Cabin air quality frequently asked questions

Concerns have been raised in the media about the possibility of air crew and passengers being exposed to toxins in cabin air. The Department for Transport (DfT) has received a number of enquiries, and these are our answers to the most frequently asked questions. There is more information on our website (www.dft.gov.uk/pgr/aviation/hci/) and that of the Committee on Toxicity (http://cot.food.gov.uk/).

Is aircraft cabin air contaminated?

Studies such as the European CabinAir project have shown that normally the levels of chemical and biological contaminants in aircraft are less than in many work environments such as office buildings.

There are however occasional bad smells or 'fume events' during flights, and these have been reported particularly on the Boeing 757, Airbus 319 and BAe 146.

The independent Committee on Toxicity has estimated that fume events occur on roughly 0.05% of flights overall (1 in 2000).

Reports to the Civil Aviation Authority (CAA) show that sometimes one pilot reports a bad smell and the other detects nothing.

The most recent figures show that in 2007 there were 116 contaminated air events reported to the CAA mandatory reporting scheme (MORS) out of 1.3 million passenger and cargo flights by UK carriers. (Not all fume events are reported, but even if the number was doubled or tripled this would still be a very small proportion.)

Some pilots who have experienced these events report a variety of short or long term symptoms or ill health. But it is not certain that these symptoms are work related.

The independent Committee on Toxicity completed a substantial review of evidence in September 2007 and concluded that the evidence available did not establish a link between cabin air and pilot ill health, but nor did it rule one out.

How many passengers have been affected?

There are very few passenger complaints air about health issues to airlines or the authorities.

The Air Transport Users Council told the House of Lords in 2007 that âout of a total of 20,000 written complaints since January 2001, 58 were categorised as medical.â Of those 58 the main medical issues raised were pregnancy, ski injuries and allergies, typically from peanuts.

What is the Government doing?

Both the Committee on Toxicity and the House of Lords Select Committee on Science and Technology have identified a gap in the world's knowledge. We are now trying to fill that gap.

No-one has yet captured samples of cabin air during fume events and analysed the samples to see what they contain. The science is difficult because fume events are unpredictable and can last just a couple of minutes.

DfT has this work in hand as a priority. To date we have:

- commissioned first functionality tests to identify equipment capable of capturing fume events in real time. This was published on 21 February 2008. We are confident we now have equipment that will do the job.
- commissioned a data analysis study of fume events and operational parameters â especially whether there is any link between âfull power take-offsâ and fume events.
- planned a second and more substantive phase of in-flight functionality tests to assemble data on substances in cabin air during fume events. This work builds on the equipment and methodology tested in the first phase. Several airlines have volunteered to take part by allowing an independent scientist to come on board with sampling equipment. Testing will take place in 2008.

The first functionality tests were peer-reviewed by scientists in UK, Europe and the USA. Future work in this area will be similarly peerâreviewed before publication.

Why not just fit filters to aircraft?

DfT has discussed this with a major filter manufacturer who said that, to produce an effective filtration system, they would first need to know what particular substance had to be filtered out.

That is why it is logical to analyse cabin air first, to identify what remedy might be needed.

Compulsory fitting of filters would have to be required by regulators (e.g. the European Aviation Safety Agency) on the basis of evidence that cabin air contains a particular substance in a harmful concentration and that a particular specification of filter could remove that substance. It is important to remember that the same aircraft types are flown world wide.

An unpleasant smell is undesirable but does not necessarily harm health. Conversely carbon monoxide has no smell yet kills people in the home every year.

Who is doing the research?

The first functionality tests were led by Professor Helen Muir, an aviation safety expert at Cranfield University.

The next phase is being overseen by a Steering Group which includes an independent occupational hygiene expert, a pilot nominated by BALPA (the main trade union representing pilots) and the Health Protection Agency.

The project reports to the Aviation Health Working Group which includes the Air Transport Users Council, trade unions, the Department of Health, Health and Safety Executive and CAA. Its minutes are published on the DfT website (www.dft.gov.uk/pgr/aviation/hci/ahwg/).

Why do fume events happen?

In any mechanical system malfunctions can occur which result in abnormal operating conditions. The CAA has already taken remedial action to help operators of particular aircraft reduce the incidence of fume events e.g. engine oil servicing procedures and engine bay sealing modifications.

For related documents, pages and internet links, see the column on the right.