

House of Lords

Wednesday, 13 June 2012

Civil Aviation Bill

Civil Aviation Bill (extract)

<http://services.parliament.uk/bills/2012-13/civilaviation.html>

Second Reading

5.50pm

The Countess of Mar: My Lords, I feel I have been here before. During the passage of the previous Civil Aviation Bill in 2006, I recall long discussions on Clause 8, relating to health—the noble Lord, Lord Davies of Oldham, may recall our exchanges then. These included my concerns, and those of injured pilots, over the effects of breathing what is known as "bleed air", which could contain organophosphates, on the health of both airline crew and passengers.

The Civil Aviation Bill before us today includes the requirement under Clause 84, "Environmental information", that:

"The CAA must publish, or arrange for the publication of, such information and advice as it considers appropriate relating to—

(a) the environmental effects of civil aviation in the United Kingdom, (b) how human health and safety is, or may be, affected by such effects, and (c) measures taken, or proposed to be taken, with a view to reducing, controlling or mitigating the adverse environmental effects of civil aviation in the United Kingdom".

This is to be welcomed, but I would suggest that there is one environment in particular where this duty is avoided: the cabin environment. Despite growing evidence, contaminated cabin air continues to be a very serious threat to the safety and health of air crew and passengers of all ages. This has been known since 1954. Indeed, a year later, an engineer from the company that is now part of Boeing recommended that,

"in light of the risk of exposure to oil fumes in flight, airlines should either operate non-bleed ventilation systems or filter the engine bleed air before supplying it to passengers".

The Civil Aviation Act 2006 clearly sets out the responsibility of the Secretary of State and the Civil Aviation Authority for,

"organising, carrying out and encouraging measures for safeguarding the health of persons on board aircraft".

Five years ago, the noble Lord, Lord Tyler, welcomed the House of Lords Science and Technology Committee's 2007 report on air travel and its call for urgent action on contaminated air, saying that this was a,

"very serious matter of public safety".

Since that time, some research has been undertaken by the Department for Transport-sponsored Institute of Environment and Health at Cranfield University-more of which later.

I believe that more rigorous action is required and this duty cannot be abdicated in favour of the European Aviation Safety Agency-EASA. In 2007, the House of Commons Transport Committee's report on the work on the Civil Aviation Authority stated that EASA was,

"not yet ready to do its job and it is vital that the UK transfers no further responsibilities to it. I see no evidence that the position has changed".

Apart from the new Boeing 787, passenger aircraft use unfiltered, heated air drawn directly from aircraft engines and auxiliary power units for cabin air conditioning. This is termed bleed air, because it is bled from the compressor section of the engine. This system has been used since just after World War II, when engine temperatures and pressures were considerably lower than today. The use of compressed air for ventilation was described in 1946 as "fortuitous". With rising oil prices, the aviation industry was faced with huge commercial challenges; since the initial introduction of bleed air, both performance and efficiency have become critical. As a result, it is normal for the temperatures to which oils are now exposed within the engine to be far higher. This is a serious toxicity concern because the base stock of the oil is known to thermally degrade when exposed to extreme temperatures. Combine this with the known design fault in engine oil seals and you have the perfect conditions for low-level oil leakage that can expose passengers and crew to toxic fumes through the unfiltered air they are breathing.

As highlighted in the recently published Australian Civil Aviation Safety Authority-CASA-report:

"Exposure to ... fumes and vapours can result in acute short-term symptoms".

The report stated that the organophosphate family of TCP includes TOCP, which is a known substance in engine oils and can cause adverse health effects. In some individuals, long-term disability and forced retirement have resulted from long-term exposure. Pilots and air crew are particularly vulnerable.

It was also proven in the 1950s that other parts of the TCP family in the oil were even more toxic than TOCP, and these were later acknowledged to be in the oil at far greater levels than TOCP. Even more concerning is the recent research undertaken by the University of Washington, which has found that the entire family of TCP chemicals is toxic. I am sure that I do not need to remind your Lordships that organophosphates are neurotoxins-also commonly known as nerve agents. A small ongoing study undertaken at the University of Nebraska has recently published an astonishing finding that 50% of airline passengers tested positive to exposure to TOCP. This was one flight only with a wide spectrum of people on board-it could have been you or me, or a member of our families. There have been many reports of contaminated air incidents for many different airlines. I can provide details if any noble Lord is interested.

A report from the German air accident investigation bureau, the BFU, showed a serious incident late in 2011 in which a Boeing 737 co-pilot was partially incapacitated shortly after take-off and again on descent after smelling a pungent smell. Blood tests undertaken at the University of Nebraska found,

"that the blood sample (was) positive for exposure to TOCP".

Recent PhD findings by Dr Susan Michaelis, specifically investigating this issue, found that 32% of the UK pilots in the survey population experienced medium to long-term ill health, 44% reported short-term effects and 13% experienced such chronic ill health that they were no longer able to fly. What we have here are threats to flight safety combined with a public health issue that can no longer be ignored.

The United States Air Force's newest fighter aircraft has been having major problems with the oxygen system, with pilots reporting a range of hypoxic-like physiological symptoms. With a growing number of in-flight incidents, the United States Air Force grounded its F22 fleet for several months from May until September 2011. Several investigations failed to find the root cause of the problem and the US Secretary of State for Defence recently limited the aircraft's operational capabilities and required NASA to resolve the issue. The F22 on-board oxygen-generating system takes some of its supply from the bleed-air system, and contaminated bleed air is one of the two issues considered to be the potential cause of the problem.

