An attempt to characterize the frequency, health impact, and operational costs of oil in the cabin and flight deck supply air on U.S. Commercial Aircraft

(Received 15 December 2007; accepted 28 March 2008)

Published Online: 2008

CODEN: JAIOAD

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Abstract

Industry, government, and labor representatives have all acknowledged that air supply systems on commercial aircraft sometimes get contaminated with pyrolyzed engine oil or hydraulic fluid, but efforts to define “sometimes” have been lacking. Despite the lack of attention it has received, the answer to this “how often” question is important because it will influence the willingness of industry, as well as regulators and legislators, to develop and implement control measures to prevent such air supply contamination. To address this data gap, an industrial hygienist collected reports of air supply contamination over an 18-month period (January 2006 through June 2007) from the following sources, all per defined inclusion criteria: (1) Service Difficulty Reports (SDR) and Accident and Incident Data System (AIDS) reports that airlines submitted to the Federal Aviation Administration (FAA); (2) incidents that flight attendants documented with one of 20 airlines and copied to one crewmember labor union; and (3) newspaper clips identified in online searches. A qualified airline mechanic reviewed each SDR and AIDS report with an oil or hydraulic fluid-related mechanical defect that did not explicitly mention oil or hydraulic fluid in combination with a specific word that indicated air supply contamination (i.e., “fume,” “haze,” “mist,” “odor,” “smell,” or “smoke”) to determine its eligibility. The resulting dataset of 470 air supply contamination events reported in the U.S. commercial fleet over an 18-month period translates into an average of 0.86 events per day and includes 350 incidents reported by airlines to the FAA, 115 reported flight attendants to their airline, and 37 incidents reported by at least one newspaper. There was limited overlap between sources. The data are discussed in detail along with commentary on whether and how the data are representative, the health and operational costs
associated with air supply contamination, and some preventive measures.

Author Information:

Murawski, Judith T. L.
*Industrial Hygienist, Association of Flight Attendants-CWA, AFL-CIO, Washington, DC*

Supplee, David S.
*Director, Flight Safety, International Association of Machinists, AFL-CIO, Seminole, FL*

Stock #: JAI101640

ISSN: 1546-962X

DOI: 10.1520/JAI101640