

## FILE ON 4

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### ***ACTUALITY OF AEROPLANE***

O'HALLORAN: Economy class syndrome – the risk of blood clots on long haul flights – has been widely publicised. But is there a cockpit syndrome on jet airliners which could jeopardise the lives of everyone on board? A condition arising from fumes in the plane itself which could cause an air disaster by overwhelming the pilots.

KOLVER: I lost what is commonly called a situational awareness of what we were doing at the time, where the aircraft was in the air and keeping it the right way up. I was confused and I just basically lost the plot, didn't know what I was doing.

O'HALLORAN: From Australia, Sweden, Britain and North America, there's growing evidence of the dangers caused by fumes in commercial jets. For years trade unions have been urging investigation of strange neurological illnesses suffered by cabin crew. Now British safety authorities have woken up to the issue. They have told File on 4 about dozens of safety incidents. Some have caused diversions, emergency landings and even the incapacitation of pilots. But we have found evidence that the potential risks of air contamination on airliners was being discussed among aircraft engineers right back in the 1980s and even the 1960s. So what are the safety regulators doing to reduce the dangers? And does the aircraft industry, after many denials, now accept that fumes in the cockpit pose a serious safety hazard?

## SIGNATURE TUNE

KOLVER: We were on descent into Melbourne, and at the time we were descending through 10,000 feet, and we all started smelling an oily odour in the aircraft, and at the time we weren't too concerned. We had experienced these oil odours previously and had been advised by our company that they had no real effect on us.

O'HALLORAN: In July 1997, Captain Frank Kolver was piloting a BAe 146 short take off jet on a routine commercial flight from Sydney. As the plane descended through 10,000 feet towards Melbourne, he began to feel strange.

KOLVER: I had to make a small correction, which I found I could not do, by turning ten to fifteen degrees in the opposite direction, and I realised I was having difficulty in controlling the aircraft, and fortunately through training was able to recognise that I had a problem and was able to hand over the control of the aircraft to the First Officer.

O'HALLORAN: When you say you were not able to make the correction, what do you mean? You weren't physically able to do something or you weren't mentally able to do it?

KOLVER: A little bit of both. I felt that if I banked the aircraft to the required angle to turn it, I was actually going to roll the aircraft upside down. So had I continued, I don't know, I don't like to think what would have happened.

O'HALLORAN: Were you fit to fly an aeroplane at those precise moments?

KOLVER: No, not at all. That's why I handed over control of the aircraft.

O'HALLORAN: Luckily the co-pilot wasn't affected, but there were a series of other fumes incidents in Australia with the BAe 146 – a plane which can carry about a hundred passengers. That led to a major inquiry by a Senate Committee in Canberra, which began two years ago. The British company which makes the 146 – BAe Systems, formerly British Aerospace, gave evidence. It said the incident on Captain Kolver's plane was caused by a leaking oil seal, diagnosed three weeks earlier, and that

rapid maintenance action would have prevented contamination. But even so, a senior BAe official, Bill Black, told the inquiry that the fumes posed no threat to passengers or crew.

READER IN STUDIO: We're comfortable on the one hand that there is no flight safety risk. We're comfortable that our aircraft meet all of the rules. All of the evidence we have to date suggests that our aircraft does not leak any more than any other aircraft and does not produce harmful chemicals in the cabin.

O'HALLORAN: But only a week after that reassuring statement, in November 1999, the pilots of another BAe 146 plane, this time over Sweden, were also overcome by fumes. In a statement to an official inquiry, flight attendant Karin Ganslandt said she and other cabin crew members began to feel strange on the first of three flights between Stockholm and Malmo.

READER IN STUDIO: Moon walk is the way I would explain it. The upper part of the head felt heavy and there was a burning feeling in the nostrils. During the turnaround at Malmo, the whole crew discussed the unpleasant feeling in the body and most of all in the head that the cabin crew experienced.

O'HALLORAN: On the next trip the sensations reappeared, and on the third flight things got worse. When she checked in the cockpit before descent towards Malmo, all was not well.

READER IN STUDIO: Both the pilots had the oxygen masks on ... We stayed in the forward galley and looked into the cockpit frequently to see that both pilots were still conscious ... We mentally prepared ourselves for an emergency ...