While attention is often focused on certain aircraft types, such as the BAe 146 and the Boeing 757, in fact the bleed-air system suffers from a flawed design affecting all aircraft using bleed air to supply cabin air for breathing. These fume events are alarming, both in their severity and their frequency. However, many sources-including Dr Susan Michaelis, the European Aviation Safety Agency and the Federal Aviation Administration in the US-have shown that these dangerous events are actually being underreported. What we have is a failed reporting system.

A survey for BALPA undertaken in 2001 and later published in a leading occupational health journal showed that less than 4% of the contaminated air events experienced by pilots in aircraft were recorded on the CAA mandatory occurrence report database. Pilots and cabin crew are too often unaware of, or complacent about, the health and safety implications and come from a culture that accepts fume smells as normal. Worse still, too many are too frightened to report such incidents for fear of losing their jobs. They are aware of the commercial pressure on airlines as, once a defect such as contaminated air is reported, it must be investigated before the aircraft can fly again. I am aware that DHL instructed its pilots not to report selected fume events, confirmed by the CAA in the House of Commons, because these are "acceptable". This is in direct contradiction of European regulation 859/2008, which states that incidents that could endanger aircraft safety should be reported to the regulator and recorded in the aircraft technical log. Furthermore, European Directive 2003/42/EC requires all suspected oil fume or contaminated air events to be reported to the national authority. I know that the Minister is aware of this because he has given me that answer in reply to a Written Question.

Pilots can also be reluctant to report any symptoms experienced for fear of exposing themselves to a medical that could, ultimately, lead to their licence to fly being revoked. This is acknowledged by the Department for Transport, which notes in its FAQs on cabin air quality that a UK study is unlikely to be successful as,

"pilots ... would be legally obliged to report any health impairments found ... to the CAA, who licenses them".

A recent example of two British Airways pilots who were cited by the airline to be filing a higher than average number of contaminated air reports illustrates this point: one had his medical certificate withdrawn after TCP was found in his blood, while the second pilot died in his mid-40s of a brain tumour after repeated exposures which were in many cases reported, but clearly ignored. The British Airways head doctor, however, is quoted in the House of Lords Science and Technology Committee's 1st Report of Session 2007-08, entitled *Air Travel and Health: an Update*, as saying that he had,

"no evidence to suggest there is a serious medical problem".

It is against this background of underreporting and an industry eager to avoid the commercial implications that the research by Cranfield was undertaken. In the House of Lords 2007 report, it was noted that as the original proposal was to sample "around 1,000 flights", the size of sample offered only a,

"remote chance of capturing an event",

if the incidence of contaminated air events is as low as the Government claim. In fact, the sample used was just 100 flights, yet the presence of TCP was detected in 23% of flights. Additionally, 38 reported fumes of which the majority were described as oil or oily-type smells. A mandatory occurrence report, or defect report, was not triggered on one single flight despite this being a requirement under the European directive and regulation. Clearly, the Government's accepted estimate of the frequency of fume events is flawed and, despite government denials, this problem is being seriously underreported. Indeed, despite censuring the Government while in opposition for their dithering on air cabin quality, with secret studies behind closed doors, putting air crews and passengers at risk, when in office, the Secretary of State for Transport, Theresa Villiers, appears to have done an about-face. Ms Villiers' interpretation of the Cranfield report was that,

"there was no evidence of pollutants occurring in cabin air at levels exceeding available health and safety standards and guidelines".-[*Official Report*, 10/5/11; col. WS37.]

I was told in 2005 that there are no safe levels set for exposure to the mixture of substances from heated synthetic oils or for the organophosphate TCP. Peer reviewers for the Cranfield study used descriptors such as "very serious deficiency", "very varying quality", and "serious weaknesses in sampling". Interestingly, earlier research by the same establishment on behalf of the Government concluded that because,

"current risk assessment practices are largely based on evaluating the toxicity of single chemicals at high doses",

and because humans are exposed to a mixture of chemicals on a daily basis,

"there could be many uncertainties in the hazard assessment",

particularly related to low-level exposures. It would appear that we are making the science fit the policy, not the policy fit the science.

As long ago as 1997 I used the term "intellectual corruption" in a speech in your Lordships' House on the subject of organophosphates. I was not in the least surprised to learn that the second and final Department for Transport-sponsored air-monitoring swab-sampling study by the Institute of Occupational Medicine, in Edinburgh, recently found TCP in aircraft at low levels, with estimated airborne concentrations of TOCP found to be very low.

Lord Trefgarne: My Lords, I apologise for interrupting the noble Countess, but if she could move one pace to her left, we could hear a little better what she is saying.

The Countess of Mar: I have a chest problem caused by organophosphates.

The Department for Transport publicly states that,

"it would be proper for DfT to be alerted of any findings out of the ordinary. Should that happen the DfT will consider what action might be appropriate to ensure that people can continue to fly without risk to their health".

