



FEDEXMEC
Air Line Pilots Association, Int'l

Environmental Standards Committee

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From: Capt. Bob Avery, Environmental Standards Committee Chairman

Newsletter #4

- What we can do to help ourselves - a wake up call
- Toilets: 'Tis the season...
- More about hand soap and water
- More on oxygen masks
- B-777 contaminated air
- How did we get here and how do we get out?
- Our ALPA goal

Fellow Pilots,

The response to [ESC newsletter #3](#) was overwhelming. Many pilots are concerned, to say the least. We should be because this issue is more important than our money. This is our personal health and the financial security of our families who depend on our careers for their wellbeing.

Many have asked—*what do we do now?* This newsletter is about helping ourselves. Some information is repeated from [ESC newsletter #3](#), but I believe it's worth repeating.

First, some background info that creates the major point of this newsletter. When the FedEx Aircraft Cleaning Program (ACP) was established in mid-2013, Flight Ops leaders put out communications to the crew force asking for PORs on aircraft cleanliness issues and promising that pilot input was vital to the success of the program. They were right. Aircraft cleanliness PORs increased 15-fold from the January–March 2013 period to the July–September period that same year—a groundswell that took everyone by surprise. With PORs describing specific issues on specific aircraft, Tech Ops was able to focus resources where they were needed. Flight Ops, as co-leader of the ACP team at that time, was able to monitor issues and engage if issues were not properly addressed. When innovation was required, the ACP team was usually able to come up with a solution. Under this system, much was accomplished in a highly effective manner. Hard data in the form of PORs and other supporting research won the day.

Unfortunately, this highly successful system was later abandoned when pilots—the customers, were removed from the ACP team. This setback put pilots back in the same situation that created the need for the ACP in the first place. Based on sound management principles and past proven success, the ESC firmly believes that combining aircraft cleaning and environmental issues under a permanent project co-lead by Tech Ops and Flight Ops is the most logical, effective, and sustainable approach to resolving issues that have plagued our crew force for decades.

The point of this background info and the lesson to be relearned: Changes do not happen at FedEx without thorough documentation and hard data to back the need for change. That's not criticism, but acknowledgement of a sound business practice. Documentation and data are required to drive change on the issues the ESC has engaged. *No data = no problem = no change.*

Insite (formerly POR)

Reporting issues through Insite is the first vital step. Without Insite reports, efforts in cleaning up our work environment will be greatly diminished. Major changes being proposed by the ALPA ESC through our MEC, no matter how logical and necessary they seem, will never get traction without broad-based pilot support.

Many ask: *"Does the Company pay attention to pilot-generated reports and will anything be done?"* Whether you're an optimist (*they can only fix what we report*) or a pessimist (*why bother—nobody is listening*), Insite is vital. I happen to be an optimist based on my former work with the FedEx ACP. But assume nobody is listening and discrepancies are not resolved. In this case, Insite tickets are just as important because they build a database of unresolved issues that can later be used to create change through other channels. Optimist or pessimist—Insite tickets and a history of data are vital to changing hygienic and health conditions in our work environment.

What should we report?

- Stinking toilets and overdue blue water servicing
- Toilets that do not properly flush
- Lack of hand soap on aircraft with potable water
- Fume events

This is a starter list. More to follow in future newsletters.

Why are FedEx toilets so malodorous when passenger airliners are not?

In order to present the argument on how we help, this newsletter will focus on a specific issue near and dear to our hearts—aircraft toilets. The following was learned while working with the manufacturer of our toilet blue water and from other sources. This information provides details on toilet mechanics to help understand how issues are created. Next are examples suggesting how you can help eliminate filthy and malodorous toilets. Examples should be applied across the board to all other hygiene and health issues in our work environment. **WARNING:** This is more than you wanted to know about aircraft toilets.

