



FEDEXMEC
Air Line Pilots Association, Int'l

**Environmental Standards
Committee**

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From: Capt. Bob Avery, Environmental Standards Committee Chairman

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Bleed Air Contamination—AKA Fume Events

Bleed air contamination, also known as a fume event, can occur when potentially hazardous chemicals enter the bleed air system. The bleed air system supplies 100% unfiltered air from the engines to the cockpit via the aircraft ventilation system. Engine oil, hydraulic fluid, anti-icing fluid and other foreign substances can enter the bleed air system due to mechanical failures, mechanical irregularities or faulty design. Under certain conditions, these fluids pyrolyze (become decomposed through heating to a high temperature) and release toxic chemicals. Substances that are not toxic in their normal state can become highly toxic when pyrolyzed. Toxicants, especially those released by pyrolyzed engine oil and hydraulic fluid, can create a serious health threat. Exposure to unfiltered contaminated bleed air may result in acute respiratory, neurological, systemic, and/or psychiatric symptoms, according to a number of sources.

One recent scientific study addressing the hazards associated with exposure to contaminated bleed air states, *“Both acute and chronic exposures to neurotoxins and a wide range of thermally degraded substances were confirmed, along with a clear pattern of acute and chronic adverse effects. The latter were supported by medical findings and diagnoses, notably involving the neurological, neurobehavioral and respiratory systems.* The study concludes: *“A clear cause and effect relationship has been identified linking the symptoms, diagnoses and findings to the occupational environment. Recognition of this new occupational disorder and a clear medical investigation protocol are urgently needed.”* This paper—*Aerotoxic Syndrome: A New Occupational Disease?* can be view on the World Health Organization website from the link below.

The odor of dirty socks, moldy cheese, vomit, burning oil or chemicals is the primary indicator of a fume event. Fume events can occur under any circumstance but are most common during engine start and with power changes when sudden temperature and pressure changes allow engine oil to leak past seals and enter the bleed air system.

Most pilots have experienced these pungent odors multiple times during their career. Few have ever made a maintenance logbook entry or filed a Flight Safety

or ASAP report. The disconnect is due to the lack of training and education on the cause of fume events and the potentially adverse health consequences. FARs require pilots to report every mechanical failure and mechanical irregularity. There is no leeway. Lack of reporting fume events is an industry wide issue that has minimized the scope and seriousness of this issue.

Fume events are health threats with potentially serious consequences and should never be ignored. ALPA offers information and guidance for fume exposure and the following steps for airline pilots following airborne or flight deck exposure to smoke, contaminated bleed air, or non-visible gaseous fumes or odors:

- Call the ALPA Worldwide Accident/Incident Hotline at 202-797-4180. Collect calls accepted 24-hours/per day, 7 days/week.
- Contact the ALPA Aeromedical Office at 303-341-4435. If the office is closed, leave a message and expect a call when the office reopens.
- It is recommended that all pilots report smoke and/or fume events to ALPA using the [IATA Smoke and Fumes Reporting Form](#). This form **does not** replace ASAP reporting or an airline's mandatory reporting program. The form should be forwarded to EAS@alpa.org.
- If you or a crewmember becomes sick immediately following an event, or within two to three days thereafter, seek medical attention.
 - Print out and take a copy of the [Fume Exposure Health Care Provider Guide](#) to your health care professional(s) for their information

Note: The quick reference guide for health care providers has been published for purposes of general information and guidance under sponsorship of the U.S. government in cooperation with the University of California San Francisco Medical Center. ALPA assumes no liability for the contents thereof. Pilots with questions should contact ALPA's Engineering and Air Safety Department and /or the ALPA Aeromedical Office.

Fume or Smoke Event Resources

[Fume Exposure Health Care Provider Guide](#)

[IATA Smoke and Fumes Reporting Form](#)

[IATA Medical Guidance on Cabin Air Quality Events](#)

[Airline Pilot magazine, January-February 2017 \(pages 55-56\)](#)

IATA has developed a comprehensive form for reporting fume events. It can be found at: www.ALPA.org/FUME

Other related resources for review:

[Aerotoxic Syndrome: A New Occupational Disease? \(Susan Michaelis, Jonathan Burdon, C. Vyvyan Howard\)](#)

[Management of Exposure to Aircraft Bleed Air Contaminants Among Airline Workers—A Guide for Health Care Providers](#) (An expanded guide)

We have a lot of new pilots on the property that were not here when the last ESC newsletter was published in September 2016. We highly recommend that any pilot who has not done so, [go to the FedEx ALPA website and download or print the previous seven ESC newsletters](#) for your layover reading pleasure. Be informed. This is about your health and wellbeing, not to mention the long-term financial stability of your family.

About the FedEx ALPA Environmental Standards Committee

The ESC was established by the MEC 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 onboard our aircraft. We will work in a diligent, responsible, and professional manner with a sharp focus on our reason to exist—promoting health and wellness for every FedEx pilot, every day they fly.

Fly safe and fly healthy,

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