methods.* (1) Coliform sampling of aircraft public water systems under this section need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.

(2) EPA approved analytical methodologies must be used for the analysis of coliform bacteria. The invalidation of a total coliform sample result can only be made by the Administrator in accordance with § 141.21(c)(1)(i), (ii), or (iii) or by the State or EPA certified laboratory in accordance with § 141.21(c)(2).

(b) *Routine Monitoring.* For each aircraft water system, the air carrier must collect two 100 mL total coliform routine samples at the frequency specified in the sampling plan in § 141.802. The sampling frequency must be determined by the disinfection and flushing frequency recommended by the aircraft water system manufacturer and as identified in the operation and maintenance plan in § 141.804.

(1) Routine monitoring frequencies must be as follows:

(i) If the aircraft water system is disinfected and flushed at least quarterly, then coliform monitoring must occur at least annually, or

(ii) If the aircraft water system is disinfected and flushed one to three times per year, then coliform monitoring must occur at least quarterly, or

(iii) If the aircraft water system is disinfected and flushed less than once per year, then coliform monitoring must occur at least monthly.

(2) One sample must be taken from a lavatory and one sample from a galley; each must be analyzed for total coliform.

(3) 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.

(4) If any routine coliform sample is total coliform-positive, the air carrier must analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the system may test for E. coli in lieu of fecal coliforms.

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

(c) *Coliform Sample Results.* (1) Negative Routine Coliform Sample Results. If no routine sample is total coliform-positive, then the air carrier must maintain the routine monitoring frequency for total coliform as specified in paragraph (b) of this section.

(2) Single Routine Total Coliform-Positive Sample Result that is Fecal/E. coli-negative. In response to a single routine total coliform-positive sample result that is fecal/E. coli negative, the air carrier must perform at least one of the following:

(i) *Disinfection and Flushing.* In accordance with § 141.804, initiate disinfection and flushing of the system no later than 72 hours after the laboratory notifies the air carrier of the total coliform-positive result. After disinfection and flushing are completed, the air carrier must collect follow-up samples in accordance with paragraph (d) of this section.

(ii) *Repeat Sampling.* Collect four 100 mL repeat samples no later than 24 hours after the laboratory notifies the air carrier of the total coliform-positive result. Repeat samples must be collected and analyzed from four taps within the aircraft as follows: the tap which resulted in the total coliform-positive sample, one other lavatory tap, one other galley tap, and one other tap; if less than four taps exist, then a total of four 100 mL samples must be collected and analyzed from the available taps within the aircraft water system. If no repeat sample is total coliform-positive, then the aircraft water system must maintain the routine monitoring frequency for coliform as specified in paragraph (b) of this section. If any repeat coliform sample is total coliform-positive, the aircraft water system must analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the air carrier may test for E. coli in lieu of fecal coliforms.

(3) If any routine or repeat sample is fecal coliform-positive or E. coli-positive, then the air carrier must perform all of the following:

(i) Restrict public access to the aircraft water system in accordance with paragraph (c)(5) of this section as expeditiously as possible, but in no case later than 24 hours after being notified of the positive result by the laboratory;

(ii) Conduct disinfection and flushing pursuant to § 141.804 prior to resumption of unrestricted public access to the aircraft water system, or no later than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers as stated in § 141.804(b)(8); and

(iii) Collect follow-up samples pursuant to paragraph (d) of this section.

(4) If more than one routine sample or any repeat sample is total coliform-positive and fecal coliform-negative (or E. coli-negative), then the air carrier must perform all of the following:

(i) Restrict public access to the aircraft water system in accordance with paragraph (c)(5) of this section as expeditiously as possible, but in no case later than 24 hours after being notified of the positive result by the laboratory;

(ii) Conduct disinfection and flushing pursuant to § 141.804 prior to resumption of unrestricted public access to the aircraft water system, or no later

than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers as stated in § 141.804(b)(8); and

(iii) Collect follow-up samples pursuant to paragraph (d) of this section.

(5) Restriction of public access includes, but need not be limited to, the following:

(i) Physically disconnecting or shutting off the aircraft water system where feasible;

(ii) Providing public notification to passengers and crew in accordance with § 141.805; and

(iii) Providing alternatives to use of the aircraft water system, such as bottled water for drinking and coffee preparation; antiseptic alcohol based hand gels or wipes in the galley 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 restored.

