

Airliner Cabin Environment Research

Aviation Safety Aerospace Medicine

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International Cabin Fire and Safety
Conference, 1 November 2007



Federal Aviation
Administration

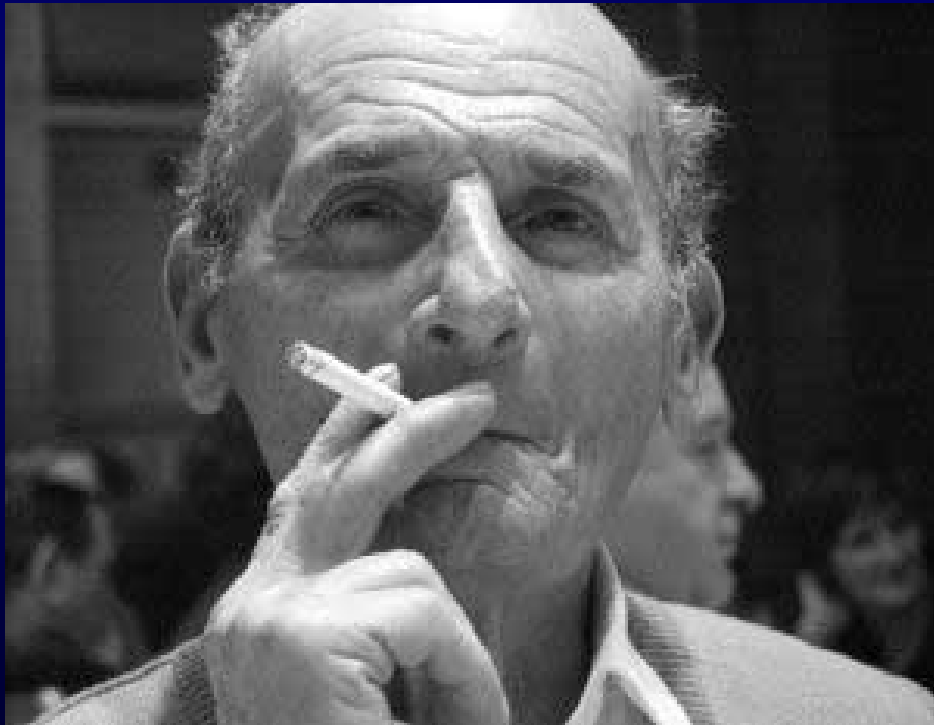


Background

Over the last 20 years, the world's population is estimated to have grown at about 2% per year, but the *traveling population has grown at 6% per year* (Weiss 2001).

Background

There has also been an *increase in the number of older people flying, including those with health conditions* (e.g., cardiovascular and pulmonary diseases) that may make them more susceptible to the effects of flight.



Background



Between 1986 and 1999, the *load factor* (fraction of seats occupied) for U.S. carriers serving *domestic and foreign* locations increased by about 13% and 21%, respectively.

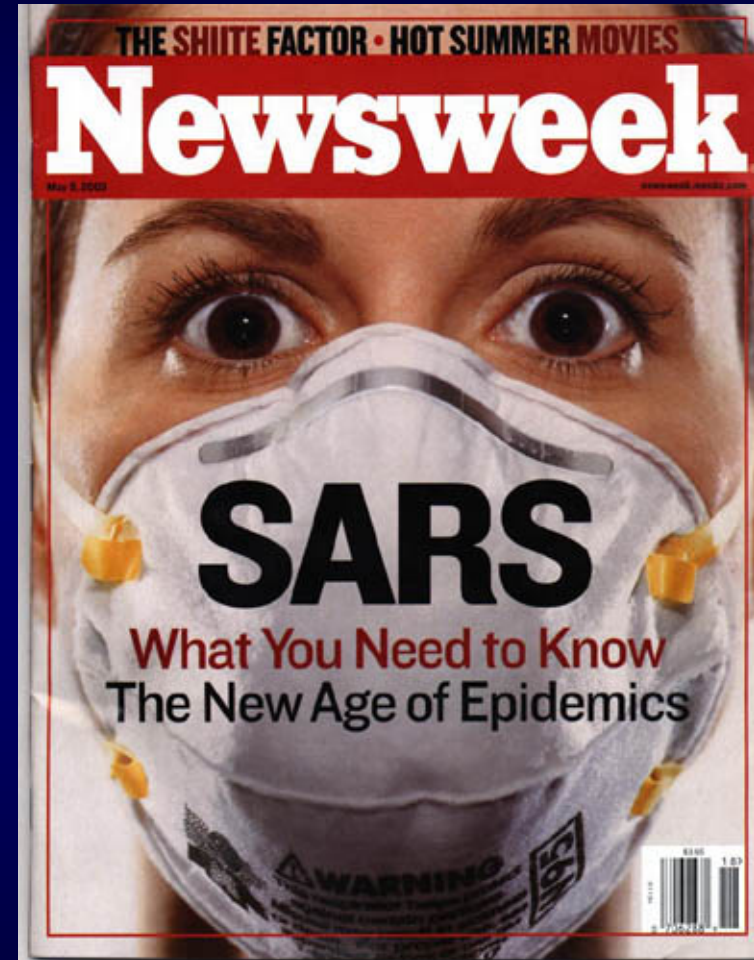
WHY DO WE CARE?