O'HALLORAN: But after breathing oxygen, one of the pilots recovered enough to land the plane without mishap. However a long and thorough probe by the Swedish Board of Accident Investigation, which reported last week, blamed 'probably polluted cabin air'. And it called for international safety measures to address such incidents. Henrik Ellinder, who led the investigation, says that when one pilot falls ill, safety margins are cut. When both are affected, that's critical.

ELLINDER: This is considered to be a serious incident, and the reason for this is that both pilots – there were just two pilots on that aircraft – both pilots partially were incapacitated simultaneously, and that’s definitely a serious incident by that reason. That is a flight safety problem.

O’HALLORAN: What do you think was the cause of the illness and the partial incapacitation suffered by those pilots?

ELLINDER: It could be any type of toxic components in the air, but so far we haven’t been able to pinpoint what it might be.

O’HALLORAN: Twelve months after that event, the pilots of another BAe 146 – this time a British European plane – suffered a very similar experience. The plane was en route from Paris to Birmingham on November 5<sup>th</sup> last year. As it made its descent, both pilots suddenly became ill. The Civil Aviation Authority, which regulates air safety, logged it as a serious incident – a classification rarely used. Shane Enright of the International Transport Workers Federation, says from the few facts released by the CAA, an alarming picture emerges.

ENRIGHT: As the flight was taking off, passengers and crew reported an oily and petroly smell in the cabin, clearly indicating that there was something in the air on the aircraft. As the flight was coming in on its approach to landing, the pilot started to feel seriously nauseous, had difficulty in concentrating, while his fellow co-pilot became highly unwell with dilated pupils. In those circumstances they had to go onto oxygen, they weren’t able to concentrate and they had difficulty communicating. Even it seems that the vision of the pilot that was in charge was affected. It was an exceptionally serious incident. In this particular case both pilots were incapacitated and it could very easily have been, precipitated a serious crash.

O’HALLORAN: Now of course one of them was only partially incapacitated, it seems. He did actually manage to land the aircraft safely. No one was hurt or injured or anything.

ENRIGHT: That may be the case, however you’re supposed to have two pilots on board the aircraft in order to make sure that the aircraft is able to fly and land safely, and even the pilot that

wasn't completely incapacitated was ill enough indeed to have to be hospitalised immediately after the flight had landed.

O'HALLORAN: The airline, British European, says that both pilots were sent for medical checks and that nothing abnormal was found. The airline also carried out maintenance checks on the cabin air systems on all its BAe 146s and says it's had no further such problems. The Civil Aviation Authority have received safety reports on fifteen fumes incidents on BAe 146s in the last five years. Only one of them is listed as serious. But Swedish air accident investigator Henrik Ellinder says figures his inquiry was given by the plane makers themselves, BAe, were more troubling.

ELLINDER: In these figures you can see that from June 92 until January 01 a total of 22 cases were reported where the flight crew capacity had been impaired, and of these seven have been judged as serious since they affected the flight safety negatively.

O'HALLORAN: How surprised were you, if at all, by those figures?

ELLINDER: I was actually surprised that they were so high. I know there were some case in Australia and there were also some other cases, but this systematic logging of incidents like that was apparently only performed by British Aerospace. I was a little bit surprised when they presented those figures for me that they were so high.

O'HALLORAN: In these events safety became an issue quite suddenly. The medical effects were acute. But some pilots claim that fumes in the planes they have flown have brought on chronic conditions severe enough to ground them.

#### ACTUALITY WITH JAGUAR

PILOT: Lift it up slightly and then put it down. I think the hinge pin has dropped out. Hang on. That's the problem there. That's okay, we can soon tighten that up.

O'HALLORAN: For this pilot, now tinkering with his rare D-type Jaguar, flying planes is a thing of the past.

PILOT: Well nowadays we just use the car for track days and occasionally race it. Now that I'm not flying anymore, this is the nearest thing I get to an aeroplane. It's like a road-going Spitfire.

O'HALLORAN: After more than thirty years flying, he's had to retire early. He says this is because of ill health which he claims developed after breathing fumes while piloting BAe 146s for a major European airline in the 1990s. He spoke to File on 4 on condition of anonymity. He says his symptoms were mental as well as physical.