However, I must remind noble Lords that, as with the Cranfield study, no fume events were reported, and yet TCP at higher levels than TCP found elsewhere was detected, indicating that the substance originated from the aircraft. Of great concern is that the levels of the neurotoxic parts of the TCP stated to be in the oil are a direct contradiction of what Mobil advised in 2000. While ExxonMobil, formerly Mobil, the manufacturer of the oil, stated at the Australian Senate inquiry into this issue that the levels of the most toxic part of the TCP were over 600,000 times higher than the TOCP part, this Department for Transport-sponsored study has stated that the difference is only three times higher. One might ask who would know better. Making science fit the policy provides a wonderful excuse for inertia.

TCP has clearly been found in all aircraft surveyed. Controversially, the Institute of Occupational Medicine study states that there are government-set exposure standards available for the neurotoxic parts of TCP, but this is not the case. TCP as a whole and the most toxic parts do not have established exposure standards and, as we know, there are no exposure limits set for the mixture of ingredients in the aircraft environment. How can the researchers compare the enclosed environment of an airline cockpit with a normal office environment?

As well as organophosphates there is chemical known to be in the oil as an antioxidant at 1%, N-phenyl-alpha-naphthylamine, which is quite a mouthful, or PAN, which is much easier. It has an acknowledged contaminant as a by-product, beta-naphthylamine, or BNA. This is a prohibited schedule 1 category 1 carcinogen that has long been known to cause human bladder cancer. While oil certification standards used to say that suspected human carcinogens are prohibited in the oil, here we have a known human carcinogen in the oil as a contaminant, totally ignored. The levels might be low, but repeatedly exposing people to human carcinogens is not acceptable. The new certification standards have removed this prohibition and simply say that all the regulations must be met. The other phrase that has been removed by the Civil Aviation Authority stated that,

"the lubricating oil shall have no adverse effect on the health of personnel when used for its intended purpose".

Baroness Rawlings: My Lords, I remind the House that it has resolved in favour of shorter speeches and that the *Companion* recommends that Second Reading speeches be no longer than 15 minutes.

The Countess of Mar: My Lords, I am aware of that. I apologise to the House. I will now sit down.

6.08 pm

Grand Committee

Monday, 9 July 2012.

Civil Aviation Bill

[Civil Aviation Bill](#)

<http://services.parliament.uk/bills/2012-13/civilaviation.html>

[4th Report from the Delegated Powers Committee](#)

<http://www.publications.parliament.uk/pa/ld201213/ldselect/lddelreg/21/21.pdf>

Committee (4th Day)

Amendment 71

*Moved by **The Countess of Mar***

71: After Clause 105, insert the following new Clause-

"Public interest disclosure

(1) The Civil Aviation Act 1982 is amended as follows.

(2) After paragraph (ha) of section 60(3) (functions with respect to health) insert-

"() for ensuring that all airline pilots and crew are aware of and are protected by the terms of the Public Interest Disclosure Act 1998.""

The Countess of Mar: My Lords first, I apologise if my voice runs out; I have a problem in that direction. In moving Amendment 71, I shall speak to Amendment 72. I suspect that most noble Lords will be aware of my long-held interest in organophosphates-OPs-and, more particularly, those whose health has been damaged by exposure to OPs. This interest stems from my personal experience.

At Second Reading I spoke of the method by which the air that pilots, airline crew and passengers breathe is drawn in over the very hot engines of an aeroplane on to which oil may have leaked. This oil, manufactured by one company, ExxonMobil, contains an OP-tricresylphosphate, or TCP. This becomes aerosolised when heated to high temperatures, such as when it drips on to a hot engine. I detailed the chemical stages during Committee on the CAA Act 2006, as I am sure the noble Lord, Lord Davies of Oldham, will remember, so I will not do it again.

I know that the Minister will rely on the much criticised Cranfield study which looked at a sample of just 100 flights and found no so-called fume events. What it did find was the presence of TCP in 23% of flights and there were 38 reports of fumes of which the majority were described as "oil" or "oily type" smells.

A mandatory occurrence report or defect report was not triggered for a single flight, despite this being a requirement of Commission Regulation (EC) No. 859/2008, which amended No. 3922/91. An "occurrence" is defined in directive 2003/42/EC as,

"an operational interruption, defect, fault or other irregular circumstance that has or may have influenced flight safety and that has not resulted in an accident or serious incident".

The directive is worth reading because it details occurrences such as fume events. I wonder why these occurrences were so studiously ignored by the Cranfield researchers.

Toyber's dictum states:

"Absence of evidence is not evidence of absence".

There are two problems with occurrence reporting. The first is that pilots and crew know that if they report a fume event, their aircraft will have to be grounded at considerable cost to their employer and that, to put it mildly, is likely to be frowned upon. The second problem is that of credibility. Fume events are, by their nature, transient. They can be minor or major, and I know that the Minister has seen film of a major event when you could hardly see down the cabin because of the smoke. There is no standard equipment on board an aircraft to collect or measure toxic fumes, and the human nose is the only available detection system. Engineering tests, unless they very precisely replicate the conditions under which a reported event took place, are very unlikely to produce a fume event. In either case, the reporting officer will be afraid at least to be made to look a fool or at worst to be sacked.

The CAA Act 2006 placed on the Secretary of State and the CAA duties in connection with,

"the health of persons on board aircraft".

