

Operational impact of exposure to oil/hydraulic fumes

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Smell/see something? Pilots instructed to complete smoke/fume checklist:

1. Don oxygen mask
2. Contain obvious problem
3. Trouble shooting
 - (a) Left pack off, wait 2 mins, evaluate by sight/odor
 - (b) If ineffective left on, right off, wait 2 mins, evaluate by sight/odor, and so on...
4. If unable to contain, divert

Instructed to not deploy pax oxygen masks when smoke is detected in a pressurized cabin, a limited amount of O₂ is supplied and is mixed with ambient air and smoke

Example of air conditioning control panel



Issues – 1 of 2

- Odor is subjective measure of problem
- Failure to don oxygen mask = exposure
- Pilots not given objective data on either nature or location of contaminant source
- Unmasking may be required during troubleshooting = exposure

Issues – 2 of 2

- No protection for passengers, little for FAs
- Prolonged trouble shooting = prolonged exposure
- Limited duration of crew O₂ (30 minutes maximum, compare to ETOPS rules for 2+ hours away from nearest airport)
- Flight attendants not trained

Example of SDR report, US airline -- Jan 16, 2010

4. Problem Description (Note: Please limit your description to 1500 characters.)

CLT FLT 1041, DURING THE FLIGHT, MULTIPLE CREW MEMBERS EXPERIENCED SYMPTOMS OF POSSIBLE AEROSOLIZED FUMES FROM CABIN AIR. SUSPECT THE RIGHT RESERVOIR WAS OVER SERVICED DUE TO POSSIBLE BAD CONNECTOR (D60) SHORT (SHIELDING DAMAGE). REPLACED CONNECTOR AND SERVICED RESERVOIR TO PROPER LEVEL. REPLACED TRANSMITTER (AS A PRECAUTION). BORESKOPED LEFT AND RIGHT HPC BLADES FOR WETTING, NONE FOUND. REPLACED RECIRCULATION FILTERS. CHECKED OPERATION OF LEFT, CENTER, AND RIGHT PRESSURE MODULES RESERVOIR. OPERATIONS GOOD.

- Aircraft mechanical records confirmed oil leak in #1 engine
- Aircraft met by 12 ambulances
- 6 of 7 crewmembers (including both pilots) still not back to work due to neurological symptoms

Captain Dave Hill

F/O Mick Fowler

- Real life experience.

How to prevent exposure to fumes?

- Proactive maintenance to avoid failures (e.g., replace parts on schedule, not just when they fail)
- Clean the air - not appropriate to provide supply air from engines/APU but not filter
- Monitor the air - provide real time feedback to flight deck with nature, location, extent of contamination

More -- prevention

- Use less toxic oils – USAPA aware of French product without TCPs
- Educate/train crewmembers to recognize fumes and deplane/contact maintenance if detected during ground operations

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