(d) *Post Disinfection and Flushing Follow-up Sampling.* Following a coliform-positive that requires 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 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 (3) of this section.

(2) If one or more of the follow-up samples is total coliform-positive then, as a minimum, the air carrier must re-disinfect and flush the aircraft water system in accordance with § 141.804(b)(2) and take additional follow-up samples in accordance with paragraph (d)(1) of this section.

(3) All follow-up sample results must be total coliform-negative before the air carrier provides water from the aircraft water system to passengers and crew and returns to the routine monitoring frequency for coliform as specified in paragraph (b) of this section.

(e) *Failure to Collect Required Routine Samples.* If there was a failure to collect and analyze the required number of routine coliform samples, the air carrier must:

(1) Notify passengers and crew in accordance with § 141.805 as expeditiously as possible, but in no case later than 24 hours after discovery of failure to collect required samples or after being notified by EPA of failure to collect required samples, and

(2) Conduct disinfection and flushing within 72 hours in accordance with § 141.804(b)(2).

(3) Collect follow-up samples pursuant to paragraph (d) of this section.

(f) *Failure to Collect Repeat or Follow-up Samples:* If there was a failure to collect and analyze the required number of repeat or follow-up samples, then the air carrier must:

(1) Restrict public access to the aircraft water system in accordance with paragraph (c)(5) of this section as expeditiously as possible, but in no case later than 24 hours after discovery of failure to collect required samples or after being notified by EPA of failure to collect required samples.

(2) Conduct disinfection and flushing pursuant to § 141.804 prior to resumption of unrestricted public access to the aircraft water system, or no later than 72 hours if the aircraft water system cannot be physically disconnected/shut off to the crew and passengers as stated in § 141.804(b)(8); and

(3) Collect follow-up samples pursuant to paragraph (d) of this section.

§ 141.804 Aircraft water system operations and maintenance plan.

(a) Each air carrier must have and follow an aircraft water system operation and maintenance plan for each aircraft water system that it owns or operates. This plan must be included in a Federal Aviation Administration approved or accepted air carrier operations and maintenance program (14 CFR Part 43, 14 CFR Part 91, 14 CFR Part 121).

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

(1) *Watering Point Selection Requirement.* All water sources must be from a Food and Drug Administration (FDA) approved watering point in accordance with 21 CFR 1240.80.

(2) *Procedures for Disinfection and Flushing of Aircraft Water System.*

(i) The air carrier must conduct disinfection and flushing of the aircraft water system in accordance with or be no less stringent than the water system manufacturer's recommendations. The air carrier may conduct disinfection and flushing more frequently, but not less frequently, than the manufacturer recommends.

(ii) The operation and maintenance plan must identify the disinfection frequency, type of disinfecting agent, disinfectant concentration to be used, and the disinfectant contact time, and flushing volume or flushing time.

(iii) In cases where a recommended routine disinfection and flushing frequency is not specified by the aircraft water system manufacturer, the air carrier must perform disinfection and flushing of each aircraft water system no less frequently than quarterly.

(3) Procedures for follow-up sampling in accordance with § 141.803(d).

(4) *Training Requirements.* Training for all personnel involved with the aircraft water system operation and maintenance provisions of this regulation must include, but is not limited to:

(i) Water boarding procedures;

(ii) Sample collection procedures;

(iii) Disinfection and flushing procedures;

(iv) Public health and safety reasons for the requirements of this subpart.

(5) Procedures for Conducting Self-inspections of the Aircraft Water System. Procedures must include, but are not limited to, inspection of: Storage tank, distribution system, supplemental treatment, fixtures, valves, and backflow prevention devices.

(6) *Procedures for Boarding Water.*

(i) Within the United States, the air carrier must board water from an approved FDA watering point.

(ii) The operation and maintenance plan must include a description of how the carrier will ensure that water boarded outside the United States is safe for human consumption.

(iii) In no event should the air carrier knowingly serve water that violates NPDWRs. If water must be boarded that is known to violate NPDWRs, the carrier must meet the requirements in § 141.803(c)(3).

(iv) The operation and maintenance plan must provide a description of how the water will be transferred from the watering point to the aircraft in a manner that ensures it will not become contaminated during the transfer.

