

## **Extracts from actual UK AAIB (Air Accident Investigation Branch) reports.**

All of these official statements are from different actual flying incidents and give an idea of the effect of the fumes on the flight crews.

- The pilot in command, following the onset of these fumes, had difficulty in concentrating on the operation of the aircraft, and suffered from a loss of situational awareness.
- ...the crew had difficulty explaining the urgency of the situation (Aircraft diverted to Paris due to fumes and a smell of oil in the flight deck) to air traffic control.
- During the first flight the purser experienced an unpleasant feeling of fainting. She told the other two cabin crew members about this and they stated they had experienced something similar. They did not recognise any special odour.
- During the subsequent flight one of the cabin attendants who was placed in the forward part of the cabin experienced an odd pressure in the head, nasal itching and ear pain. The other two colleagues in the cabin also felt discomfort and the feeling of “moon walk” while working.
- The third flight the same day was flown by the Commander. During the flight, which took place at a cruising altitude of FL 280, all three members of the cabin crew experienced similar discomfort as during the preceding two flights but more pronounced. During the first portion of the flight the pilots did not notice anything abnormal but shortly before they were to leave cruising altitude the Commander began to feel a mild dizziness.

During the approach into Malmo/Sturup airport when the aircraft was descending through FL 150 the Co Pilot suddenly became nauseous and immediately donned his oxygen mask. Then, after an estimated period of ten seconds, the Commander also became very nauseous and immediately donned his oxygen mask. After a few seconds of breathing in the oxygen mask the Co Pilot felt better and thereafter had no difficulty in performing his duties. However the Commander felt markedly dizzy and groggy for a couple of minutes.

He had difficulty with physiological motor response, simultaneity and in focussing. Finally he handed over control to the Co Pilot. After having breathed oxygen for a few minutes even the Captain began to feel better and landing on Runway 27 without problems.

This incident was caused by the pilots becoming temporarily affected by probably polluted cabin air.

- All four cabin crew members reported feeling nauseous following passenger disembarkation, but they did not realise that they all had been similarly affected during the descent until the matter was discussed between themselves after landing. In addition to nausea, they reported feeling light headed and hot, but neither the flight crew nor passengers reportedly suffered any ill effects. The aircraft was reported to have had a history of such events and, despite satisfactory ground tests after this incident, similar symptoms were reported two days later by a different cabin crew when working in the forward galley.
- During the climb, the Senior Cabin Attendant (SCA) entered the flight deck to report that two passengers towards the left rear of the cabin had informed that they had noticed an oily/petrol like smell. In addition, a cabin crew member of a Company BAe 146 positioning crew had also reported a similar smell.

He (First Officer) sat in his seat but began to feel progressively worse, although his work load was low. He felt 'light headed' and had difficulty concentrating. He was aware of a tingling feeling in his finger tips and his arms started shaking.

At about this time the Commander also began to feel nauseous and asked the First Officer how he felt. The First Officer replied that he "felt dreadful" and the Commander looked at him and saw his face was white and that his pupils appeared dilated.

When she (SCA) arrived, the First Officer was on 100% oxygen, his seat was well back from the aircraft controls and his hands were seen to be trembling.

The Commander was feeling progressively worse. He felt light headed and recalled considering three aspects: landing, declaring an emergency and putting on his oxygen mask. However he felt able to cope only with one decision and continued his approach.

...the Commander seemed to have 'double vision' and had difficulty in judging height.

The Commander noted afterwards that it was all he could do just to land the aircraft as by now he felt very light headed and tired.

He (First Officer) did not consider that being on oxygen had made him feel better only after he had left the aircraft. However, he still felt as if he was in a daze.

- The crew noticed an “oily metallic” smell on the flight deck during an outbound flight from London Heathrow to Copenhagen. The same smell was noticed on the return flight. Towards the end of the flight, on approach to Heathrow, the crew missed numerous ATC calls, which prompted the controller to ask “if everything was all right”. In addition the Commander did not reduce aircraft speed to configure the aircraft for landing until reminded by the controller when the aircraft was at 3.7 nm DME (Distance Measuring Equipment). It was only after landing that the crew considered a possible link between the smell and their performance. When the smell was first detected, the crew had discussed the use of oxygen masks, but had concluded that there were no side effects to justify their use.

Subsequently, neither crewmember experienced any further symptoms or adverse effects.

- After parking on stand, both flight crewmembers experienced headaches and eye irritation.
- .....the Commander found it very difficult to concentrate on completing the fuel check and R/T tasks. He reported that his throat was dry, that his eyes felt irritated, that he had a headache and was generally aware that all was not well. The SCA reported that she also had a ‘very dry throat and eyes’ and the other crewmembers also had headaches.
- The Commander stated that, following the incident, he developed blisters inside his mouth, around his left inner cheek, on the roof of his mouth and left lower rear gum. He also had a tight chest, sore throat and suffered from coughing. The source of fumes was subsequently traced to No 3 engine, which was replaced on the following day.
- .....when fumes entered the flight deck and reportedly caused ‘dizziness and irritation to eyes’

However the problem recurred on 22 February 2001 when an oily smell was reported to have persisted on the flight deck for the duration of the flight, causing nose, and increasing throat irritation in both pilots.

- In addition to headaches, both pilots suffered from irritation to their mouths and nasal passages. An oily film was subsequently wiped off the flight deck CRT displays and passed to the operating Company’s engineering department for analysis.

- Both flight crew were left with a metallic taste in the mouth; the Commander also experienced a tingling sensation on his lips and a sore throat for several days. The First Officer was left with minor eye irritation.
- During the climb the Commander noticed a metallic taste coupled with an increasingly strong smell. The commander began to feel light headed and “un-coordinated”. The effects were still evident after landing with some reported errors of judgement and garbled speech.
- During the turnaround, the Commander alighted the aircraft in order to breathe fresh air but, after a short time, he suffered a head ache, itchy eyes, nausea and a bad taste in his mouth. The same crew then prepared the aircraft for return sector but, when engines number 3 and 4 were started, the Commander and the cabin staff felt increasingly unwell and as a result, the flight was cancelled. The aircraft was inspected in accordance with Service Bulletin ISB 21 – 150 but this did not reveal any oil contamination. However, following an air test it was found that engine No 4 and the APU were both the source of the fumes.
- The fumes reportedly affected two cabin staff and several passengers.
- The cabin manager felt overwhelmed by these fumes, and was on the verge of passing out, when her colleagues became aware of the situation and administered oxygen to her. After 10 minutes, the cabin manager recovered but was unable to resume her normal duties. Subsequent blood tests revealed that she had been exposed to higher than normal levels of carbon monoxide. (CO).
- The crew began to feel nauseous and so donned their oxygen masks, declared a PAN and returned to Heathrow where an uneventful landing was made.
- Then he started to feel dizzy and so donned his oxygen mask.
- The co pilot was limited in his capability of acting during the approach and landing due to the effects of fumes.

The medical examination of the co pilot after the flight showed that during the flight toxic exposure took place.

The medical examination of the Commander after flight did not show any results.

- They described it as a ‘burnt’ or ‘exhaust’ smell, but it was not accompanied by any visible smoke. Soon after, both crew members began to experience symptoms of tunnel vision, loss of balance and loss of feeling in the hands and lower arms. They immediately donned their oxygen masks, breathing 100% oxygen, which improved their condition noticeably.