The EU legislation listed in my Amendment 72 also places duties on the competent authority in relation to the health and safety of pilots, crew and passengers on board aircraft. Other EU and international legislation defines the safety of the aircraft, its engines, other mechanical equipment and even the quality of the engine oil to be used. Much of the health and safety legislation that applies to everyone in the UK workplace is defined in health and safety Acts and regulations. The Minister, in a letter to me dated 18 June this year, stated that:

"The operation of aircraft in and over Great Britain is subject to the Health and Safety at Work Act 1974. Consequently, the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) do apply to aircraft in flight in airspace above Great Britain. However, the Civil Aviation Authority (Working Time) Regulations 2004 (as amended), also impose a duty on employers to ensure adequate health and safety protection of aircraft crew on British-registered aircraft at all times. These regulations cover aircraft in flight and are enforced by the CAA".

The memorandum of understanding between the CAA and the Health and Safety Executive, which the Minister mentions in his letter, states at paragraph 1.5.3:

"The CAA is responsible for regulating the occupational health and safety of crew members whilst they are on board an aircraft from the time when they board the aircraft, preparatory to flight, to the time they leave the aircraft on completion of the flight. For the purposes of the occupational health and safety reporting and regulatory consideration, the CAA will monitor events occurring in aircraft whilst in operation outside the UK".

That all sounds very good. However, when the CAA was challenged for failing to enforce the COSHH regulations, Mr Tim Williams, then the CAA health, safety and environmental adviser, wrote on 13 April 2007:

"The CAA's health and safety enforcement powers are derived from the Civil Aviation (Working Time) Regulations 2004"-

which the Minister has told me-

"in particular Regulation 6 that requires adequate health and safety protection to be provided to crew members. These Regulations neither replicate nor replace those made under the Health and Safety at Work etc Act 1974, which are enforced by the Health and Safety Executive. The Control of Substances Hazardous to Health Regulations 2002 ... are derived from the Health and Safety at Work etc Act 1974 and"-

I hope that the Minister will listen to this-

"the CAA has no authority to enforce these Regulations, with enforcement duties falling to the HSE. It is therefore inappropriate for the CAA to investigate any alleged breaches of the COSHH Regulations. The Memorandum of Understanding (MOU) between the HSE and the CAA, and in particular Annex 8, provides further details on the divisions of health and safety responsibilities in aviation. The MOU also sets out how the CAA and HSE will interact to avoid duplication of regulatory effect".

They might also interact to avoid any regulation in this case.

Mr Williams goes on to say that the CAA is always prepared to investigate where the health and safety of crew members may have been compromised, but states that there is a lack of evidence. Of course, if you do not look, you will not find. There is plenty of evidence going back to the 1950s. If the Minister looks at the PhD thesis of Susan Michaelis, called *Health and Flight Safety from Exposure to Contaminated Air in Aircraft*, which I gave him last year, he will see in the annex page upon page of contaminated air reports from May 1985 to August 2006. He will see pages of data which confirm cabin air quality problems in BAe 146s, just one of the aircraft types known to have this problem, and yet no one in government or the CAA seems to have shown any interest in what effect these events have on pilots, aircrew and passengers. I wonder, and am frequently asked, why, after a reported incident, medicals, including blood tests, are not conducted immediately on those likely to have been affected. This would at least establish whether there has been exposure to TCP.

As I said at Second Reading, a small study in Nebraska showed that 50% of passengers on one flight tested positive to TOCP, and a recent survey found that 32% of UK pilots experienced medium to long-term ill health. Forty-four per cent reported short-term effects and 13% were grounded because of fume events.

Researchers at Cranfield and the Institute of Occupational Medicine in Edinburgh express an opinion that the levels of TCP found in aircraft are acceptable, but I do not think that it needs much imagination to realise that levels of absorption and inhalation of toxic chemicals in a normal working environment such as a factory are very different from those in the enclosed, pressurised atmosphere of an aeroplane cabin or cockpit. No safe levels have been established in this case. In any event, there are no acceptable daily exposure levels laid down for the more toxic breakdown products of TCP or for the chemical cocktails produced by heated oil. Incredibly, a CAA investigation into cabin air quality suggested that the average man can safely,

"ingest 7 metric tonnes of pyrolised oil per day for 74 days without effect".

I wonder on what sound scientific evidence that statement was based.

A long-standing former British Airways cabin crew member, concerned about the health effects that she was seeing among her colleagues, surveyed more than 1,000 crew. Among other things, she identified cancer occurring at 10 times the UK national average. She advised BA management and medical personnel of her findings. Instead of thanking her for her efforts and agreeing to take matters further, they sacked her. Although my Amendment 71 may not be perfectly worded, I hope that the Minister will accept its spirit and either assure me that airline pilots and crew will be supported and encouraged to report events that may have adverse health effects or assist me with wording an acceptable amendment to this effect.

The Minister and the noble Lord, Lord Davies of Oldham, may recall my efforts during the passage of the Civil Aviation Act 2006 to provide a truly independent health and safety and medical facility for pilots and crew. I was concerned that because the CAA was dependent on the aviation industry to fund this provision, there might be some reluctance to put pressure on the airlines to improve working conditions and health and safety grounds.