The main components of a liquid flush toilet are the seat, shroud, toilet bowl, tank top, flush system and waste tank. [Here is a technical diagram if you want a visual.](#) The small waste tank is

attached to and sets immediately below the toilet bowl, just behind the flapper valve. (The B-777 has a vacuum toilet, which is different than the rest of our fleets.) The normal blue water charge for an Airbus and B-777 is about 2.5 gallons of blue water. Other aircraft hold slightly more.

Unlike ground-based toilets, aircraft toilet waste does not go away when flushed; rather, it continues to stir in the small waste tank partially filled with chemically charged blue water. Chemicals engineered to kill bacteria and other pathogens and eliminate foul odor work well when blue water is fresh but begin to break down and become ineffective when human waste is introduced, or over time even without human waste.

Besides being used several times per day by flight crews and jumpseaters, it was documented by the FedEx ACP team that our toilets are used by ramp personnel when they are working in and around the aircraft (even though they are instructed not use aircraft toilets). A considerable amount of human waste can accumulate in the small waste tank and blue water can rapidly become ineffective after several days without servicing.

Aircraft toilet tanks are the breeding ground for E. coli and fecal coliform. These and other bacteria can cause infections and sickness and have a foul smell. Organic growth and tar-like buildup is created by solid waste in the toilet tank and organic and inorganic buildup in the pump, pipes, valves and waste tank walls. Organic growth is also created outside the toilet—on the seat, shroud and floor (bad aim/low manifold pressure) and all other surfaces where blue water aerosol settles after a toilet flush. Mineral scaling is created by urine. Urine generates ammonia, which is foul smelling and corrosive. As waste buildup and organic growth increase, bacteria and other pathogens multiply and foul odors increase.

When an aircraft toilet is flushed, whatever matter is suspended in the blue water can become airborne via aerosol created by the flush. When this happens, you can inhale the particulate matter, and particulate matter is left behind on all surfaces where the aerosol settles and evaporates. The good news is that if the blue water is fresh and active, pathogens have been killed and particulate matter carried in the blue water will not likely threaten your health. If the blue water has been in the tank for days, and chemicals are breaking down, all bets are off.

After 24 hours and when human waste is deposited, blue water begins to chemically break down and becomes less effective in killing bacteria, other pathogens, and odor, according to the manufacturer. When breakdown occurs, E. coli and fecal coliform from solid waste and ammonia created from urine are able to multiply. Bacteria thrive in warm, wet conditions. In warm weather, and especially when unserviced toilets are buttoned up for layover on a hot ramp, bacteria can grow rampant and malodorous conditions can become unbearable. Besides being disgustingly unpleasant, these conditions are unhealthy, unsanitary, and can cause illness, according to the World Health Organization.

The only way to prevent or eliminate pathogens and malodors in aircraft toilets is to eliminate the source. Source elimination is accomplished through three distinctly different procedures—cleaning, sanitizing, and odor control. All three are vital to the lavatory housekeeping process. Cleaning means complete removal of dirt and waste using physical means and appropriate

detergent. Sanitizing is the elimination or reduction of the number of microorganisms to a safe level. Odors are controlled through cleaning and sanitization and with fragrances in the blue water.

The following three procedures are industry-standard practices for cleaning, sanitizing, and odor elimination in airliner lavatories.

First, toilets must be “soaked,” meaning deep cleaned, by filling and soaking the toilet tank, pipes, valves, and pump with a special chemical for 6-12 hours. Soaking removes all organic growth, tarlike buildup, and scaling and eliminates odor. The procedure, normally accomplished every 60-90 days at other airlines, allows blue water to remain chemically effective longer. Every passenger airline in the world soaks aircraft toilets on a regular basis. FedEx Tech Ops established soaking procedures in 2015 after the need was identified by the FedEx ACP team. Before 2015, toilets had never been soaked at FedEx. The new FedEx procedure is now scheduled during aircraft heavy check, which is approximately once per year. Once per year is a big improvement over never, but still falls far short of industry-standards. And, the new FedEx toilet soaking procedure is not mandatory during heavy check. Some FedEx aircraft toilets have yet to be soaked after the toilet soaking procedure has existed for 1.5 years.

