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M. G. POTTS

A COMMONSENSE PERSPECTIVE:
Environmental Tobacco Smoke and...
Commercial Aircraft

When your flight is calm, an airliner's engines seem to purr.

But combine that engine noise with buffeting storm turbulence and the purring can become a worrisome growl.

with stirrings
?

Comfort in an airliner cabin is often relative. And often subjective: with our head thousands of meters in the clouds, we are actually different people --- more sensitive, more excited, more stressed --- than with our feet on familiar ground.

Some of the most delicate instruments even created --- small babies --- react strongly to subtle changes in aircraft cabin environments. High in the air, most adults are also keener barometers of perceived physical discomforts.

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Vieljeux et al.
1981 6/77
83-507

SPACE BUBBLE

In fact, cabin comfort and air quality in this highly of space depend on many interrelated factors: cabin p ventilation, humidity, heat, oxygen and ozone levels, gases or fuel vapors, vibration, noise --- even reflec

Original
Draft
NOTE ?

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"Characteristics in the Atmosphere
of Long-Range Transport Aircraft Cabins"
H. Vieljeux, P. Fournier + R. Auffret
Medical Dept of U.T.A and Laboratoire
de Médecine Aéronautique - Centre d'Essais - Briston, Air, France

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W. Engin G. Eng Survey on Eye Comfort in Aircraft, ASSEM April 1979 401-404

Survey on Eye Comfort in Aircraft, ASSEM April, 1979
Aviation, Space & Env. Med March, 1982 pp 235-238

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6
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Eye discomfort emerged as the most frequent symptom of high ozone in research conducted on smoking and nonsmoking passenger surrogates by W.G. Eng, L.K. Harada and L.S. Jagerman. Headache and nose and throat irritation were the next most serious reported symptoms identified with invisible ozone gas. 5

Dry Air

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Engin G. Eng ASSEM March '82

Low cabin air humidity and inadequate ventilation also have been identified as a major source of eye irritation and discomfort --- especially for passengers or crew wearing contact lenses. Even napping, which can alter eyeball shape, may cause irritation for lens wearers --- noticeably in conjunction with dry, overheated cabin air or a shift in cabin pressure. 6

NOV 79
Engin G. Eng 7

Medical Aspects of Transportation aboard Commercial Aircraft.

Blinking to relieve dryness created by arid cabin air can increase irritation. This, according to three separate studies, often is mistakenly reported as an "allergic" reaction. Researchers suggest commercial eye-drops to re-lubricate the eyeball. 7

JAMA 2/19/82
Vol 247 No 7
pp 1007-1011

ENG
March '82

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ENG

ENG
3/82
ASSEM

The Eng study called dry cabin air "very important and possibly the most significant factor" ACTUALLY contributing to eye discomfort. While this research into dry air effects could not "separate absolutely low-humidity-induced changes from low-pressure-induced changes", the scientists concluded "it is understandable that many air passengers may have eye discomfort as a result of low humidity."

WHILE "PASSENGERS" IN AN EARLIER ENG STUDY BELIEVED ETS CAUSED THEIR EYE DISCOMFORT, A LATER STUDY BY ENG ET AL

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Horvath
Symptoms of discomfort passengers report during commercial flight include headaches, dry or itchy eyes, plugged ears or popping sensations, nose and throat irritation, dry mouth, shortness of breath, neck or joint pain, anxiety, fatigue. (2) *Horvath*

Because environmental tobacco smoke (ETS) is easily seen or smelled, it is often blamed for these subjective complaints. ETS is the ambient smoke dissipated in the atmosphere from active cigarette smoking. Antismoking forces have lobbied for total smoking bans on aircraft --- mistakenly equating "smoke-free" with comfort and safety.