The ability to enforce COSHH regulations is fundamental to ensuring that cabin air is not contaminated, but on its own admission the CAA has no enforcement powers. This is totally unacceptable. The cockpits and cabins of airplanes are workplaces for pilots and crew. I can think of no other workplace in the UK where employees are so unprotected. I understand that an Air Navigation Order would be necessary to give the CAA this power. I hope that the Minister will agree to Amendment 72 when I move it. In the mean time, I beg to move Amendment 71.

5.30 pm

Lord Wigley: My Lords, I support Amendment 71, as moved by the noble Countess, Lady Mar, and I support her in regard to Amendment 72. I pay tribute to the phenomenal work that she has undertaken over an extended period on conditions associated with organophosphates. I regret that I cannot bring to this Committee the direct experience of flying that other noble colleagues have but, during my incarnation in another place, I have certainly had far too much experience of exposure to organophosphates in other walks of life. Some noble Lords may be aware of the work undertaken by Mrs Enfys Chapman, who was for a time a constituent of mine and had the need to dig into the tragic consequences of OP dips. I had constituents who were chronically affected by organophosphates: two sheep farmers who were almost certainly crippled by the effects of OP sheep dip. A relative of my wife was also afflicted.

For those reasons, I have no doubt whatever that those open to ill health caused by such substances in the course of their work must be protected by law. It is surely our responsibility to ensure that the law is stringent enough, and properly applied, that there is: adequate identification of these cases when they arise; that there is clarity with regard to who has the responsibility for following up; that a statistical analysis is undertaken; and that, where necessary, regulations are tightened to ensure that people in cabins and passengers in aircraft are not put in danger because of the effects of these substances.

I draw to the Committee's attention some statistics that are relevant to air crew contamination. The noble Countess has referred to Susan Michaelis who, in a PhD thesis, undertook an extensive health survey of 146 UK BAE pilots. That snapshot showed that: 88% were aware of cabin air contamination; 63% reported symptoms consistent with cabin air contamination, some immediate and some long term; 44% reported immediate short-term effects consistent with cabin air contamination, representing flight safety hazards; and 32% reported medium to long-term effects, again consistent with air cabin contamination and representing a flight safety hazard. Thirteen per cent were chronically impaired and no longer able to fly, which was in fact higher than pilot medical statistics for disqualification globally for all reasons, not just those consistent with air cabin contamination. There is a strong temporal relationship between the adverse effects reported and the contaminated air environment. Those data are the most authoritative that we have and surely should be considered.

I hope that the Minister will accept the amendments but, at the very least, is he willing to accept those figures? If he does not accept them, is he in a position to gainsay the argument? If other figures exist, they should surely come to light. I hope that he can tell the Committee that his department has rigorously examined the evidence put forward by Susan Michaelis in her PhD thesis. At the very least, I hope that the Minister will set up some independent investigation into the reporting system of events that may have adverse health effects on those in aircraft cabins, and clarify who is responsible for applying the regulations. Will he undertake to review the statistical information available, from all sources, to ensure that this issue is most assuredly not swept under the carpet?

Lord Rotherwick: My Lords, I congratulate the noble Countess, Lady Mar, and the noble Lord, Lord Wigley, on tabling the amendment. It is most important, and the compelling evidence that we have heard is evidence I have heard about for a long time and, indeed, read in books. If I am right, the aircraft referred to is the one that the royal flight uses and is mainly used for Ministers. If someone said to me that a Minister has faded or gone bonkers, the next question should be: how many times have they flown on the royal flight? We all get into the commercial aeroplanes that we are talking about, so this is something that affects us. Of the Cranfield test, it was suggested-alleged-to me that it was suspect because the aircraft that they had on test were ones given to them by the airlines, not picked at random but, it was alleged, safe aircraft given for tests. One of the unofficial research teams referred to in some books found that, of its swab tests on a range of aircraft, the majority had contamination when the swab tests came off seats.

We have all had the awareness when we come off a plane that we frequently travel on: "Gosh, I was tired on that flight. I'm not normally that tired". That is a real problem. If the Minister does not accept the amendment, my only advice for noble Lords about planes that take their cabin air, their bleed air, off the engines, off the compressor, is to fly on a Boeing 787, the Dreamliner. It is the first aircraft that does not use the ghastly system that causes the problem; it uses a specialist air system totally independent of the engine.

I hope that the Government will come forward to address this elephant in the room; it affects us all when we go on aircraft.

Lord Empey: My Lords, I do not know whether the amendments before us will be the right vehicle, but they draw attention to a problem that definitely exists. As someone with a family member who is a commercial airline pilot, I am very conscious of the risks involved. It is often pointed out that pilots and air crew are at greater risk of receiving higher levels of radiation because they fly without any protection at very high levels for prolonged periods-indeed, throughout their working lives-and that that makes a difference. Here, there is undoubtedly a problem but the solution is not as immediately obvious. For instance, on the point made by the noble Lord, Lord Rotherwick, about the Dreamliner and its new system, many of the huge fleets of existing aircraft have the basic bleed air system so this is not easy to resolve. Mention has been made of the BAe 146, which is a very nice aircraft to fly in and, in particular, to land in, but there have been incidents where aircraft have suffered a large ingress of vapour to the cabin, visible to the passengers. This is not a figment of someone's imagination; it actually happens. Although it is true to say that pilots on flight decks generally have an independent air supply from that of the people in the main cabin, it is sourced from the same place.