Second, blue water should be changed as often as necessary, depending on the volume of toilet use and other factors, such as warm weather. Passenger carriers with high volume use service toilets after every flight. For FedEx’s low-volume use, the chemical manufacturer recommends a blue water change once every 24 hours for reasons previously mentioned. FedEx Tech Ops’ standard for changing blue water is once every three days. In reality, toilets sometimes go un-serviced for days more. The three-day policy, which is contrary to the manufacturer recommendations, exists to save money. Not providing toilet servicing from an airport vendor at an outstation is also a money saving policy. The cost of blue water for one toilet, if supplied from FedEx inventory, is about \$12. The cost if supplied by a vendor at an outstation is about \$40.

Finally, toilet seats, shrouds, countertops, walls and the floor must be routinely cleaned and sanitized on an appropriate schedule. Passenger carriers clean and sanitize toilet interiors after every flight. We don’t need this frequency at FedEx, but it is obvious we need a frequency higher than we currently have.

FedEx offices are cleaned once per day and office toilets are cleaned and sanitized twice per day. It seems apparent that current FedEx aircraft toilet cleaning and sanitization procedures are inadequate and are the main cause of the foul and unsanitary toilet issues on many of our aircraft.

We all recognize and accept the obvious differences between our work environment and the typical office environment. But dirt, grime, bacteria, other pathogens and disgusting malodor should not be a difference we are expected to accept. Sacrificing employees’ personal hygiene by eliminating the most basic of cleanliness and sanitization practices for the sake of saving money is not tolerated in any other FedEx work environment, and it should not be happening in ours.

Here are two real-world examples with suggested ways to handle unacceptable toilet situations:

Toilet servicing: [The Lavatory Service Record](#) (LSR) is located in a multi-pocket grey pouch on the inside or outside wall of the toilet. You will find a date indicating when the toilet was serviced. The LSR only reports blue water change, not cleaning and disinfecting of toilet shroud and seat or LAV interior.

[This Lavatory Service Record](#) (LSxR) is from one of my recent flights. The lavatory had not been serviced for four days (16-19 May) and later had not been serviced for six days (20-25 May) preceding my flight. It was rancid. I called for a lavatory service immediately upon entering the cockpit. A service cart appeared under our aircraft in less than 15 minutes. I took a photo of the LSR with my FPR to document the dates, then later submitted the photo with an Insite ticket to document the unacceptable amount of time between toilet servicing.

Toilet mechanical failure: When you check the LSR upon boarding the aircraft, flush the toilet to make sure it's working properly. At the very top of the toilet bowl, under the plastic shroud, there is a flush nozzle ring designed to distribute blue water 360 degrees to rinse human waste out of the bowl. When the flush nozzle ring is clogged or broken and blue water only flows over a portion of the bowl, human waste is not being removed from the unrinsed portion of the bowl. Besides being disgusting and unsanitary, this is a mechanical failure that requires an AML write-up. Not documenting all aircraft mechanical failures was a recent Flight Ops hot topic driven by the FAA. Most importantly, Maintenance can only fix what we report as broken.

This was my AML entry for a recent flush ring issue:

Flush ring in toilet is clogged or broken. Blue water only rinses less than half the toilet bowl when toilet flushed. Human waste cannot be rinsed from toilet bowl. Toilet has foul smell. Flush ring needs to be fixed.

Here was the AML resolution sign-off one hour after the above AML entry was received by Maintenance:

LAV serviced by vendor. Pressure adequate to properly flush. OK for service at this time.

According to the AML resolution, the broken flush ring was fixed with a blue water change. Upon receiving the AML resolution by e-mail, I submitted the original AML write-up and the AML resolution on an Insite ticket with this complaint:

Please see the attached AML write-up and sign-off resolution. The toilet flush ring was clogged or broken. The resolution was a blue water toilet service. This cannot fix the problem. That means the flush ring is likely still broken. I would like to open this original broken flush ring AML write-up. I believe someone needs to check the toilet to see if it works. The blue water must rinse 100% of the toilet bowl when the toilet is flushed. If it rinses less than 50%, as was the case with this toilet, human waste is never rinsed off of the unrinsed off of 50% of the toilet bowl. Besides being disgusting, this is unsanitary and unhealthy. Thank you for looking into this matter.

