MAY 3 1 1989

AIRCRAFT CABIN AIR QUALITY - WHY SMOKING BANS ARE UNNECESSARY

4/89

1. The next time the "no-smoking" light comes on in an airplane, clap - for the smokers this time. You owe them one. Remember how you were told of the horrors of tobacco smoke in airplane cabins? Well, just like many of the conflicting statements regarding what is bad for you, a recent study[1] concluded that cigarette smoke is a symptom and not the cause of bad airplane cabin air quality. This study concludes that the serious problems with the air quality in airplanes are attributable to chemicals and conditions independent of tobacco smoke. Chemicals such as ozone and carbon dioxide, coupled with an extremely dry environment (low relative humidity), are responsible for eye discomfort, nose, throat irritation, and headaches on airplanes. These conditions are exacerbated by the reduction in ventilation rates and the practice of recirculation of stale air currently employed by many airlines as a means to economize on fuel costs. These surprising results were discovered as a result of a study designed to determine the effects of cigarette smoke on airplane air quality. The simple solution to the entire issue is to improve airplane ventilation systems. Of course, the easiest and cheapest solution for the airline industry is to ban smoking, but that only removes the visual sign of an underlying problem. This time, if it were not for the smokers, you would be uncomfortable and not know why.

2. ALL major inflight tests of tobacco smoke conducted since 1971 have concluded the amount of cigarette smoke detected in actual commercial flights is extremely small, posing no demonstrated risk to nonsmoking passengers or flight personnel. For example, studies of transatlantic flight attendants published in The New England Journal of Medicine (1983) concluded that the physiological effects of ETS were unlikely[2]. Murumatsu, Umemura, Okada and Tomita, in their survey of inflight ETS levels, also found that the exposure to ETS on Japanese domestic flights was small.[3]

3. "People may attribute discomfort to smoke, but there are other potential causes. The greatest impact is the relative humidity which is so low during flight --it drops from 40 to 70 percent to 5 to 10 percent -- that your whole upper respiratory system dries out at flight altitude."[4]

4. One of the major pollutants in an aircraft is the ozone. "If a plane has a good catalytic converter, and if it is operating and maintained properly there should not be much excess ozone. Otherwise, ozone will cause a short cough, eye discomfort, nose and throat irritation and headache and asthmatic symptoms."[5] Symptoms are usually associated with tobacco smoke.

---

[1] "Bad Air In Airplane Cabins? It May Not Be Smokers," International Herald Tribune, April 21, 1989.

[2] Environmental Technology Letters 1988, Vol. 9, p. 509-14.

[3] Foliart, D., Benowitz, NL., Becker, CE., New England Journal Of Medicine, Vol. 308, 1983.

[4] Murumatsu, M., Umemura, S., Okada, T., and Tomita, H., "Personal Exposure to Ambient Nicotine in Daily Environment," National Academy Press, 1986.

[5] Holcomb, Larry, "Impact of Environmental Tobacco Smoke on Airline Cabin Air Quality", 1988.

5. In 1986 the National Research Council Committee reported that there is a risk of "infection" when the amount of air supply to each passenger during a flight is minimized.

6. Although the captain of an airplane can control the ventilation rate on the airplane, he/she usually cuts the air supply in the cabin to smaller exchanges. Airlines claim this saves fuel by changing the proportion of fresh air and recirculated air. Therefore, the pilot's cabin gets a 50 times higher rate than the rest of the plane.

7. The best indicator of general indoor air quality is the level of CO^2. In buildings, the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) recommends that levels do not exceed 1000 parts per million. In airplanes, the levels of CO^2 can be as high as 2500 per million, or 150 times the level in buildings. CO^2 will be reduced with proper ventilation systems.

8. Newer airplanes give the captain the option of cutting back ventilation rates below the 7 cubic feet of fresh air/minute per person in the economy section of the cabin by turning off environmental control units. ASHRAE standards recommend 20 cubic feet of fresh air/minute per person in general office space, or almost 3 times the level in airplanes.

9. Fuel savings are obviously the motivating force behind cutting back ventilation rates, and yet analysis of scientific data suggests only a 1-2 percent increased fuel cost is incurred to go from an unacceptable ventilation rate to an adequate one.

10. FAA regulations do not even discuss CO^2 levels in terms of passenger comfort. They only state a maximum level for safety. Furthermore, the current FAA regulations concerning acceptable cabin concentration of CO^2 is "several decades old".[6]

11. At a recent congressional hearing (March 6, 1989), expert witnesses discussed the public health threat of several chemicals including methyl ethyl ketone, benzene, toluene, chlorinate solvents, methylene dianiline and epoxy resins, used in the building of aircrafts. Workers at Boeing have complained, and several have gotten ill from exposure. Consumers can also be exposed to these chemicals from sources in the interior of an aircraft if ventilation rates are not adequate.[7]

12. Current airplane designs allow for optional ventilation systems that would result in better overall air quality. This is a simple solution to almost all of the problems mentioned above. Most are not used for cost containment reasons.

---

[6] Gray Robertson, President, AVCA Atlantic Incorporated, 1989 (Indoor Air Experts)

[7] "Indoor Air Pollution News," Bureau of National Affairs, March 23, 1989.

13. A Dallas ETS study, conducted by independent scientists, estimated that to be exposed to the equivalent of one cigarette a person must spend 224 consecutive hours (9 1/3 full days) in the nonsmoking section of a commercial airliner. (That is equal to eight consecutive round trips between New York and Tokyo.)[8]

---

[8]Carson, John, International Technology Corporation (ITC), 1986