PILOT: Short term memory loss was the worst, and the concentration. The short term memory loss, for example I couldn't remember having put the undercarriage up on one occasion and I had to double check and look back. Now that's not something that a pilot would normally do. Basically I thought, well what's going on. The wheels were quite obviously up, but I couldn't remember having done it. Things that you would normally see as routine, you think, well I can't remember having done that. It was that sort of feeling. The symptoms got gradually worse and worse and worse, and I persisted in flying until somebody told me to stop, and that somebody was first of all my wife and then my general practitioner. He grounded me in November 1999. I think it's very difficult to prove it, but the medical opinion of the tests that I've had anyway are such that the symptoms I have shown are fully compatible with those of long term effect to exposure to toxic chemicals.

O'HALLORAN: How well do you feel the authorities in this country have addressed this problem?

PILOT: I think initially they have turned a bit of a blind eye to it.

O'HALLORAN: So what could be causing both chronic symptoms and the very sudden incapacitation of pilots? Environmental toxicologist Chris Van Netten of the University of British Columbia tried to unravel the mystery after pilots in Western Canada told him about five years ago of fumes on BAe 146 planes. In a modern jet, the cabin and cockpit air is drawn off from the airflow through the engines. As a result it reaches very high temperatures before being cooled again. Chris Van Netten says his research in the laboratory showed that at such heat, if certain engine oils get into the air, they can give off hazardous compounds such as organo-phosphates, including one called trycresyl phosphate.

VAN NETTEN: One of the components in these oils, which is a lubricating type of additive, which are called trycresyl phosphates, these are organo-phosphates, not necessarily identical to pesticides, but certainly similar in their structure and some of these have been linked to long term chronic effects. And some of the pilots and crew members in Australia and across North America and some in Europe have actually reported some of these long term neurological problems.

O'HALLORAN: But Chris Van Netten says heating jet engine oil can also produce carbon monoxide, the odourless gas which is sometimes fatal in domestic gas heating accidents. He says in North America it's also been blamed for a number of incidents where light aircraft pilots have blacked out and crashed. He knows of no such crashes on commercial jets. But Chris Van Netten believes carbon monoxide could well be implicated in some of the fumes incidents.

VAN NETTEN: The most serious one, because it causes the acute problems, is the carbon monoxide problem, and that's a serious one that has to be dealt with very quickly because if you don't do it you will really have an accident on your hands. And some of the symptoms and the complaints that people have been reporting are consistent with carbon monoxide poisoning. Now in addition to death, carbon monoxide can also cause long term chronic type of problems if you have long exposure to it, and some of the problems are associated with Parkinsons type of disease problems.

O'HALLORAN: What is the problem with carbon monoxide? How does it develop?

VAN NETTEN: It develops where you get incomplete combustion, and the interesting thing is that when they designed some of these aircraft engines, specifically the BAe 146s, they actually put in what they call a catalytic converter, a similar to what you have on your exhaust of your automobile, and that is supposed to make sure that any carbon monoxide is being reduced. Now when you have an oil seal leak in the engine itself, the whole system becomes overloaded, cannot deal with the amount of material passing through this catalytic converter, and you have now a problem of smoke in the cabin and all the other problems associated with that.

O'HALLORAN: The makers of the 146, BAe Systems, refused to be interviewed, but in a statement they say:

READER IN STUDIO: The quality of the air in aircraft cabins is an integral part of airline safety and as such is of clear concern to the aviation industry. Allegations of ill health associated with the cabin environment are always taken seriously and BAe Systems, along with other manufacturers and operators, has taken an active role in the investigation and research of this issue. To BAe Systems' knowledge, none of the research carried out to date has demonstrated a causal link between the symptoms complained of and the cabin environment.

O'HALLORAN: They say they will continue to monitor reports of any problems and help airlines deal with them. In the past BAe have strongly rejected claims that organo-phosphates in fumes could make pilots ill, and they have said independent analyses of the plane's cabin air have shown no contaminants at anywhere near current safety limits. However we learned the question of carbon monoxide was discussed in relation to fumes on the 146 at an industry meeting in London last February. The company that organised it put the minutes of the session on its website. In a list of points on cabin air made by Ivor Williams of BAe, one entry reads:

READER IN STUDIO: Carbon monoxide appears to be the problem, but carbon monoxide detectors have found nothing. Continuing to work with toxicologists and doctors.

