UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 12 2008

OFFICE OF
WATER

MEMORANDUM

SUBJECT: Request for Recommendations from the Science Advisory Board Drinking Water Committee on the Proposed Aircraft Drinking Water Rule

FROM: Cynthia C. Dougherty /s/
Director, Office of Ground Water and Drinking Water

TO: Resha M. Putzrath, Ph.D., DABT
Designated Federal Officer
EPA Science Advisory Board Staff Office (MC- 1400F)

This request is for the Science Advisory Board (SAB) Drinking Water Committee (DWC) to provide recommendations on challenges related to the proposed Aircraft Drinking Water Rule (ADWR). Specifically tailored to aircraft public water systems, the proposed ADWR incorporates the applicable requirements from the Total Coliform Rule, the suite of Surface Water Treatment Regulations, and the Public Notification Rule. EPA published the proposed ADWR on April 9, 2008.

The purpose of this action is to:

- Present EPA's proposed Aircraft Drinking Water Rule; and
- Gain recommendations on addressing some of the challenges specific to aircraft public water systems.

Attached is the charge to the SAB's Drinking Water Committee that identifies issues and questions we would like the board to address. The charge also includes background information on the need for proposing a new rule, which provides a feasible way for aircraft public water systems to comply with the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulations (NPDWRs). If you need additional information or have questions pertaining to any aspect of this notice, please call me or have your staff contact Stephen Heare 202-564-3751 or Richard Naylor 202-564-3847.

Attachments

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Science Advisory Board, Drinking Water Committee
Charge on Proposed Aircraft Drinking Water Rule

The Environmental Protection Agency (EPA), Office of Water, seeks advice from the Science Advisory Board (SAB) Drinking Water Committee (DWC) to address challenges specific to aircraft public water systems 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 the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulations (NPDWRs).

Background

In 2004, the Environmental Protection Agency (EPA) found all onboard aircraft water systems to be out of compliance with 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 (domestically and internationally) 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). 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. 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. Subsequently, EPA proposed the Aircraft Drinking Water Rule (ADWR) on April 9, 2008 [see Attachment 1, 73 FR 19320-19348].

To date, EPA has placed 45 air carriers under Administrative Orders on Consent (AOC), which 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.

Under Section 1411, the classes of interstate carrier conveyances (ICCs) include aircraft, trains, buses, and water vessels. As a result, all ICCs that regularly serve water for human consumption to an average of at least 25 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. Further, aircraft public water systems are considered transient noncommunity water systems (TNCWS) (See 40 CFR 141.2). Additionally, aircraft public water systems are regulated as surface water systems because they are likely to board finished[1] 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.

An estimated 63 air carriers and 7,327 aircraft public water systems are covered by the proposed ADWR. The EPA, the Food and Drug Administration (FDA), and the Federal Aviation Administration (FAA) jointly regulate drinking water safety on air carriers (see Attachment 2: "Aircraft Water Supply and Transfer Chain"). 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. The proposed ADWR 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.

Potential Health Concerns of Interest Associated With Aircraft Water Systems

In 2004, EPA tested 327 aircraft of which 15% tested positive for total coliform. As of May 31, 2007, preliminary data from 15 of the 45 air carriers under AOCs, consisting of 2,316 aircraft, had a total coliform occurrence rate of 2.8% out of 7,812 routine samples.

The proposed ADWR assumed that only finished water is boarded on aircraft. 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 ICCs (21 CFR 1240.80). 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

[1] 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).

water system operation and maintenance plans, which include best management practices, air carrier training requirements, and periodic sampling of the onboard drinking water.

Elements of the Proposed Aircraft Drinking Water Rule

The proposed ADWR combines routine sampling for total coliforms, routine disinfection and flushing, best management practices, corrective action, public notification, oversight, and reporting and recordkeeping to ensure public health protection. In brief, the coliform monitoring frequency is determined by the frequency selected for disinfecting and flushing the aircraft public water system (see Table 1). The selected frequency option for each aircraft public water system will be incorporated into the Operation and Maintenance (O&M) Plan. The implementation of the O&M plan is enforced by rules under the Federal Aviation Association (FAA). The FAA-approved/accepted O&M plan serves as a primary oversight vehicle for ensuring routine compliance because air carriers are subject to severe penalties (e.g., fines, loss of operational certification) for noncompliance. In addition, EPA provides oversight through compliance audits that can be done at the discretion of the Regions.

Table 1: Routine Frequency for Disinfection & Flushing and Monitoring

Routine Disinfection & Flushing	**Routine Total Coliform Monitoring**
At least once per quarter	*Annually*
1 to 3 times per year	*Quarterly*
Less than once per year	*Monthly*

Charge Question to the Science Advisory Board, Drinking Water Committee

The Office of Water is proposing that SAB provide their recommendations to the charge by August 13, 2008.

As the Committee considers the charge question, it is asked to keep in mind feasible ways for aircraft public water systems to comply with the SDWA and the NPDWRs so that the requirements are implementable and ensure that safe and reliable drinking water is provided to aircraft passengers and crew.

EPA requests the SAB Drinking Water Committee to review the proposed ADWR and provide recommendations to inform its decision on the following priority area:

1. *Statistical Sampling*: 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. The proposed ADWR requires corrective

action based on monitoring results for each individual water 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 asks for SAB's recommendation on: (1) the use of statistical sampling methodologies, specifically on what type of monitoring scheme would allow a statistical sample to be representative of the whole fleet, and 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; and (2) if allowed, what should be the statistical sample occurrence triggers for total coliform and/or E.coli/fecal coliform that would require follow-up action in the entire fleet, and what should the follow-up action entail.**

Potential Additional Work

Time permitting, EPA request recommendations on the following subject matters:

2. *Temperature of Sample Taps*: In the proposed ADWR, routine monitoring includes taking a total coliform sample from the galley tap and a lavatory tap. In some aircraft, the only sampling point in the galley is the coffee maker and/or hot water tap that is hard-wired and cannot be adjusted. The proposed ADWR 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 asks for SAB's recommendation on: (1) whether sampling should only be limited to cold taps when they are available; and (2) if a cold tap is <u>not</u> available in the galley, should the air carrier measure and provide the sample temperature to EPA to provide some indication of whether the temperature achieved is high enough to alter the microbiological results.**

The following attachments have been included to facilitate the SAB discussions:

1) Attachment 1= Proposed Aircraft Drinking Water Rule
2) Attachment 2= Aircraft Drinking Water Supply and Transfer Chain