(v) The operation and maintenance plan must also describe emergency procedures to be used in the event that water is boarded to operate essential systems, such as toilets, but is not boarded from an FDA approved or otherwise safe watering point, as specified above, including:

(A) Notification of passengers and crew in accordance with § 141.805 as expeditiously as possible, but in no case later than 24 hours after boarding the water, and

(B) Conducting disinfection and flushing within 72 hours in accordance with (b)(2) of this section.

(C) Collect follow-up samples pursuant to § 141.803(d) of this section.

(7) Coliform Sampling Plan. The air carrier must include the coliform

sampling plan prepared in accordance with § 141.802.

(8) A statement as to whether the aircraft water system can be physically disconnected/shut off to the crew and passengers.

(c) For existing aircraft, the air carrier must develop their operations and maintenance plan required by this section by [DATE 6 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**];

(d) For new aircraft, the air carrier must develop the operations and maintenance plan required by § 141.804 within the first calendar quarter of initial operation of the aircraft.

§ 141.805 Notification of passengers and crew.

(a) Air Carriers must give notice for each aircraft in all of the following situations where:

(1) Public access to the aircraft water system is required to be restricted, in accordance with § 141.803(c)(3) or (4);

(2) There has been a failure to collect required samples, in accordance with § 141.803(e) or (f);

(3) Water has been boarded from a watering point that has not been approved by FDA, or otherwise determined to be safe in accordance with the procedures specified in § 141.804(b)(6); and

(4) The Administrator, the carrier, or the crew otherwise determine that notification is necessary to protect public health.

(b) Air carriers must provide notification to passengers and crew within 24 hours of being informed of sample results or other events which trigger notification, or within 24 hours of being informed by EPA to perform notification, whichever occurs first. Notification must be in a form and manner reasonably calculated to reach all passengers and crew while onboard the aircraft by using one or more of the following forms of delivery:

(1) Broadcast over public announcement system on aircraft;

(2) Posting of the notice in conspicuous locations throughout the area served by the water system. These locations would normally be the galleys and in the lavatories of each aircraft requiring posting;

(3) Hand delivery of the notice to passengers and crew;

(4) Another delivery method approved in writing by the Administrator.

(c) All notification must continue until all follow-up coliform samples are total coliform-negative. Each notice:

(1) Must be displayed in a conspicuous way when printed or posted;

(2) Must not contain overly technical language or very small print;

(3) Must not be formatted in a way that defeats the purpose of the notice;

(4) Must not contain language that nullifies the purpose of the notice;

(5) Must contain information in the appropriate language(s) regarding the importance of the notice reflecting a good faith effort to reach the non-English speaking population served, including where applicable, an easily recognized symbol for non-potable water.

(d) Notice when public access to the aircraft water system is restricted must include:

(1) A prominently-displayed, clear statement in each lavatory indicating that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use; and

(2) A prominent notice in the galley directed at the crew which includes:

(i) A clear statement that the water is non-potable and should not be used for drinking, food or beverage preparation, hand washing, teeth brushing, or any other consumptive use;

(ii) A description of the violation or situation triggering the notice, including the contaminant(s) of concern;

(iii) When the violation or situation occurred;

(iv) Any potential adverse health effects from the violation or situation, as appropriate, under paragraph (g) of this section.

(v) The population at risk, including sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water;

(vi) What the air carrier is doing to correct the violation or situation; and

(vii) When the air carrier expects to return the system to unrestricted access;

(e) If access to the water system by passengers is physically prevented through disconnecting or shutting off the water, or if water is supplied only to lavatory toilets, and not to any lavatory taps, then only the notice specified in paragraph (d)(2) of this section is required.

(f) Notice when water has been boarded from a watering point not approved by FDA or otherwise determined to be safe in accordance with the procedures in § 141.804(b)(6), or when required monitoring or required disinfection and flushing was not conducted must include:

(1) A prominently-displayed, clear statement in each lavatory indicating that the water is non-potable and should not be used for drinking, food or beverage preparation, or teeth brushing; and

(2) A prominent notice in the galley directed at the crew which includes:

(i) A clear statement that the water is non-potable and should not be used for drinking, food or beverage preparation, or teeth brushing;

(ii) An indication that water was boarded from a watering point that has not been approved by FDA, or otherwise determined to be safe in accordance with the procedures specified in § 141.804(b)(6), or that required monitoring or required disinfection and flushing was not conducted, and it is thus not known whether the water is contaminated;

(iii) When and where the water was boarded or the specific monitoring or disinfection and flushing requirement was not met;

(iv) Any potential adverse health effects from exposure to waterborne pathogens that might be in the water;

(v) The population at risk, including sensitive subpopulations particularly vulnerable if exposed to the contaminant in the drinking water; and

(vi) A statement indicating when the system will be disinfected and flushed and returned to full service if known;

(g) The following standard health effects language must be included in each public notice to the crew.