On June 21, this AML resolution was sent to me:

Removed and replaced LAV flush ring in Ref to MD-10 AMM 38-31-01-2. LAV flush checks normal. A/C OK for service.

One small victory for the team!

If we will simply take the time to document the issues, then follow up on resolutions, we can make a huge dent in fixing what's wrong with hygienic and health issues in our work environment. We must be proactive and help ourselves. Look out for your crew and the next crew by timely and accurate AML reporting of dirty, un-serviced, malodorous or broken toilets. Guaranteed: If it's not reported, it will not be fixed. Submit an Insite ticket because *no data=no problem=no change*. If we are unwilling to document reoccurring failures, we will never be able to resolve the issues. If reporting does not work, we need the situation well documented so other alternate channels can be engaged.

More about hand soap

We see signs in FedEx hallways telling us how important it is for our own health and the health of others to frequently wash our hands with soap and water. Yet soap and water was removed from 75 percent of our aircraft to cut costs. Hand washing is even more important for pilots who do not have the luxury of using toilets that are cleaned, sanitized and serviced daily, and who are exposed to toxic particulate matter ([described in newsletter #3](#)) on everything they touch in their work environment.

Hand sanitizers are no substitute for soap and water, according to [this article by Purdue University](#). According to the Purdue article, *"In terms of the regulations regarding food services, the Food and Drug Administration says hand sanitizers may be used as a supplement but not as a substitute for hand washing."* Also, [see this article from the Minnesota Department of Health](#) explaining why hand sanitizers cannot be used in a food service area (which we have) or [this article from the Center of Disease Control and Prevention \(CDC\)](#) explaining why hand sanitizers may not be effective on dirty or greasy hands or might not remove harmful chemicals (such as toxic particulate matter in our work environment).

Our office (the cockpit), our toilet, and our food are confined to an area the size of a modest walk-in closet. Our hands become coated with toxic particulate matter ever-present in our work environment. We use malodorous aircraft toilets that are not frequently cleaned and sanitized and may not have been serviced for days. Then, we are forced to eat our catering with our bare hands without the opportunity to first wash with soap and water. How can this inconceivable scenario be justified by anyone and how can it possibly be allowed it to continue?

Because non-pilots are protected by OSHA, this cannot happen to any other employee group at FedEx, or any other company in America for that matter. It should not be happening to us.

Besides the lack of soap and water on non-potable water aircraft, hand sanitizer is frequently stocked on potable water aircraft and soap is not, even though Tech Ops standards call for potable water aircraft to be supplied with liquid hand soap. This shortfall was identified in early 2013 by the FedEx Aircraft Cleaning Program and continues to exist today. For whatever reason, the team stocking the lavatories continue to make this mistake. It is not uncommon for long

international flights to block out with no hand soap onboard.

The solution to these issues—proposed by the FedEx Aircraft Cleaning Program team in early 2013, is simple, logical and inexpensive. Today, every aircraft has a black rubber base attached to the lavatory shelf near the wash basin. On all aircraft, either hand soap or hand sanitizer is screwed into the base (but often the wrong one for the aircraft configuration). By simply adding a second base, and then instructing the lavatory restocking team to put one each of liquid hand soap and hand sanitizer in every lavatory, pilots always have what they need and can chose which to use. Adding one base to each aircraft and the problem is solved. If FedEx will not recharge the potable water systems and give us the most basic of industry standard hygienic considerations, we can use bottle water.

