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Airplane Water Regulations

Having just got off a flight a few hours ago, a short news story about water on airplanes caught my eye. I recall hearing about an issue with airline water some time ago and thought it was all dealt with and there was no further concern. I guess I was wrong.

The article quoted Mr. Tom Skinner who is the EPA's chief enforcement officer. He explained that over the last six months the EPA has been sampling water from more than 300 airplanes, both foreign and domestic. One out of seven planes tested did not meet federal standard for bacteria like coliform and E. coli, which are often associated with human or animal feces. (What a dumb word, not that I have a better one that can be used clinically, but it just sounds stupid). Ingestion of such bacteria can cause food poisoning-like symptoms and while there have been no reports of such issues, Skinner thinks that it is appropriate to warn passengers with compromised immune systems, cancer patients, pregnant women and children. And these little bacteria critters aren't croaking when used to make coffee or tea. They are still swimming around in your cup, doing the backstroke and having a lively bacteria party.

Water onboard an airliner is used in a variety of ways. These include not just the preparation of coffee and tea, but reconstitution of dehydrated foods, brushing teeth in the lavatory, hand and face washing in the lavatory, cleaning of utensils and work areas, etc.

Generally, the drinking water in an airplane can be contaminated from a number of sources, but generally it breaks down to four major sources:

1) The source of water coming into the airport
Given that flight allows long distances to be traveled, the source of water into an airport varies. While the water in the United States may be fine, these planes travel to faraway places where the water may not be of the same quality. Once bacteria is introduced into the airports water system, the transfer point and the planes water system, those wily organisms (like Elmer Fudd's famous sayings in any vintage Bugs Bunny Looney Tune cartoon, "That wily waskalie wabbit") can hide in lots of places...

2) The airport water system which includes the distribution system of piping or trucking the water to the airplane
The airport's water system should replicate the municipal/public water system to a great degree, but maybe in some places that should be avoided and be more state-of-the-art. But again, it may not depend just on where the airport is located, but the age of the systems, their components, their maintenance,

etc. (An airport using Flint, Michigan water may not have bacteria, but with the lead content it may weigh more than clean water – you think?) There is a need to prevent cross contamination between the potable water and sewage, and unfortunately, there is no worldwide standard to prevent this from occurring. Implementation of programs to prevent such cross contamination and assuring that backflow preventions are in operation requires a rigorous schedule of observation and repair. Add into this calculation that part of the airports' distribution system may include trucks, which pose their own risks that need to be tended to.

3) The transfer point, where the water is physically transferred into the airplane

At this point there are many areas for contamination to occur. Common equipment used to transfer water includes, but is not limited to, piping, hoses, potable water cabinets (not to be confused with a water closet, but basically a cabinet that contains a roll out hose), bowsers (a tank truck, not a four legged furry animal or a member of Sha Na Na – most of you may be too young to remember that, but Google it), tanks, refillable urns and jugs and hydrants. All such items should be properly designed, built, used and maintained. Simple things like keeping a hose nozzle from dragging on the floor must be a regimented procedure. (Go to the head of the stupid line and don't collect anything close to $200.00).

4) The aircraft water system, which includes tanks, pipes and even urns used to make hot beverages (OK, tepid beverages)

On board the areas of concern involve the filler ports, water tanks, piping, treatment equipment and plumbing. Tanking should be designed to empty completely, so that all the rotten water can be dumped and maximum contact with disinfectants can be obtained. Different planes hold different amounts of water obviously, but to give you a range, an Airbus 380 (double-deck, wide-body, four-engine jet airliner) holds about 600 gallons of water. A Boeing 737 (twinjet narrow-body airliner) holds about 40 gallons. Piping has to be designed as such, so that it is completely separated from lavatories just in case. (The "just in case" worries me.) Filters used to neutralize chlorine have to be changed as required, which then renders the water susceptible to bacteria growth so the frequency of change must be carefully watched.

