



Researchers question cabin air safety

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While the issue of contaminated “bleed air” on airplanes is not a new one, it is attracting renewed attention, in light of a recent report in the World Health Organization’s Journal, Public Health Panorama.

Bleed air is the system used by all aircraft, except the Boeing 787, to provide the cabin with ventilation and air pressurization. Fresh air enters the aircraft’s system through the engines, where the air is compressed, bled through ports and cooled, then filtered before entering the cockpit and cabin. The Boeing 787, in contrast, uses electric compressors and not bleed air to supply cabin air. While seals are in place to keep oil and bleed air separate, these can leak or fail, permitting toxins from substances like kerosene, oils, and antifreeze to leak into the bleed air, being fed directly into the cabin. The resulting smell has been described as a “dirty sock” smell.

According to the report, titled “Aerotoxic Syndrome: A New Occupational Disease?” contaminated bleed air has been linked to short and long-term chronic and acute illness, including cancer, neurological problems, and chronic fatigue. The Report found that in 2015, more than 3.5 billion passengers and 500,000 pilots and crew members were exposed to low levels of such materials in the air.

Having studied some 200 flight crew who had been exposed to contaminated bleed air, researchers recorded an array of health effects, including nose, eye and throat infections, fatigue, nausea, cramps, skin reactions, and reoccurring respiratory tract infections. Chronic fatigue, chemical sensitivity, chemical exposure, soft tissue damage, and cardiovascular, neurobehavioural, neurological, and respiratory symptoms were also reported.

Researchers examined fifteen circumstances in which flight cabins were filled with contaminated bleed air, and found that on seven occasions the pilot or pilots were fully or partially incapacitated, in five of which both pilots were fully or partially incapacitated.

Concerns about the risks of contaminated bleed air have long circulated in the airline industry, with unions demanding changes to protect their workers.

The Canadian Union of Public Employees (CUPE) issued an October 28, 2016, statement on its website regarding onboard air quality. CUPE stated that the only way to prevent exposure to contaminated bleed air is to fit aircraft with filtration systems that eliminate any potential air contamination, or to



change the way pressurized air is brought into the cabin when aircraft are designed. CUPE speculated that, in addition to direct health risks, cognitive impairment of flight crew exposed to toxic fumes may also be linked to crashes.

CUPE's statement ends with a demand that the federal government act immediately to bring together airline industry, medical and scientific communities, and airline unions to identify and recommend regulatory options to eliminate the effects of toxic fumes.

CUPE represents over 10,000 employees working for Air Canada mainline and Rouge, Air Transat, Calm Air, Canadian North, Cathay Pacific, First Air, and Sunwing Airlines.

CUPE is also currently involved in ongoing litigation with Air Canada regarding the issue of bleed air, and whether it constitutes a danger pursuant to the *Canada Labour Code*, so as to permit flight crew to refuse to work when contamination is suspected.

In 2015, in companion decisions, the Canadian Occupational Health and Safety Tribunal considered two situations of contaminated bleed air. In one, Air Canada flight attendants refused to work, having noticed a "dirty sock" smell, while other crew members reported nausea and light-headedness. The Tribunal concluded that the contaminated bleed air did not constitute a "danger" as defined by the *Canada Labour Code*. In the companion decision, the same Tribunal found that, in a similar but separate incident, there was significant enough risk posed by the air to trigger the employer's obligation to investigate.

CUPE applied for judicial review. In its June 6, 2017, decision, the Federal Court granted CUPE's application, on the basis that the two decisions were contradictory on their face, given that the same chemical hazard was present and there was knowledge of its potential effects for exposed employees. The question before the Court was whether the presence of airborne chemicals arising from the pyrolysis (decomposition brought on by high temperatures) of jet engine oil and hydraulic fuel, in quantities not precisely measured but sufficient to create a distinct "dirty socks" odour, constituted a "danger" as defined by subsection 122(1) of the *Canada Labour Code* (as it was between January 1, 2010, and December 13, 2012).

At that time, "danger" was defined as follows:

"danger" means any existing or potential hazard or condition or any current or future activity that could reasonably be expected to cause injury or illness to a person exposed to it before the hazard or condition can be corrected, or the activity altered, whether or not the injury or illness occurs immediately after the exposure to the hazard, condition or activity, and includes any exposure to a hazardous substance that is likely to result in a chronic illness, in disease or in damage to the reproductive system.

Under the current *Canada Labour Code*, danger is defined at section 122(1) as "any hazard, condition



or activity that could reasonably be expected to be an imminent or serious threat to the life or health of a person exposed to it before the hazard or condition can be corrected or the activity altered.”

In reaching its conclusion, the Federal Court commented that it was not clear that the Tribunal actually considered the factors in assessing whether a danger entitling the employees to refuse to work had been shown to exist. It noted that although actual illnesses were suffered by some of the employees, the Tribunal concluded there was not enough information to prove cause and effect. The Court also noted that the symptoms suffered by some of the employees were identical to those the material safety data sheet for the oil indicated may be caused when it is pyrolyzed.

The Federal Court referred the matter to the Tribunal for redetermination.

Emond Harnden will continue to monitor this developing area of the law.

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