- ❖ Since the early 1980's there has been a concern by the public and crewmembers on the effects cabin air quality and the airliner cabin environment.
- ❖ There is a need for research to provide quantitative and qualitative information to address ongoing concerns.



WHY DO WE CARE?

- ❖ Ozone (O₃)
- ❖ Carbon Monoxide
- ❖ Carbon Dioxide
- ❖ Pesticides
- ❖ Infectious Disease
- ❖ Chem-Bio Weapons (Terrorism)



Severe Acute Respiratory Syndrome (SARS)



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Which Lead to Issues of...

- ❖ Cabin Air Quality
- ❖ Ventilation
- ❖ Cabin Pressure
- ❖ Incidents
- ❖ Reporting Mechanisms
- ❖ In-flight measurements
- ❖ Surveillance
- ❖ Detection
- ❖ Response
- ❖ Containment
- ❖ Security
- ❖ Resources

*etcetera,
etcetera,
etcetera...*



FAA ROLE

- ❖ FAA has the regulatory authority over the operations of civil aircraft, including aviation safety (PL 85-726).
- ❖ Under the OSH Act, Federal Agencies were granted the right to exercise jurisdiction over workers (PL 91-596).
- ❖ The FAA asserted its jurisdiction over safety and health of crewmembers (40 FR 29114, DOT).

Office Of Aviation Safety (AVS)

- ❖ AVS Mission is to *provide the safest, most efficient aerospace system in the world.*
- ❖ To *improve continuously* the safety and efficiency of aviation while being responsive to customers and accountable to the public.



APPROACH: FAA Center of Excellence Airline Cabin Environment (2004)

- 1. Respond to issues raised in the 2002 National Research Council Report.**
- 2. Respond to public, crews, Congressman DeFazio (D-OR), and Senator Shelby (R-AL) concerns including:**
 - ✓ air quality during normal operations.**
 - ✓ air quality events outside the normal operational envelope.**



COE Airline Cabin Environment (PL 101-508)

- ❖ National Program Director: Dr. Patricia Watts
- ❖ Sponsor: Office of Aerospace Medicine
- ❖ Technical Co-Leads: Harvard University and Purdue University.
- ❖ Administrative Lead: Auburn University
- ❖ Other Members: Boise State U., Kansas State U., UC Berkley, U Medicine and Dentistry, NJ, OK State U., St. Louis U., and over 26 industry members.
- ❖ Budget (2004-present): \$23 M
- ❖ PM Activities: 4 Joint Meetings, 10 Cooperative Agreements, and 30 Awards.

BENEFITS

- ❖ **Promotes** academic, government and industry **networks** to enhance the safety, security, and efficiency of the National Aerospace System.
- ❖ **Augments resources** and leverages funds.
- ❖ **Expands** U.S. mathematics and sciences **pipelines; facilitates recruiting.**
- ❖ **Provides structure and a formal strategy** to coordinate a national research agenda and related education and training to serve next generation needs.