So who is watching all this? Believe it or not our good friends at the EPA via (get this) the Aircraft Drinking Water Rule (ADWR). Actually when you think about this it makes sense that the EPA would be involved as they are responsible for carrying out the dictates of the Safe Drinking Water Act, which is designed for fixed facilities, as flying is an interstate commerce issue within the purview of the federal government. The ADWR is rather new, coming into its own in 2008, almost 105 years since Orville and Wilbur took to the air at Kitty Hawk. (But they didn't have time to take a drink or use the restroom.)

The rule, like every other rule tumbling from EPA is complicated, but to summarize it here are the basic requirements:

A. Air carriers must develop and implement an O&M (Operations and Management) plan for each aircraft water system in active service. That plan must be included in a Federal Aviation Administration-accepted aircraft operations and maintenance program.

B. Air carriers must develop a coliform sampling plan covering each aircraft owned or operated by the carrier. Sampling plans are developed for each new aircraft by the end of the calendar quarter in which the aircraft is placed in service.
C. Air carriers must routinely disinfect and flush aircraft systems at the frequency recommended by the water system manufacturer or, if not specified by the manufacturer, may choose from one of four options.
D. All aircraft water systems sample for total coliform bacteria according to the frequency and procedures described in the coliform sampling plan. The routine sampling frequency is based on the routine disinfection and flushing frequency—the more often aircraft water systems are disinfected, the less often it is required to monitor for coliform. (Why?)
E. If corrective disinfection and flushing is opted or required, air carriers must follow the procedures in their O&M plans. (When in doubt, follow the rules). Unscheduled flight disruptions to perform corrective disinfection and flushing can be minimized by shutting off the water or preventing the flow of water to the taps. Before allowing unrestricted access to the aircraft water system, a complete set of two follow-up samples must be collected and submitted for analysis after the disinfection and flushing event if triggered by a total coliform-positive sample, and must be reported as total coliform-negative if triggered by an E. coli-positive sample. (With planes hopscotching hither, dither and yon, I am skeptical as to how this is tracked, or if it is tracked or what track is it on).
F. Each aircraft water system must be inspected by the air carrier at least every 5 years according to the procedures in their O&M plans. (In 5 years bacteria could morph into some kind of alien creature far beyond Ray Bradbury's imagination.) At a minimum, the self-inspection procedures for an aircraft water system must include inspection of the storage tank, distribution system, supplemental treatment, fixtures, valves, and backflow prevention devices. Any deficiencies detected must be addressed, and any deficiency that is unresolved within 90 days of identification of the deficiency must be reported to EPA. (So let's report and fly away?)
G. Notification of passengers and crew onboard the aircraft is required when:
    - Any sample results are total coliform-positive or E. coli-positive.
    - An air carrier fails to perform required routine disinfection and flushing.
    - An air carrier fails to collect required samples.
    - An air carrier board's water from a watering point that does not meet FDA regulations, EPA standards, or is otherwise determined to be unsafe.
    - EPA, the air carrier, or crew determines public notification is necessary to protect public health.
    - Notice to passengers need not be provided if the water is shut off, if flow of water to taps is prevented, or if water is supplied only to the lavatory toilets and not the lavatory or galley taps.

Over the PA – "Ladies and Gentleman we are looking for a few passengers to give up their seats on this overly contaminated flight. If you are willing to do that we will give you 5 free bottles of Pepto-Bismol and your choice of any off-brand, over-the-counter, half-baked, totally natural, biotic treatment of digestive cramps meds."

So how is all this doing? Well here are some of the internet postings on the issue. Read them:

Dangerous contamination found in water on US planes

Airplane Drinking Water Is 'Frequently Contaminated': EPA Finds Coliform Bacteria in 12% of Plane Tap

Airlines' Experience Shows it is Your Immune System that Gets You Sick, Not the Virus or Bacteria

Why Airline Crews Skip The Coffee And Tea On Board - Forbes

So buy bottled water before you board or order a gin and tonic (the gin will kill some bugs and brain cells). Don't order coffee or tea – stop at Starbucks, Peet's, Coffee Bean and while you are there grab me a scone. Don't ask for a cup of water either. Instead, ask for a cup of ice and let it turn into water because ice is delivered by an outside vendor.

Who'd have thunk the friendly skies were this yucky.