The question is: do we need international action? Let us face it, there are a very small number of aircraft manufacturers in the world and probably an even smaller number of aircraft engine manufacturers. Basically, there needs to be international action by Governments to deal with this issue, whether through an action in this Bill, through action by the Government taken via international organisations or through discussions with the industry. As the Minister pointed out, we are still number two in the world on aerospace, which is a very important industry to this country. I would think that adequate information is bound to be available within the United Kingdom from the manufacturers of engines and aircraft or parts of aircraft generally, and I cannot see any reason why we cannot pursue this issue through that route.

We are in a worldwide competitive market, and no individual airline will be in a position to put its head above the parapet without putting itself out of business. Therefore, we need not only national or European action but international action to deal with this. I guess that we all fly in aircraft that are differently flagged.

We could be in an American aircraft, a British aircraft or an aircraft from Abu Dhabi. This is an international issue that needs international action. I do not think that we will resolve it simply by domestic means alone, albeit that we can set an example, and I have no doubt that that is the purpose behind the amendments. I think that the proposers would accept, though, that this needs an international response.

I hope that the Minister will allude to that and say whether he would be prepared to undertake on behalf of the Government to contact our European partners and some of our major manufacturers. We have medical expertise in this country that should be able to identify the significance of the problem. I think that the noble Countess said that you will not find if you do not look, which is a very telling point. Yes, I do not want to see our industry crippled competitively against others but, at the same time, if long-term damage is done to pilots and other air crew as a result of this contamination, that is a matter where we as a Parliament have a duty of care to people in the community who work in that environment, just as the noble Countess identified those people who worked in our agricultural sector and were exposed to vast quantities of contamination.

I recall the time years ago when people said that Sellafield was not a threat in the Irish Sea. We were told that the levels of contamination were perfectly safe. The levels of what people think is safe are now about one-thousandth of what they were 30 years ago. We are all in territory where we know that something is not right but we are not necessarily sure of the solution. There are many examples where substances entering our systems can do long-term damage if people are exposed to them for long periods of time.

I have an open mind on whether this is the right route but I hope that the Minister, on behalf of the Government, at least will address the fundamental and underlying point behind the amendments.

5.45 pm

Lord Davies of Oldham: My Lords, I shall contribute briefly because I cannot do justice to this issue. However, I hope that the Minister will do so. I pay tribute to the enormous work of the noble Countess, Lady Mar, in this area. I had the privilege of knowing Nancy Tait who happened to be a constituent when I represented Enfield and first came into the House. For a number of years her concerns about asbestosis were brushed aside on the grounds that the evidence did not match the allegations being made and anxieties being expressed. Everyone else knew that huge potential costs were involved if asbestos had to be stripped out of buildings that were already constructed, to say nothing about not being used again for building. She was right and the doubts of the authorities were eventually overcome. The evidence was produced and we are all healthier because of that, not least our schoolchildren because one of the great uses of asbestos was in schools.

I do not know whether this issue is as significant as that but when the noble Countess, Lady Mar, came to see me when I had responsibility for the department in this House a few years ago, I asked for all the investigations and evidence that the department could make on these issues. I know that a significant amount of work was done. The one thing that I was not prepared to do was to stand before the House on behalf of the Government and reject the noble Countess's amendments without an assurance that we had explored every dimension.

There was an element in that about which I have not heard any more. I wonder whether the noble Countess can enlighten the Committee. One of the issues was that the airline pilots, through BALPA, did not regard themselves as being excessively threatened by this problem. We all know that they have to protect their livelihoods and they have a vested interest, but equally no one goes to work thinking that they may be engaging in something that will seriously affect their health in the future or even make them dangerous if they fall ill while they are working. That was an important dimension. I do not know whether BALPA's attitude has changed. There has been no reference to it but it would be germane to the debate.

The Countess of Mar: I think that the noble Lord might agree that being an airline pilot is quite a macho job and you do not admit that you are feeling ill until you have to. We have two pilots here. Some of the people with whom I have contact are ex-BALPA pilots and are now seriously ill—some very seriously ill. While they were members of BALPA and working they did not complain. I mentioned at Second Reading the fear that they have of reporting because of losing their jobs.

Lord Davies of Oldham: We all understand that point. The noble Countess referred to macho jobs. There are lots of tasks that are extremely dangerous and people are prepared to take them on, but a risk to their health of what is involved is a long-running dimension that this manifestation represents.

My point is obvious enough: I was assured several years ago that there was not sufficient substance in the position as established at that stage for action to be taken. The action, of course, will be dramatic. Reference has been made to the fact that the Dreamliner does not use this air system. The Dreamliner is rather an expensive aircraft to produce, as we all know, and it is in open competition with the A380, which uses the old system. We are talking about massive resources being involved. There is no easy switch. If anyone had thought at any stage that everyone's health could have been safeguarded just with an easy technological change, that would have been done, but we are talking about something so much bigger.

Lord Empey: Does the noble Lord accept that maintenance is an issue here? The 146's oil seals were partly responsible when they corroded, largely due to the chemicals to which they were exposed. Maintenance may not be the solution but it is certainly an issue.

