"Bleed air" products liability actions filed against Boeing and Airbus

Public Justice alleges that manufacturing defects have caused engine fumes to enter cabins, with debilitating health effects on flight attendants and countless others.

By Mike Withey

Terry Williams was a flight attendant for American Airlines for over 17 years. On April 11, 2007, she worked a routine flight from Memphis to Dallas. She never imagined that this ordinary flight would be the last she ever worked – and the last time she would be even remotely healthy.

Immediately upon landing in Dallas, Ms. Williams observed a smoky haze in the first-class section that made her cough, irritated her throat and gave her headaches. Over the next several days, her symptoms worsened and she was forced to stay home from work. When she reported to work eight days after the incident, she was unable to stop coughing and was finally rushed to the hospital. At the time, Ms. Williams' doctors were mystified as to the cause of her illness. But the cause has since been identified: Ms. Williams, like many others, had unwittingly been poisoned by toxic "bleed air" fumes emitted from the jet engines.

Those fumes have taken a terrible toll on Ms. Williams and countless others. Since her exposure that fateful day, Ms. Williams has suffered from crippling migraine headaches, uncontrollable tremors, coughing and bronchial spasms, difficulty breathing, gastrointestinal distress, insomnia, memory loss, weakness, disorientation, dizziness, numbness and tingling in her extremities, and a respiratory condition. She can no longer work, and she has been told by her doctors that she is permanently disabled.

A first step towards justice

In April 2009, Terry Williams filed a groundbreaking product liability lawsuit against McDonnell Douglas Corporation and The Boeing Company in Washington state court. (McDonnell Douglas designed and manufactured the aircraft involved in this case and is a wholly owned subsidiary of Boeing.) The lawsuit charges that Boeing has known for more than 50 years about the potentially adverse health effects that can result from toxic engine oil fumes that its planes' ventilation systems, known as "bleed air" systems, allow to enter the cabin's air supply. Her suit alleges that such "bleed air fume events" pose risks far beyond that which the normal flight attendant or passenger would ever contemplate.

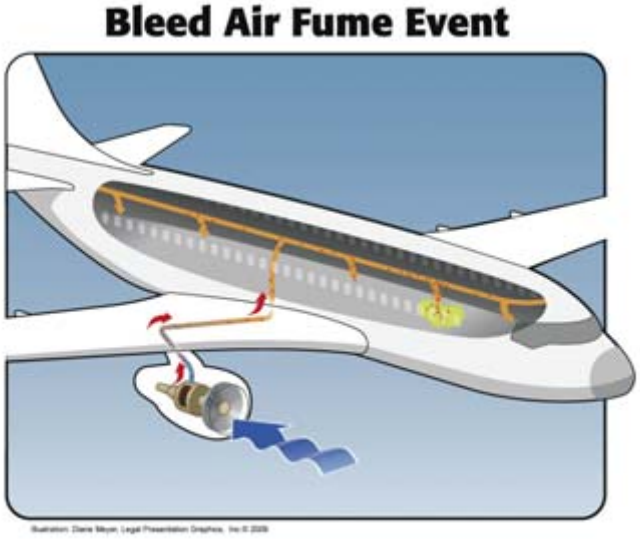

Figure 1

Even though the aircraft industry has known for decades that bleed-air ventilation systems can introduce toxic chemicals into airplanes' air supply, only very recently have passengers and flight crew members begun to take the industry to court to hold it accountable for the chronic and permanently disabling health problems that its ventilation systems can inflict on passengers and crew members. In particular, the last three months have

seen a spate of lawsuits aimed at forcing the industry to address the harms that can result from bleed air fume events.

Public Justice, a public interest law firm headquartered in Washington, DC, has joined Terry Williams' lawsuit against Boeing, which is the first lawsuit directed at spurring aircraft manufacturers to address this serious health risk. The lawsuit, filed in Washington state court, alleges a design defect: that Boeing's system of air delivery is defective because the health risks to crew and passengers far exceed consumer expectations. The suit also alleges that there are alternative safe designs, including the use of filters and sensors, that are both feasible and also would have reduced or eliminated the serious health risks of bleed air.

Public Justice's team of cooperating counsel, Alisa Brodkowitz, Mike Withey and Ted Leopold, has also initiated litigation against Airbus and Southwest Airlines for similar fume events that led to debilitating long-term injuries to Valerie Vaughn and Victoria Vaughn Holsted – twin sisters who were passengers on a Southwest flight that made an emergency landing after a fume event – and Lucy Mayorga and Adriana Moravcik, flight attendants for US Airlines, who experienced a fume event while on board an Airbus A319-312. Ms. Mayorga and Ms. Moravcik's suit, filed in Florida federal court, alleges similar design defect and failure to warn theories against Airbus that Ms. Williams alleged against Boeing. The Vaughn-Holsted suit, filed in federal court in Alabama, alleges that Southwest, as a common carrier, owed passengers a higher duty of care but failed in that duty by improperly operating and maintaining its air delivery system, resulting in permanent and disabling injuries to the two plaintiffs.

What exactly is "bleed air"?

Bleed air fume events occur when the operation and design of bleed air ventilation systems – the ventilation systems used in nearly all commercial passenger aircraft – permit heated engine oil and hydraulic fluid to contaminate aircraft air supply. Such events have been documented in the aviation industry since the introduction of bleed air ventilation systems in the 1950s. As early as 1953, the Committee on Aviation Toxicology of the Aero Medical Association acknowledged the potential for "toxic substances [to] arise in personnel compartments of an airplane [supplied with bleed air] from such sources as oil . . . and hydraulic fluids."

