

## Medical Information Sheet

**Cabin Air Quality Smoke, Odor, Fume (SOF) Event:** The airplane cabin air consists of 50% air that comes from outside air that is pulled from engines into the air conditioning unit (Auxiliary Power Unit-APU) and 50% is recirculated air. This system is called a bleed air filtration system, and it is on all-American Airlines aircraft except for the B787. The 787 supplies air to the aircraft by avoiding the engines and taking air from outside the aircraft by two inlets and then fed to electric cabin air compressors (CACs).

**Cabin Air Contamination:** Cabin air contamination events, called smoke, odor, fume events (SOF), occur when the air from the outside flows through the engines and pulled into the air conditioning unit Auxiliary Power Unit (APU). That air then can mix with oil residue from the aircraft. These heated oils, lubricants, and fluids in the engine, when leaked into the cabin air supply, becomes contaminated. When this happens, you may notice a strange odor and/or physical symptoms. On occasion, there are reports of people seeing haze. Fumes that have contaminated the cabin from oil into the air supply system will not necessarily smell like oil fumes. People identify the odor as sometimes musty, dirty, wet, old cheese, rotten egg, heated garbage, burning plastic. Burning can be described as burning electrical, burning rubber, burning plastic, burning chemical, burning crayon, burning wax, burning food, burning fuel, burning sulfur, burning oil, burning exhaust, burning heater.

**Chemical Toxins:** Airborne toxins include a complex mixture of oil-based compounds, gases, and ultra fine particles. Exposures could include tri-cresyl-phosphate (TCP), Carbon Monoxide (CO), Ozone, Pesticides, Ethelene Glycol,

- **Tricresyl phosphates (TCP):** The chemical tri-cresyl-phosphate (TCP) is an organophosphate in engine oil, lubricants, and hydraulic fluids. It is a flame-retardant additive in oils. Exposure to this chemical is toxic and increases the risk of health illnesses, such as aero-toxic syndrome. Air contamination by this chemical is harmful. The only detection system on our aircraft is from flight attendants, pilots, maintenance, or ground workers who either smell the odor or exhibit symptoms. Tricresyl phosphates (TCP) are in BP2389 for the APU and BP2197 AA uses for engine oil, and tributyl phosphates (TBP) are in Skydrol 500-4 hydraulic fluid, which AA is used in aircraft systems. [TricresylPhosphatesDetection.pdf \(faa.gov\)](#)
- **Carbon Monoxide (CO):** Engine fumes from oil, hydraulic fluid, exhaust, and smoke can contain carbon monoxide gas. Exposure to carbon monoxide in flight can be severe. Symptoms of this contamination are called aero-toxic syndrome and can cause short term or long-term illness. The effects can be dizziness, headache, nausea, trouble breathing, abnormal taste, eye, nose, and throat irritation, rash, tingling, fatigue, reduced motor skills/cognitive deficiency. The effects of CO are more intense in-flight because of reduced oxygen environment. Even though CO clears from the body quickly, it still can cause short- or long-term symptoms such as dizziness, headaches, fatigue. [Carbon Monoxide | NIOSH | CDC \(Centers for Disease Control\)](#)
- **Ozone:** Ozone is a gas composed of three oxygen atoms and occurs in the Earth's upper atmosphere. Ozone is present in concentrations on aircraft in flight because of the presence in the atmosphere at

higher altitudes. Symptoms for ozone inhalation can be a cough, pain and/or shortness of breath, respiratory irritation, nasal congestion, eye irritation. [Ozone | NIOSH | CDC](#)

- **Insecticides:** Disinsecting of aircraft is a process of applying pesticides to decrease and prevent transmission of diseases that can be carried by insects. Airplanes have strict schedules for pretreatment to assure this requirement is met before entering these countries. The program ensures that the aircraft is unoccupied, unless on rare occasions, the spraying was not accomplished prior to entering a country that requires it. The sprays contain the active ingredient, 2% permethrin or d-phenothrin. Symptoms of being in contact with these pesticides can be respiratory, sinus, skin irritation, headache. In extreme cases, anaphylactic shock, immune, respiratory, and neurological problems have been reported. If inhaled, it is recommended you relocate to an area with fresh air. If on your skin, wash the affected areas of the skin with soap and water. Get medical attention if irritation persists. [Aircrew Safety & Health - Exposure to Pesticides on Aircraft | NIOSH | CDC](#)
- **Deicing Fluid (Ethelene Glycol):** Deicing of aircraft is a required practice by the FAA under FAR 91.527. [eCFR :: 14 CFR 91.527 -- Operating in icing conditions. \(FAR 91.527\)](#) to keep water from freezing on the wings. Ethelene Glycol is more commonly associated with anti-freeze and described as having a sweet odor, but if mixed with other oils and fluids, it can take on other smells, sometimes described as sweet, musty, burnt crayon. It is most harmful if swallowed, but if you believe you have inhaled ethylene glycol, it is important to inform the pilots immediately, and when possible, go to an area with fresh air. Deicing Fluid, Ethylene glycol, used in antifreeze can be a sweet, syrupy odor, then take on other odors if mixed with oil/fluids. Smelling deicing fluid fumes are more closely recognized as sweet. [tfacts96.pdf \(cdc.gov\)](#)
- **Fuel:** Gasoline is a volatile, flammable liquid that can permeate into that cabin air from the outside when fueling the aircraft or in some cases, a fuel spill on the tarmac. If inhaled, gasoline vapors can cause symptoms, such as dizziness, headache, nausea, [CDC - NIOSH Pocket Guide to Chemical Hazards - Gasoline](#)