(1) Health effects language to be used when notice was triggered by detection of total coliforms only (not fecal coliforms or E. coli):

Coliform are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in [INSERT NUMBER OF SAMPLES DETECTED] samples collected and this is a warning of potential problems. If human pathogens are present, they can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

(2) Health effects language to be used when any routine or repeat sample is fecal coliform positive or E. coli positive:

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

(3) Health effects language to be used when notice was triggered by an event other than a coliform-positive sample, including where required monitoring

and analysis or flushing and disinfection was not conducted and where water was boarded from a watering point that has not been approved by FDA or was not otherwise determined to be safe in accordance with procedures specified in § 141.804(b)(6):

Because [REQUIRED MONITORING AND ANALYSIS WAS NOT CONDUCTED], [REQUIRED DISINFECTION AND FLUSHING WAS NOT CONDUCTED] [WATER WAS BOARDED FROM A WATERING POINT NOT APPROVED BY FDA], or [other appropriate explanation], we cannot be sure of the quality of the drinking water at this time. However, drinking water contaminated with human pathogens can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems. This water may be used for hand washing, but not for drinking, food or beverage preparation, or teeth brushing.

§ 141.806 Reporting requirements.

(a) Reporting of the development of the coliform sampling plan and the operations and maintenance plan and coliform sampling frequency.

(1) The air carrier must report to the Administrator that they have developed the coliform sampling plan required by § 141.802 that covers each existing aircraft water system as well as report the frequency for routine coliform sampling identified in the coliform sampling plan by [DATE 6 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**]. The air carrier must report to the Administrator that they have developed their operations and maintenance plan required by § 141.804 by [DATE 6 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**];

(2) For each new aircraft meeting the definition of an aircraft water system, which becomes operational after promulgation of the ADWR, the air carrier must report to the Administrator that they have developed the coliform sampling plan required by § 141.802 as well as report the frequency for routine coliform sampling identified in the coliform sampling plan within the first calendar quarter of initial operation of the aircraft. The air carrier must report to the Administrator that they have included the aircraft's water system in the operations and maintenance plan required by § 141.804, and indicate the routine coliform sampling frequency for the aircraft, within the first calendar quarter of initial operation of the aircraft.

(b) The air carrier must report the following information to the Administrator:

(1) A complete inventory of aircraft that are public water systems by [DATE 6 MONTHS AFTER FINAL RULE IS PUBLISHED IN THE **Federal Register**]. Inventory information includes:

(i) The unique aircraft identifier number;

(ii) The status of the aircraft water system as active or inactive;

(iii) The type and location of any treatment equipment installed on the water system; and

(iv) Whether aircraft water can be shut off and the extent to which it can be made inaccessible to the passengers and crew.

(2) Changes in aircraft inventory no later than 10 days following the calendar month in which the change occurred. Changes in inventory information include:

(i) The unique identifier number for any new aircraft, or any aircraft removed from the carrier's fleet;

(ii) Change in status of any aircraft water systems (active to inactive or vice versa); and

(iii) Type and location of any treatment equipment added to or removed from the water system.

(3) All sampling results no later than 10 calendar days following the monitoring period in which the sampling occurred. The monitoring period is based on the monitoring frequency identified in the coliform sampling plan required under § 141.802.

(4) All events requiring notification to passengers and crew and non-routine disinfection and flushing must be reported within 10 days of the event triggering the notification or disinfection and flushing requirement (*e.g.*, notification of positive sample result by laboratory), including an indication of whether required notification was provided to passengers and/or crew.

(5) The air carrier must report to EPA within 10 calendar days the failure to comply with the monitoring or disinfection and flushing requirements of this proposed regulation.