In a bleed-air ventilation system, outside air is drawn in, compressed in the aircraft engines or auxiliary power unit (APU), and then cooled and routed to the cabin and flight deck through ventilation ducting. The APU supplies bleed air when the main engines are not operating – i.e., when the aircraft is on the ground – and the engines supply bleed air in flight. The engines' air compressors and the APU have a "wet side" that comes into contact with engine oils and a "dry side" that comes into contact with supply air; the wet and dry sides are supposed to be kept separate with tight-fitting seals.

But as a result of leaky seals, deficient maintenance, excess oil, or even routine operation, engine oil and hydraulic fluids can become "pyrolized," or superheated, and contaminate the plane's air supply. Such contamination generally occurs during takeoff or landing, when there is increased engine thrust and, as a result, load on the seals. In Terry Williams' case, for instance, the maintenance logs document that there was an oil leak in the plane's APU and it was taken out of service. The presence of pyrolized engine oil and hydraulic fluids in the air supply is deeply problematic because almost all engine oils and hydraulic lubrication products contain a toxic organophosphate known as tricresylphosphate (TCP), along with other volatile organic compounds. These compounds were once commonly used in pesticides and insecticides but have now been banned in most states. The only filters used in conjunction with the air delivery system are HEPA filters that are unable to detect or filter out these harmful volatile organic compounds.

Recently, a groundbreaking study by Judith Murawski, an industrial hygienist, and David S. Supplee, the Director of Flight Safety for the Association of Flight Attendants-CWA (AFA-CWA), examined the frequency and causes of bleed-air fume events in commercial aircraft in the United States. The May 2008 article, *An Attempt to Characterize the Frequency, Health Impact, and Operational Costs of Oil in the Cabin and Flight Deck Supply Air on US Commercial Aircraft*, found that 470 reported incidents from January 1, 2006, until June 30, 2007, involved oil or hydraulic fluid, or an average of 0.86 fume events per day. The operational impact of such incidents is substantial: 57 percent of the in-flight incidents resulted in the aircraft's diversion to another airport, and six percent resulted in aborted takeoffs or landings. The study also found that fume events may be underreported to the Federal Aviation Administration (FAA); of the 115 fume events involving oil or hydraulic fluid that AFA-CWA members reported to their airlines, only 16 were reported to the FAA.

Even with this potential underreporting, the FAA is sufficiently concerned about the health consequences of bleed-air fume events that it recently commissioned a reference guide for health-care providers. This guide, authored principally by occupational medicine expert Dr. Robert Harrison, MD, MPH, of University of California at San Francisco, describes in detail the medical protocol that physicians, including emergency room personnel, should follow in diagnosing and treating toxic-air events in airplanes. The guide concludes: "The most common symptoms reported are acute respiratory, neurological, systemic, and/or psychiatric symptoms. These typically occur within minutes to a few hours following the contaminated bleed-air event. Symptoms vary depending on the duration and magnitude of exposure, plus individual factors. Chronic and sometimes delayed neurological, psychiatric, respira-

tory, systemic, and dermal symptoms have been reported." The complete reference guide is available at www.ohrca.org/healthguide.html.

Aircraft manufacturers have ignored known bleed-air risks

Despite the documented adverse health effects of bleed-air fume events, aircraft manufacturers have continued to use dangerous and defective bleed-air filtration systems rather than implementing a number of alternative technologies that could protect passengers and crew members from toxic fumes. Indeed, 99 percent of civilian commercial aircraft are not fitted with adequate filtration systems or treatment solutions that would protect crews and passengers from exposure to contaminated air. However, according to The Aviation Contaminated Air Reference Manual, edited by Captain Susan Michaelis – called a "ground-breaking and seminal work" by the Royal Australian Air Force Institute of Aviation Medicine – at least nine systems have been created that could resolve various aspects of bleed-air contamination, if airlines were interested in implanting the technologies. Honeywell, for example, is believed to have a Boeing 767 bleed-air filtration system sitting on the shelf; it has been designed, but not implemented, because Boeing has never chosen to install it. Captain Michaelis reports that the major aircraft manufacturers have not equipped their aircraft with such filtration systems because the "regulators have not required it."

Holding the powerful accountable

Terry Williams seeks to show that the failure of regulators to insist on technologies that would protect crew members and passengers from toxins in their air supply does not give aircraft manufacturers the right to poison people on their planes. The three bleed-air cases being brought by Public Justice and its co-counsel – the Terry Williams case, the Lucy Mayorga and Adriana Moravcik case, and the Valerie Vaughn and Victoria Holsted case – are in their early stages, but they hold out hope that, for the first time, aircraft manufacturers will be held accountable for the immense harm that their bleed-air ventilation systems can cause.

According to Leslie Brueckner, the lead Public Justice attorney on the case, "It is outrageous that aircraft manufacturers have refused to implement technologies that could prevent devastating injuries like those suffered by Terry Williams and numerous other crew members and passengers. Success in this case will finally create a financial incentive for Boeing to remove the poison from its planes' air supply." The complaint can be found at http://publicjustice.net/Repository/Files/Williams%20Conformed%20Complaint.pdf.

Mike Withey has practiced in the courts of Washington and California since graduating from USF Law School in 1971. He won a $15.1 million verdict against former Philippines dictator, Ferdinand Marcos, for the murder of two anti-Marcos union organizers. He specializes in public interest/human rights litigation, toxic torts, products liability and consumer class actions. He is the past-president of Public Justice and the recipient of its Champion of Justice award in 2006. He is a member of CAOC.


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