**Health Steps:** Seek medical attention immediately if you are experiencing symptoms, such as difficulty breathing, irritated eyes, nose, throat, blurred vision, headache, nausea, or fatigue. Contact IOC (Integrated Operations Center) (682-315-7070) to report the event and your illness or injury to receive the necessary assistance in seeking immediate medical treatment at the nearest hospital for proper testing and treatment for exposure. Call the APFA (Association of Professional Flight Attendants) Notification System at 817-357-8786, choose prompt 2. Inform the pilots right away. Leave the aircraft immediately, if possible, and get fresh air. Get checked out by a medical professional at an emergency room hospital.

**Medical Examination: When at the ER:** When exposed to cabin air contaminants, it is recommended you go to an area with fresh air and then seek medical treatment if you experience adverse symptoms, it is advisable to see a doctor in an emergency room hospital right away. Respiratory effects are treated according to standard protocols for acute chemical exposure by inhalation. oxygen may be appropriate to increase oxygen saturation, an arterial blood draw for carbon monoxide exposure detection, take vitals, a full neurological examination, and follow-up the next day by a physician.

If you do not see a doctor right away, you will need to do so within 24 hours of any lost time to qualify for an IOD (Injury on Duty). In an emergency, do not wait to speak with a nurse - go to the nearest emergency room. You must be removed from work by a doctor to become eligible for Work Comp pay benefits once the claim is accepted.

Tell your doctor you have been exposed to harmful chemicals leaking in through the air circulation system of the airplane. Symptoms vary depending on the duration and magnitude of exposure. Neurological, psychiatric, respiratory system and dermal symptoms have been reported. The most common symptoms reported are acute respiratory and high blood pressure. It is recommended to get evaluated for respiratory effects. Neurological examination should be performed. Neuropsychological screening examination may be useful for cognitive dysfunction for short-term memory function, concentration, and color vision loss. A blood test for the TCP additives in aviation engine oils consists of oxygen saturation arterial blood draw. Hemoglobin pulmonary function test with pre post bronchodilators and chest radiograph. There are currently no tests to specifically assess exposure or other health outcomes. Tests of the autonomic nervous system and auto antibodies may be useful to evaluate exposure and chronic neurotoxicity. If symptoms have not completely resolved within two months following contaminated bleed air exposure, persistent health effects may have occurred. Persistent health effects could be asthma, neurological problems, systemic symptoms, muscle joint aches, sensitivity to chemicals, fatigue and or psychiatric problems, PTSD (Post Traumatic Stress Disorder), depression, anxiety.

**Reports: Crewmembers** have multiple reporting systems for SOF events. When fume events occur, both the long-term health, safety, and cognitive function of crewmembers and passengers are put at risk. Report it for you and for the data and measures that need to be taken to move our efforts forward for better standards, protections, regulations, and protocols. This is crucial for your health and moves us toward better medical protocols and standards for these incidences. This helps to get all eyes on this problem so you get the assistance you need, and maintenance is informed and a thorough check of the airplane to check for oil leaks and other issues that might be contributing to aircraft air being contaminated. Reports include:

- CERS (Company Event Reports System) and ASAP (Aviation Safety Action Program) (These reports are found in tablet/Inflight Manual)
- APFA SOF EVENT FORM is on our union website. [SOF Report Form - APFA](#)
- OSHA Occupational Health and Safety Administration <https://www.osha.gov/workers/file-complaint>
- FAA Federal Aviation Administration [FAA Website](#)
- CGARS Global Cabin Air Reporting System (<https://gcars.app/>)
- NASA <https://asrs.arc.nasa.gov/report/caveat.html?formType=cabin> [ASRS - Aviation Safety Reporting System \(nasa.gov\)](#)

Airlines records of aircraft maintenance records, pilot logs, and crew reports. Health Care providers can request material on these events by asking for safety data sheets on a particular aircraft with a hydraulic/engine oil leak. You will need to have the date, flight number, nose number. Other valuable information is the aircraft type, phase of flight the SOF occurred, the odor and/or visible sign, and physical symptoms.

Service Difficulty Reporting System for aircraft components. [Federal Aviation Administration \(faa.gov\)](#)

Reports through the Freedom of Information Act [FOIA Reference Guide \(long\) revised.pdf \(faa.gov\)](#)