Lord Davies of Oldham: It certainly is; the 146 illustrated that in graphic terms and that is why changes were made. I hope that the Minister is able today to build on experience. After all, the issue has been before the department, thanks to the work of the noble Countess, over a number of years now. I hope that he is able to give the Committee reassurances about this question of health and how it is being monitored. I do not have the slightest doubt that if we are wrong, we would all feel dreadfully culpable because significant warning signals have been sent out, and that is why the issue has to be treated with the utmost seriousness.

Lord Wigley: Does the noble Lord agree that the first step must be to get authoritative independent evidence, facts and figures on which to base decisions, and that that needs to be looked at rigorously? That is something we could all support because out of that we can then reach reasonable conclusions.

Lord Davies of Oldham: Of course. That is a major exercise and a costly one, and would have to be done with the greatest thoroughness. The department and indeed the Government would have to be convinced that the anxieties were such that they could be allayed only by that approach. It is for the Minister to indicate to us whether he thinks that we are at that stage now; we certainly were not a few years ago.

The Countess of Mar: I have no intention of expecting the airline industry to scrap all its planes immediately and replace them with the Dreamliner. I recognise that that would be hugely expensive. It is just the same story as with asbestos and, in a more minor way, with sheep dip, although the latter problem has been resolved. I am concerned that people are not reporting ill health because they are frightened-frightened of losing their jobs, in one case, or of retribution. If the CAA had the power to enforce COSHH, doing so would make the airline owners maintain their aeroplanes properly- I am grateful to the noble Lord, Lord Empey, for his intervention there-and take notice when there was a complaint. Until we know how many complaints there are, we are not going to be able to solve the problem.

Lord Davies of Oldham: I hear what the noble Countess says, and I heard that case deployed at the time when we met previously on this issue. Overall, though, my experience is that, whatever risks to livelihood, people have the greatest concern about threats to their long-term health and it is therefore not the case that they conceal these issues. The issue with the asbestos problem was not that people were concealing the impact; what was not being substantiated sufficiently was cause and effect, which is exactly the issue here.

Earl Attlee: My Lords, I am grateful to all noble Lords for their contributions to this debate. On the first amendment tabled by the noble Countess, airline pilots and crew members are already protected in this area by Part IVA of the Employment Rights Act 1996, which was inserted by Sections 1 to 2 of the Public Interest Disclosure Act 1998, both as workers who can make a protected disclosure to their employer and as individuals who can make one to the CAA. The CAA is a prescribed person for the purposes of that Act, which means that it can receive "protected disclosures" or whistleblowing from the civil aviation industry.

As for awareness of these rights, the CAA has a published statement on its website in relation to its whistleblowing policy which makes it clear that it will investigate all complaints in an appropriate manner, endeavouring to maintain confidentiality at all times.

I add for the sake of completeness that, as well as the protection afforded by the Act, the CAA has long established processes in place for incident-reporting and to safeguard confidentiality. The chief of these is the mandatory occurrence reporting scheme established in 1976. Consequently, the noble Countess's amendment refers to protections already in place and is unnecessary.

The second amendment proposed by the noble Countess is also unnecessary. However, it also has an important and possibly unintended consequence which makes it unacceptable. The amendment would substitute the existing provision in Section 60 of the Civil Aviation Act 1982 with the wording that it proposes. This would be a backward step because it would cause the removal of the power which enables an Air Navigation Order to contain provisions,

"for safeguarding the health of persons on board aircraft".

That power has already been used.

The duty on the Secretary of State of,

"organising, carrying out and encouraging measures for safeguarding the health of persons on board aircraft",

now in Section 1(1A) of the 1982 Act, as inserted by Section 8(2) of the Civil Aviation Act 2006, was a widely welcomed reform. The existing Section 60 power is part of delivering that general duty. We do not want to lose that. I suspect that the noble Countess does not want to lose that either, but the effect, perhaps unintentional, of this amendment would be to remove the relevant subsection of Section 60. That is why I regard it as a backward step and why it is opposed by the Government.

There is also a second objection to this amendment. The matters listed in it are a mixture of UK legislation, European legislation and European Aviation Safety Agency technical specifications. They are already enforced by the appropriate regulators in relation to the protections that they give, including safety, technical integrity of aircraft and working conditions for those in the aviation industry.

The principal enforcement agencies are the Civil Aviation Authority and the Health and Safety Executive, and there is a memorandum of understanding, referred to by the noble Countess, between these two bodies setting out their respective responsibilities for enforcing occupational health and safety in relation to public transport aircraft while on the ground and in the air. It was drawn up by the two organisations with the aim of avoiding duplication of effort in the areas of overlapping mutual interest. There is therefore no need specifically to provide for the enforcement of these in an ANO.

The noble Countess suggested that the CAA was complacent. This is far from being the case. Successive UK Governments have investigated the matter thoroughly. The UK has an excellent safety record in aviation which we would not wish to lose by being complacent. Allegations of ill-health caused by cabin air have not been upheld by research. The main research study, published by Cranfield University in May last year, found no evidence of pollutants occurring in cabin air at levels exceeding available health and safety standards and guidelines.