More on oxygen masks

According to FedEx simulator maintenance technicians, crew oxygen masks in our simulators are never cleaned internally by FedEx. When a simulator O2 mask breaks, the entire unit is removed and shipped away for repair, but this is a rare occurrence. There is a chance that broken simulator masks are cleaned by the repair station, but this has not been confirmed. We know O2 masks on our aircraft (behind the microphone in the regulator and hose attachment area where you cannot see or clean) are only cleaned once every six years and are polluted with dried mucus, food particles, unknown particulate matter and pathogens. We can only guess the condition of a simulator mask that can go years with no internal cleaning. We know that OSHA does not protect pilots on board the aircraft they are flying, but we do not know if pilots are protected in a simulator. This is being investigated.

How we help ourselves

As suggested in [ESC newsletter #3](#): Captains should check the lavatory upon boarding the aircraft. First officers should do it as a backup when preflighting the cabin. The following recommended checks will take less than 20 seconds:

- Check the LSR. If the toilet blue water has not been serviced in a reasonable time (you be the judge) or if the toilet stinks, immediately call Maintenance for a toilet service. In MEM, IND, and most major hubs, a servicing cart will usually appear within 15 minutes. If you are on a ramp with no toilet service capability, help the next crew and make an AML entry so it will be accomplished at the first opportunity.
- Flush the toilet to make sure it's working properly. If the flush nozzle ring is not rinsing the entire bowl, it is not rinsing all human waste from the bowl. This is a contributor to bacteria growth and malodor and is unsanitary and potentially unhealthy. Be specific and use the term "flush nozzle ring" in describing the issue in the AML entry. Check your AML resolution e-mail later to see that the issue was fixed. If not, submit an Insite ticket.
- Check for liquid hand soap if you are on a potable water airplane. This is especially important for personal cleanliness and sanitization on long flights. A quick radio call to Maintenance will usually resolve the issue quickly. Submit an Insite report that will help us all by creating data critical to change.

Fume events

If you missed the important discussion on fume events and contaminated air, please read [ESC newsletter #3](#). This is a reminder that fume events require an AML entry because they are caused by mechanical irregularities or failures. A flight safety report is also required per FOM 2.15 (but consider an ASAP report to make sure the FAA has the data required for their congressionally mandated database). Fume events and air contamination are serious, health threatening issues. Documentation is critical for all the reasons previously mentioned.

Contaminated Air

Recently, I exchanged an email and phone call from a female B-777 first officer. She complained that every time she slept in the B777 crew rest module, she gets a headache, watering nose (she describes as sniveling mess) accompanied by coughing and congestion. She said on more than one occasion the captain accused her of flying while sick and she needed to explain it only happens after being in the crew rest bunk. She says this pop-up illness subsides a few hours after leaving the bunk, then completely disappears within 24 hours. She asked me for any help in understanding what is going on. Other pilots have made similar complaints regarding the B-777 crew rest bunk.

Following my conversations with the first officer, I flew (jumpseat) on three B-777 aircraft and inspected the bunk area. On all three aircraft, I found the same situation that I suspect could be causing her symptoms. The main air exhaust vent in the bunk area is heavily coated with the fine dusty material. You can see the vent located under the bottom bunk in this [photo](#) and a close-up of the vent in this [photo](#). Samples swabbed out of the vent with q-tips are shown [here](#). What ever is in this dusty material cannot be good for anyone with allergies or respiratory sensitivities while sleeping in the crew rest bunk.

You would never see an air vent in this condition on a passenger airliner. This is probably something that can be corrected with basic housekeeping procedures. These photos and story were sent to Flight Ops senior management and we are waiting for feedback.

How did we get here and how do we get out?

I believe NASA gave us the answer after investigating the Challenger Space Shuttle disaster. NASA explained a root cause—*the normalization of deviance*, defined as *“the gradual process through which unacceptable practice or standards become acceptable. As the deviant behavior is repeated without catastrophic results, it becomes the social norm for the organization.”* If you have never seen this [NASA presentation](#) on the subject, it’s fascinating and well worth your time.