Ozone Anxiety

(1) *Horvath*
Scientific studies have traced passenger complaints to less visible causes, however. Ozone exposure, for example, has been cited as a major source of breathing difficulty, chest tightness, persistent cough and sore, dry throats among flight attendants. Colorless ozone, the smell we associate with lightning after summer storms, commonly increases

(2) during trans-oceanic, high-altitude flights. (3) *Horvath*

(4) Another study by J.A. Gliner, J.A. Matsen-Twisdale and S.M. Horvath involved non-smokers. It revealed that high ozone levels on trans-oceanic flights caused dry throat, chest tightness, short breath --- and increased anxiety and irritation, which themselves can exaggerate both symptoms and sensitivity. (4)

(4) "Auditory and Visual Sustained Attention During Ozone Exposure"
J.A. GLINER, et al
Inst. of Environ. Stress, Univ. of Calif., Santa Barbara
Aviation, Space, and Environmental Medicine Sept 1979 pp 906-909

French Atmosphere

Viellefond
BSGM GT7
503-507

A French study of long-range flights concluded that "numerous pollutant gases may contaminate the aircraft cabin atmosphere". Researchers H. Viellefond, P. Fourn and R. Auffret found that vapors from airport refueling, outside and interior fuel and exhaust vapors as well as ~~ETS~~ galley and toilet odors could contribute to passenger discomfort.

SMOKE
ETS

Smokers
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in

Making a distinction between comfort and safety, however, the authors pointed out that in the DC-8s and DC-10s studies fuselage air was completely renewed every four minutes --- preventing excessive concentrations of any vapor accumulations, including ETS.

Testing for exhaled carbon monoxide, they observed that levels reached a maximum value of five parts per million "at the end of the longest day flights when a large number of smokers were on board" --- noting that France's maximum acceptable dose is 10 times that amount, 50 parts per million.

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DRAKE PROPOSED
LAND AIR/SAS

Nine Days to Tokyo

In commonsense terms, the amount of ETS in no-smoking sections is so small a passenger must fly eight continuous round-trips from Tokyo to New York to experience the nicotine equivalent of a single cigarette. That means nearly nine days of non-stop flights, according to Guy Oldaker, senior research chemist at R.J. Reynolds Tobacco Co.

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"Estimation of Effect of Environmental Tobacco Smoke on Air Quality Within Passenger Cabins of Commercial Aircraft."
Environ Sci. Technol 21:994-999 1987

"Passive Smoking and Uptake of Carbon Monoxide in Flight Attendants" JAMA 251(20): 1984

Similarly, in tests on flight attendants concerned about ETS during 10-hour trips between Honolulu and Los Angeles, scientists ^{VCLA, So. Occupational Health Center}

Douglas Duncan and Peter Greaney found less expired carbon monoxide rather than an increase. Their conclusion: "These results indicate that the concentration of smoke to which flight attendants are passively exposed is too low to alter significantly their expired air carbon monoxide levels."

Real Culprit

"Letter to the Editor" "Smoke Gets in Your Aisles" ^{Well St. T 9-21-1987}

Indeed, U.S. Aviation Safety and Health Association president Peter L. Trask has gone on record to declare: "All these symptoms are not related or caused by smoking aboard aircraft. Nor will a smoking ban of any length correct this fresh-air deficiency." And he added: "Our research indicates that the real culprit is fresh-air ventilation."

In 1987, a U.S. Department of Transportation's Report to Congress reiterated the 1971 FAA study on aircraft air quality, i.e.: "tobacco combustion products do not represent a hazard to the nonsmoking passengers." While many studies note that ETS frequently is the "most noticeable" discomfort factor reported, objective research counters the subjective evidence. A large part of this "discomfort" can apparently be ascribed to the visibility and familiar smell of ETS.

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~~Philip Morris~~ ^{We} sympathizes with airline passengers who are annoyed by ETS. But we also believe a smoking ban deprives other passengers of a relaxing pleasure that's especially welcome during air travel. So when antismoking advocates get up in the air about ETS, we hope they'll remember to keep their feet on the factual ground.

There is a growing tendency to blame environmental tobacco smoke (ETS) for many human ailments. This brochure is one of a series that attempts to bring an informed perspective to the ETS controversy. ~~For further information, contact...~~

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