O'HALLORAN: When we asked BAe to elaborate on this point, they said they were now convinced carbon monoxide was not the problem and that the meeting minute only reflected a belief by others outside BAe that it was. The mystery deepens. The Civil Aviation Authority told us they began to focus on fumes reports on the BAe 146 after events in Australia from 1997 onwards. However they don't appear to have taken decisive action until after the serious Birmingham incident last November. They refused to be interviewed, but in a statement they say:

READER IN STUDIO: The Civil Aviation Authority is working closely with the manufacturers of the aircraft and engines to find the exact cause and a solution to the problems of potentially hazardous fumes and odours. A Mandatory Airworthiness Directive was issued by the CAA in March this year to address the problem on BAe 146 aircraft. This mandated immediate inspections and regular actions to reduce the likelihood of engine oil leaks into the cabin air supply. Meanwhile instructions

have been issued to flight crew to don oxygen masks whenever a smoke or fumes event is suspected or experienced to ensure flight safety is maintained.

O'HALLORAN: But it's now clear that it's not only the BAe 146 that's had problems with fumes. The Boeing 757 is a much bigger plane. It can carry more than two hundred passengers. We've learned that while flying it, a surprising number of pilots have suffered health effects they link to fumes on board.

#### ACTUALITY OF PILOT DRAWING SKETCH

PILOT: Basically the air comes from the outside. It goes into the engine, this bit here, then the air is heated and modified. It goes into an air conditioning unit, this piece here if you like ...

O'HALLORAN: On his living room table in Surrey, a pilot sketches how the air reaches passengers and crew on a modern jet. It's of close personal interest to him, because he too has had to stop flying through ill health which he blames on fumes. He flew Boeing 757s for a major airline, but a few years ago he started to suffer flu-like symptoms, lethargy and difficulty with thinking clearly. He has never spoken to the media before, but he agreed to talk to File on 4 on condition that we don't reveal his name or the airline he worked for.

PILOT: I really didn't know what was causing the problem until about three years ago. I got on board one of our aircraft and there was a horrendous smell of engine oil in the flight deck. This was on the ground before we'd even started the aircraft up. We switched on the air conditioning, which is powered by the auxiliary power unit in the tail of the aircraft, and within two or three minutes I felt really horrendously dizzy. I had to get out of the aircraft, I had to go into the terminal, write an air safety report and I couldn't think properly and I almost passed out. The First Officer said he had a headache, the cabin crew all complained of headaches, so I put the aircraft unfit for further service. I spoke to the flight crew manager and he immediately took me and the First Officer off a three or four day trip which we were in the middle of without any explanation at all, and it was only after that that I realised that the engine oil fumes which had got into the air conditioning system were causing probably these symptoms.

O'HALLORAN: Do you think you were fit to fly a plane or not on that day in November 98?

PILOT: I certainly was before I inhaled the engine oil fumes, but within two or three minutes I definitely wasn't.

O'HALLORAN: In November last year the pilots of another Boeing 757 were overcome by fumes, but this time it was much worse because the plane was in flight. The Civil Aviation Authority records it as a serious safety incident. The brief report says there was an oily metallic smell in the cockpit, that the pilots missed a number of calls from air traffic control and became partially incapacitated. Shane Enright of the International Transport Workers Federation says that the few facts revealed by the CAA have grave implications.

ENRIGHT: What's particularly disturbing about this incident is that as a result of the incapacitation the crew became unaware that their abilities had been impaired and indeed the pilot had to be told to slow down as he was approaching landing. Now if you have circumstances where crew are not even able to judge their own cognitive and mental abilities, I would say that that's something that puts a flight seriously at risk. I'd also say that if the pilot forgets to slow the aircraft down during approach, as the report says, and the pilot ignores a number – in fact numerous air traffic control calls, then in my book that means that the flight is seriously at risk.

O'HALLORAN: In the last two years, the Civil Aviation Authority have recorded 28 safety incidents with fumes on Boeing 757s, and this year alone they tell us the effects have been that seven pilots suffered some impairment of their ability to fly the plane, and a further eleven felt unwell. We've learned that many of the incidents were on British Airways flights. BA at first said in a statement that at no point did the problem present any danger to aircraft, passengers or crew. But when we referred them to the serious incident last November, they withdrew that comment. In their revised statement they said:

READER IN STUDIO: The vast majority of these incidents have lasted a short period of time and have passed without any serious effects on our flight crew ... Safety is our number one priority and we have been actively working with Rolls Royce, Boeing and GE to investigate this problem ....