However, I am well aware that the noble Countess has very strong views about the standards and guidelines. Levels observed in the flights that formed part of the study were comparable to those typically experienced in domestic settings. The department has now formally referred the published research studies to the Committee on Toxicity, the independent adviser to the Government on matters concerning the toxicity of chemicals, for it to consider the matter.

6 pm

The noble Lord, Lord Davies of Oldham, mentioned BALPA. It is interesting to note that when I had a meeting with BALPA recently concerning the Bill, at no time did it mention cabin air quality. In addition, BALPA supported the Cranfield research and issued a supportive press notice when it was published last year. The noble Countess suggests that pilots are reluctant to raise the issue because of job insecurity. Why, when they retire, do they not suddenly start blowing the whistle loud and clear? They do not.

The Countess of Mar: My Lords, that is precisely what they are doing. The people I have contact with are ex-BALPA pilots and they are now complaining. If the Minister was to go to a meeting of the GCAQE, he would see a lot of ex-BALPA pilots.

Earl Attlee: What I find odd is that the noble Countess has been raising the issue for some time, but no pilot or any member of cabin crew apart from a very few who are in contact with her has ever approached me on the issue. I have received nothing about it.

The noble Countess also asked me about medical data. The swab test research undertaken by the Institute of Occupational Medicine in Edinburgh found concentrations of organophosphate compounds consistent with previous measurements. I remind the Committee that the main research study published by Cranfield University in May last year found no evidence of pollutants occurring in cabin air at levels exceeding available health and safety standards and guidelines. Levels observed in flights that formed part of the study were comparable to those.

The Countess of Mar: I remind the noble Earl that in none of those aircraft was there a fume event, but they still found TCP in the aircraft.

Earl Attlee: The noble Countess has made that point before. As a mere parliamentarian, I have to rely on the academic research being conducted in an appropriate manner and subject to peer review. All the published research studies have now been formally referred to the Committee on Toxicity which is, as I said, the independent adviser to the Government. When I first came into the House in 1992, I was rapidly aware of the noble Countess's work regarding organophosphates and sheep dips.

In answer to a point made by the noble Lord, Lord Wigley, I am sure that the law is being properly applied. The noble Lord asked: how frequent are fume events? Incidence of fume events is extremely low. The most recent figures show that in 2010, there were 207 contaminated air events reported to the CAA mandatory reporting scheme out of 1.12 million passenger and cargo flights by UK carriers. That is 0.018% or less than 1 in 5,000.

The Countess of Mar: Does the noble Earl agree that the Science and Technology Committee found severe underreporting of fume events?

Earl Attlee: My Lords, I am not sure what would drive underreporting of fume events.

The noble Lord, Lord Davies, talked about his role in this matter and his discussions with the noble Countess some time ago. As I said, the UK has undertaken research where no other country has done so.

The Countess of Mar: I am sorry to interrupt the noble Earl, but Australia and the United States have done so.

Earl Attlee: My Lords, I am afraid we will have to have a difference of opinion on that matter. In view of what I have said, I hope that the noble Countess will feel able to withdraw her amendment.

The Countess of Mar: Will the Minister kindly address my question about the ability of the CAA to regulate through COSHH? I repeat: the CAA has no authority to enforce the COSHH regulations-this is from the CAA-and it is therefore inappropriate for the CAA to investigate any breaches of the COSHH regulations.

Earl Attlee: My Lords, in my answer I explained to the Committee that I am certain there is no gap in responsibilities between the HSE and the CAA.

The Countess of Mar: But the HSE has the ability to enforce COSHH regulations. The CAA has no ability to enforce COSHH regulations, on its own admission, and it is important that it should be able to.

Earl Attlee: Yes, my Lords, but as I explained to the Committee there is a memorandum of understanding, which the noble Countess referred to, to ensure that there is no gap between enforcement by the CAA and the HSE.

The Countess of Mar: I thank the Minister for his response but I find that really inadequate. The facts are there: the Health and Safety Executive has the ability to apply COSHH but the CAA, on its own admission, has not that ability. It is important because engine oils and their effects would come under COSHH. I thank the Minister for addressing my other points and I am also very grateful to the noble Lords, Lord Wigley, Lord Rotherwick, Lord Empey and Lord Davies of Oldham, for their contributions and kind comments, which I found quite embarrassing.

This is an important subject. I highlighted problems with sheep dip and I was told at first that it was perfectly safe. I was proved right on that occasion and I hope that noble Lords will listen to me because there are serious effects. What concerns me perhaps as much as anything is that passengers are never told when there has been a fume event. You might get a lady who is newly pregnant-perhaps she does not know that she is- and whose baby, when it arrives, has either a cognitive problem or a deformity. We know that foetal exposure to tiny amounts of organophosphates can be quite serious.

We really need to be looking at this more thoroughly. I know that when the Cranfield work was done, it was agreed that pilots would not be looked at until it could be established whether these toxic chemicals were in fact arising in airplanes. That work has been done and there has been a lot of criticism of it. I am not too happy about it, personally, because I have seen how such research can be twisted in order to provide the answer required and I mentioned intellectual corruption at Second Reading. I am not going to let go of this. I shall pursue it even beyond this Bill. I realise that it is difficult but the noble Lord will hear more of it. In the mean time, I beg leave to withdraw my amendment.

Amendment 71 withdrawn.

Amendment 72 not moved.

Clause 106 agreed.