Pilots face hygiene issues and health threats every day at work that none of us—pilots or managers—would ever expose our family to. Health and safety threats and issues in our workplace could never exist in any FedEx office environment, thanks to OSHA, and should not exist for us, based on health and safety policy promises by FedEx executive leadership. Not only do these unacceptable conditions exist, we have come to accept them.

We can only reverse previously accepted social norms with pilot participation. The ESC, even with 100 percent backing of our MEC, cannot effectively fight this battle alone. We need your help beginning with first steps presented in this newsletter. **If pilots will not participate we send one**

of two messages: Either nothing is wrong or we don't care. Both messages will produce the same results. If it's not important to you, it will not be important to management.

Our ALPA goal

On March 31, the ESC delivered a detailed briefing to FedEx senior leaders, including FedEx Legal. The briefing and issues of concern were reported in [ESC newsletter #2](#). Next, the ESC appealed to Flight Ops management to put pilots back in the loop so we gain back some control of the environment we will spend our entire careers in. Here is the recap of the ESC proposal presented to FedEx leaders:

- Form and support a collaborative investigation committee, to include the ALPA ESC, that will research pilot work environment threats and issues in a meaningful way.
- Receive FedEx's commitment that any health and safety threats identified will be eliminated, or at least mitigated to the maximum extent possible. This would be consistent with FedEx executive leadership's safety and health policies outlined in the [ALPA ESC newsletter #3](#).
- Form and support a combined Aircraft Cleaning and Environmental Standards Program co-lead by the customer (pilots) overseeing quality control. Quality control is fundamental to any work process and the customer is always in the quality control loop. Such a program would be the most effective model for continually monitoring and improving hygiene and health issues in our work environment. This team concept proved highly successful in 2013-2015 under the FedEx Aircraft Cleaning Program before pilots were completely removed from the process.

FedEx pilots do not have OSHA to guard basic hygiene and health rights guaranteed by federal law to every other industry employee in America. We can only depend on FedEx senior leaders to provide an acceptable work environment. The MEC continues to anticipate Flight Ops management's favorable reaction to resolving hygiene, health and safety issues in our work environment.

What's next?

The ESC continues to receive e-mails, texts and phone calls from pilots relaying individual stories about illnesses they suspect are or were related to contaminated air or wearing the oxygen mask. According to credible technical, medical and research data, there is good reason to be suspicious. The next ESC newsletter will provide information on adverse health conditions reportedly caused by contaminated air in the airline industry. Additionally, we will offer information from medical, technical, and scientific subject-matter experts on suggested actions if you suspect you are experiencing ill health effects due to air contamination.

The ESC is coordinating with a well respected medical research establishment to create a FedEx pilot health survey. It is widely known that adverse health effects caused by air contamination, oxygen mask use, and other environmental factors are grossly underreported in the airline industry because pilots are generally unaware. Our goal is to obtain a realistic database on how frequently pilots experience fume events or suspect adverse health reactions due to bio threats in

our work environment. With data, change is possible.

Pilot feedback is critical to the success of this effort. Firsthand reports are a huge benefit for building our database. If you have a story, an opinion, a question, or a work environment issue you think should be addressed, please forward your comments to FedEx-ESC@alpa.org or call Bob Avery anytime.

About the FDX ALPA Environmental Standards Committee (ESC)

The ESC was established to foster acceptable hygiene and health environmental standards in our pilot workplace. The ESC mission is to research, document, report on, and positively impact health, safety, and hygiene related environmental threats and issues that exist on board the aircraft we fly. We will work in a diligent, responsible, and professional manner with a sharp focus on our reason to exist—guarding the health and wellness of every FedEx pilot, every day they fly.

[Review ESC newsletter #1 \(introduction of ALPA ESC Committee\)](#)

[Review ESC newsletter #2 \(report on March 31 ALPA briefing to FedEx\)](#)

[Review ESC newsletter #3 \(discussion of environmental issues and threats\)](#)

We live forever with the standards we accept today. Fly safe and fly healthy,

Capt. Bob Avery

Environmental Standards Committee Chairman

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