Modifications have been carried out on those affected engines to prevent a repeat of the problem, and all 757 engines of the same type will be modified as a precaution.

O'HALLORAN: But could the problem be even bigger than the official figures reveal? Do all reports of such safety incidents actually reach the safety regulators? The 757 pilot we spoke to said that after he was overcome by fumes, he at once submitted a safety report. We saw a copy of it. The form appeared to commit his airline to filing it with the Civil Aviation Authority as a so-called mandatory occurrence report, if the pilot ticked the relevant box. He did, but the CAA never received it. What happened to the report you filed? Do you know?

PILOT: The airline took it and I think they replied to me a few weeks later, although I didn't really take it on board, because I chased up the CAA who I assumed would have it forwarded. However in this case the airline decided it wasn't a significant report and they apparently didn't forward it to the CAA. I checked with the CAA some weeks or months later and they had no record of it.

O'HALLORAN: Why do you think it's important that incidents like that should be reported to the authority?

PILOT: Well, if the authority doesn't know there's a problem, there's nothing they can do about it. I understand that in recent years – ie, the last two or three years – more and more reports have been forwarded, and it's a worldwide problem which is slowly being acknowledged. But I – and the airline – were aware of it over three years ago.

O'HALLORAN: The Civil Aviation Authority says all airlines are legally required to file reports on safety incidents. On the Boeing 757, it says it's working with the manufacturers and taking all possible steps to find the exact cause and to solve the problem. The Air Accidents Investigation Branch is also inquiring into a number of the fumes incidents on BAe 146s and Boeing 757s and will report next year. The makers of the 757, Boeing, did agree to discuss some of the issues and evidence. David Space of the Boeing Commercial Airline group says the company is doing all it can to help the investigations in Britain.

How much do you know about these air contamination incidents?

SPACE: I'm aware that they have occurred and I am aware that there is discussion ongoing in Britain with the airline and with the CAA, and we have sent people over there, we have had meetings with them, we are discussing with them on airplane specifics, but more details than that I'm not at liberty to go into right now. We'd like to have this investigation go forward and get down to the root causes.

O'HALLORAN: The British Air Accidents Investigation Branch suggests that the cause of these incidents is lubrication oil, the likely cause, leaking through the seals and contaminating the cabin air. Do you agree with that?

SPACE: I wouldn't speculate. I think we need to let the investigation go forward and that we need to look at all possible causes, let that go through and we'll see what happens.

O'HALLORAN: In these incidents, of which we've been told about more than twenty, they talk about incapacitation of pilots, impairment, oxygen masks being used in some cases, emergency landings, diversions, and quite a number of pilots affected. How do you react to all that?

SPACE: I think any time that there's reports like that, we take it extremely seriously. Safety is paramount for Boeing and we look at this as an area that has to be investigated, and we are going to cooperate fully and we'll let the investigation go forward and be fully supportive of that. But I think we need to look at all possible causes and go forward and we'll see how the outcome comes out.

O'HALLORAN: Boeing say that many independent studies have shown the quality of cabin air on its planes to be excellent. And in the industry as a whole, such analyses have been heavily relied upon to rebuff claims by staff over illness and fumes. But in a significant departure, David Space of Boeing conceded to File on 4 that on very rare occasions things can go wrong. He quotes the safety regulator in America, the Federal Aviation Administration, as recording 167 such incidents in the last ten years. He says there's now a case for research into these so-called 'upset conditions'. Why are the rare upset conditions, as you call them, why are they important?

SPACE: They're important because it's viewed as something that could happen, and it has happened on a rare occasion. Again the FAA database shows 167 events in ten years, and we want to see if that can be captured, if that can be quantified, and develop the research protocols necessary to study that.

O'HALLORAN: And the rare upset event can affect safety and does affect safety on rare but significant number of occasions?

SPACE: I wouldn't speculate on that. I really think what we need to do is wait for the real cognisant authorities, like the National Academy of Sciences to come out with their report, and they are looking at potential contaminants and potential health effects.

