

AIR QUALITY IN AIRCRAFT CABIN: FROM ISSUE TO STANDARDIZATION

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The number of people traveling by commercial aircraft in recent years is unprecedented. More and more young and elderly people are flying, but also adults with medical problems (cardiovascular diseases, lung diseases), children and infants.

The aircraft cabin is similar to other indoor environments, in that people are exposed to a mix of outside and recirculated air. However, the cabin environment is different in many respects, such as space occupancy, the inability of people to leave at will, psychological factors, and the need to pressurization of the cabin.

Over the years, passengers and crew members (for whom the aircraft is their workspace) have repeatedly raised questions about air quality in aircraft cabins.

Under these pressures, national and regional air safety agencies (FAA, EASA, etc.) gradually took a number of measures, starting in the late 1980s, leading in particular to the ban on smoking on commercial aircraft.

However, according to the unions of pilots, cabin crew members and the organizations defending passenger rights, several other issues concerning the air quality of airplane cabins have not yet been adequately addressed by air safety agencies (FAA, EASA ...) and the airline industry, and new health issues have been raised.

Various studies have been funded by the states (mainly USA and Europe) to examine airborne environmental control systems specifically, to identify the sources of contaminants in airplane cabins and the toxic and sanitary effects associated with these contaminants, to measure the concentration of contaminants of concern in passenger cabin air, to suggest possible approaches to improve the air quality of the cabin.

Among the chemical compounds particularly targeted by the cabin crew' unions are those derived from lubricating oils of engines. These oils are composed of a variety of organic constituents, including Tri-Crested Phosphate (TCP), suspected to be neurotoxic. However, no data have definitively linked the exposure to these compounds with health effects reported by the occupants of the cabin.

The subject is sensitive and for many years, air safety agencies, airplane manufacturers, airlines, pilots' unions and cabin crews have opposed each other in the diagnoses and the means to be implemented to improve a situation otherwise difficult to describe.

The normative approach seems to be the only possible way to reach a consensus on how the subject of air quality can be addressed that can satisfy each of the stakeholders, provided that they can all express themselves.

This approach began at European level more than 10 years ago with a chaotic start.

Erasing the past, a new standardization committee was envisaged at the end of 2013 and was created at the end of 2014 (CEN TC 436, Air Quality in commercial aircraft - chemical agents). France, together with AFNOR, giving delegation to the French Bureau of Standardization of Aeronautics and Space, is its secretariat. Since 2015 Vincent EDERY from IFTS, has been the Chair of this committee, developing, together with the interested parties, a strategy that will be disclosed in the presentation, to elaborate a standard on cabin air quality.