(c) The air carrier must provide evidence of a self-inspection to the Administrator within 90 days of completion of the self-inspection required under § 141.808(b), including an indication that all deficiencies were addressed in accordance with § 141.808(c). The air carrier must also report to the Administrator within 90 days that any deficiencies identified during a compliance audit conducted in accordance with § 141.808(a) have been addressed. If any deficiency has not been addressed within 90 days of identification of the deficiency, the report must also include a description of the deficiency, an explanation as to why it has not yet been addressed, and a schedule for addressing it as expeditiously as possible.

(d) All information required to be reported to the Administrator under this subpart must be in an electronic format established or approved by the Administrator. If an air carrier is unable to report electronically, the air carrier may use an alternative approach that the Administrator approves.

§ 141.807 Recordkeeping requirements.

(a) The air carrier must keep records of bacteriological analyses for at least 5 years and must include the following information:

(1) The date, time and place of sampling, and the name of the person who collected the sample;

(2) Identification of the sample as a routine, repeat, follow-up or other special purpose sample;

(3) Date of the analysis;

(4) Laboratory and person responsible for performing the analysis;

(5) The analytical technique/method used; and

(6) The results of the analysis.

(b) The air carrier must keep records of any disinfection and flushing for at least 5 years.

(c) The air carrier must keep records of a self-inspection for at least 10 years.

(d) The air carrier must maintain sampling plans and make such plans available for review by the Administrator upon request, including during compliance audits.

(e) The air carrier must maintain aircraft water system operation and maintenance plans in accordance with FAA requirements; and make such plans available for review by the Administrator upon request, including during compliance audits.

(f) The air carrier must keep notices to passengers and crew issued as required by this subpart for at least 3 years after issuance.

§ 141.808 Audits and inspections.

(a) The Administrator may conduct routine compliance audits as deemed necessary in providing regulatory oversight to ensure proper implementation of the requirements in this subpart. Compliance audits may include, but are not be limited to:

(1) Bacteriological sampling of aircraft water system;

(2) Reviews and audits of records as they pertain to water system operations and maintenance such as log entries, disinfection and flushing procedures, and sampling results; and

(3) Observation of procedures involving the handling of finished water, watering point selection, boarding of water, operation, disinfection and flushing, and general maintenance and self-inspections of aircraft water system.

(b) Air carriers or their representatives must perform a self-inspection of all water system components for each aircraft water system no less frequently than once every 5 years.

(c) The air carrier must address any deficiency identified during routine compliance audits or self-inspections within 90 days of identification of the deficiency or where such deficiency is identified during extended or heavy maintenance before the aircraft is put back into service. This includes any deficiency in the water system's design, construction, operation, maintenance, or administration, as well as any failure or malfunction of any system component that has the potential to cause an unacceptable risk to health or that could affect the reliable delivery of safe drinking water.

§ 141.809 Supplemental treatment.

(a) Any onboard drinking water treatment units installed onboard existing or new aircraft must be acceptable to FAA and FDA; must meet the applicable NSF/ANSI Standards; and must be installed, operated, and maintained in accordance with the manufacturer's plans and specifications and FAA requirements.

(b) Water treatment and production equipment must produce water that meets the standards prescribed in this part.

§ 141.810 Violations.

(a) An air carrier is in violation of this subpart and must provide notification to passengers and crew onboard any aircraft it owns or operates for which any of the following occur:

(1) It fails to disinfect and flush in accordance with §§ 141.803 and 141.804.

(2) It fails to monitor for coliforms in accordance with § 141.803.

(3) It fails to perform any of the requirements in accordance with § 141.803(c).

(4) It has one or more fecal coliform positive or E. coli positive sample in any monitoring period (routine and repeat samples are used in this determination).

(b) An air carrier is in violation of this subpart when for any aircraft water system it owns or operates any of the following occur:

(1) It fails to provide notification to passengers and crew in accordance with § 141.805.

(2) It fails to comply with the reporting and recordkeeping requirements of this subpart.

(3) It fails to conduct a self-inspection or address a deficiency in accordance with § 141.808.

(4) It fails to develop a coliform sampling plan in accordance with § 141.802, or fails to have and follow an operations and maintenance plan, which is included in a FAA approved or accepted program in accordance with § 141.804.

[FR Doc. E8–7035 Filed 4–8–08; 8:45 am]

BILLING CODE 6560–50–P