O'HALLORAN: Well the Civil Aviation Authority in Britain has made it crystal clear to us that they do regard this now as a safety issue, whatever the history of it may have been. They must be right, mustn't they?

SPACE: I'm not going to, I wouldn't speculate on that. I think we need to let the investigation go forward and we need to look at the outcome.

O'HALLORAN: But trade unions in the United States believe the 167 incidents recorded by the FAA is only a fraction of the real total. The Association of Flight Attendants say they've been told of about 8,000 incidents involving smells and fumes in the last fifteen years. Deanne Dewitt, a flight attendant working out of Seattle in Washington State, says she herself has been in five incidents in nine years, on McDonnell Douglas MD-80 series planes. The last was in October last year. There were faults in part of the cabin air system known as the air packs. She agreed to speak on condition that we didn't name her airline, which she is still working for.

DEWITT: It wasn't until we were airborne and the flight attendant crew became ill that I called the flight deck, found out that they were on oxygen, because I knew at the time, when I started to experience the symptoms, that it was an oil of some sort, because of the taste of the air, the burning of the eyes, the burning of the chest, the smell and the haze in the aircraft. It wasn't until then, until I challenged the flight deck and I looked at the log book that I found out that we had had a significant

dripping of the oils, and that one of our air packs was completely turned off, inoperable, and the other one was leaking so much oil that it was burning off and coming into the cabin.

O'HALLORAN: So let me get this right. You take off, you're in mid air. You and the other flight attendants are feeling ill. You're breathing fumes, you think. And then you go onto the flight deck and you discover the pilots have got oxygen masks on.

DEWITT: Right.

O'HALLORAN: What about you?

DEWITT: Well we, we on board, we have two tanks of medical oxygen which are for passengers with needs. So after I found out the flight deck was on oxygen, I went back and went to use the medical oxygen first. That had been depleted. That had already been used up.

O'HALLORAN: What do you mean, it had been depleted?

DEWITT: Someone had already used the medical oxygen. So that means that before we got the aircraft, the other crews must have been using that oxygen, because the plane was already dripping oil, and they had been flying the plane with this mechanical problem and the other crews had used the oxygen.

O'HALLORAN: But many events of that kind are not reflected in official figures, according to Judith Murawski of the Association of Flight Attendants. She says she was recently phoned about an incident in which two pilots became ill on a scheduled flight from San Francisco to Las Vegas on October 30<sup>th</sup>. Despite its apparent seriousness, details weren't sent to the Federal Aviation Administration.

MURAWSKI: The flight attendant told me that upon landing, the pilot and the first officer were rushed to an emergency medical centre for suspected carbon monoxide poisoning, because they had experienced disorientation and dizziness during the flight and during the landing. Interestingly enough though, the airline did admit to the flight attendant who called to follow up on this incident that the oil reservoir in San Francisco, the point of departure, had been overfilled and that some of that oil had

leaked into the air supply system and contaminated the air that is supplied to the cockpit, and we were able to get a hold of some of those maintenance records for that specific aircraft that did support this.

O'HALLORAN: What kind of aeroplane was that?

MURAWSKI: That was a Boeing 737. I have also seen reports of these types of incidents on the triple seven aircraft by Boeing, the Airbus 320 aircraft, and the list goes on. We've got a large file full of similar reports. It's difficult to answer the question of how many per year or per five years or per month because there is no requirement for the FAA to collect these incident reports. And so if the union hears of them, it's often by chance.

O'HALLORAN: This year it was reported that one American operator, Alaska Airlines, has paid out around \$700,000 to settle a claim by 26 flight attendants over fumes and health effects. The same group are now suing Boeing and an engine manufacturer. Boeing say that because of litigation they can't comment, either on the Alaska Airlines case or on fumes on MD-80 aircraft. When dealing with complaints by staff, the industry for many years resisted the idea that cabin or cockpit air can be contaminated, says Shane Enright of the International Transport Workers Federation. He says when he raised the possibility in connection with the sick cabin crew his federation represents, it was entirely dismissed.

ENRIGHT: The airlines denied that there was any problem. Indeed some of the airlines concerned said that it was a case of a mass hallucination on the part of the crew. So we then went direct to the manufacturers and in 1997 we asked Boeing, the manufacturer of the major range of aircraft in flight today, whether they could identify any sources of contamination of the aircraft cabin. They indicated to us at the time that it was simply not possible for the sort of contamination that we were concerned about to occur because of the way in which ventilation systems were designed.

O'HALLORAN: He says the man who told him this at Boeing was David Space. But Shane Enright was surprised to discover two years later a report which discussed cabin air contamination written for a large professional and educational body, the Society of Automotive Engineers, as long ago as 1981.

ENRIGHT: The document said that engine oils and lubricating fluids and hydraulic fluids could enter the aircraft cabin and they could degrade as a result of heating at temperatures above 320 degrees Centigrade into irritating and toxic compounds. Now this report will certainly have been drawn to Boeing's attention, indeed Boeing have an active engagement in the development of these studies. I would find it really quite extraordinary if they weren't aware of this report at the time, certainly at the time of my meeting with them in 1997.

O'HALLORAN: But it's fair to say, isn't it, that David Space may well have meant, when he spoke to you, that there wasn't contamination which could result as far as they knew in serious health effects on the pilot and crew, for instance?

ENRIGHT: Well I find that very surprising. The Society of Automotive Engineers report talks about toxic compounds entering the aircraft cabin air supply. It talks about irritating compounds. I don't expect them to be aero-medical experts, but I do expect them to understand that these contamination incidents are potentially very serious.

O'HALLORAN: Boeing executive, David Space, confirmed that he had met Shane Enright and discussed cabin air. He thought Enright had found the meetings very productive. But what about the 1981 report which spoke of cabin air contamination and toxic compounds produced by heated jet engine oil? A report which indeed refers to even earlier papers relating to Boeing planes going back to the 1960s.

SPACE: I would very much like to see a copy of the report and review it, and I would be glad to provide you with constructive input and my thoughts on the report.

O'HALLORAN: He feels that you in the industry collectively and you at Boeing should have known that the toxic possibilities of contaminants getting into cabin air were known about in the early 80s and were being discussed and written about at that time, and that you should have told him that when he met you.

SPACE: What Shane and I looked at was all the air quality studies that are out there published. If there's one that didn't get looked at, then please provide a copy and we would be glad to look at it.

The focus on contaminants again has only been in the last two or three years, four years at the most, when it was brought up in the research committee by some of the top scientists, and this is an area that we are focusing on, research has already been done, and more research is being proposed.

O'HALLORAN: That research paper actually includes references to Boeing company reports, CS Robbins Boeing Company, 737 bleed air contamination analysis, April 1969. That's one of the papers mentioned in it, and there's another paper, November 1968. So this problem goes back more than three decades.

SPACE: I'm not going to speculate. I really think we need to say what is known now in these research bodies and what research is being done and why is it being done, and that's really where I think the focus should be. I think we've been trying to be very upfront and very honest. We want to very much ensure a healthy, safe, comfortable cabin environment and have it to be a good experience for people flying.

O'HALLORAN: Unlike Boeing, some others closely involved in the fumes problem here were unwilling to discuss the issues on air, as indeed were the safety regulators and the government, who have kept their heads well below the parapet. We were told the Aviation Minister wouldn't be interviewed until he sees the inquiry by the Air Accidents Investigation Branch. Meanwhile those who represent airline staff are growing impatient. Shane Enright says the failure of the industry and those who oversee safety to tackle the problem more openly and robustly in the past has seriously delayed the search for a solution.

ENRIGHT: I think the people who operated aircraft and manufactured aircraft thought that they would be able to get away with not alarming the public or drawing public attention to a potential hazard, so I really think they've been brushing it under the carpet for very many years. Clearly not enough is being done. Clearly the problem still exists. It's time for the industry to wake up, it's time for the industry to take action.

O'HALLORAN: After September 11<sup>th</sup> and the more recent air disaster in New York, it could be argued that the last thing the airlines need is another safety scare. But the evidence we've heard suggests it's the safety authorities who are ringing the alarm

bells. It's clear they and the industry are now working behind the scenes to drastically reduce fumes incidents. The industry has now accepted that if the necessary engineering fixes help to prevent a single air disaster, then the cost – even in the current financial crisis in the industry – will have been well worthwhile. What some pilots and cabin crew will say is it's taken them too long to reach that conclusion.

SIGNATURE TUNE