

Learning Objectives - Air Transport and the Environment (Chapter 14)

The student will know the following terminology:

- a. Local, regional, and global effects

- b. Relevant regulatory and standard-setting bodies and associated regulations and standards:

- U.S. EPA

- Clean Air Act

- ICAO CAEP

- FAA

- Aircraft Noise Abatement Act (1973)

- Aviation Safety and Noise Abatement Act (1979)

- European Commission Environmental Council

- c. Water quality

- Deicing and anti-icing fluids (glycol-based, acetate-based, formate-based, etc.)

- Fuels and oils

- Pesticides and herbicides

- Surface runoff

- d. Noise

- Engine noise

- Airframe noise

- Sonic boom

- Sleep disturbance

- Speech interference

Hypertension
Effective perceived noise level (EPNL)
Day-night noise level (DNL)
A-weighted sound energy
Noise contour
Noise performance “stages”

e. Surface air quality

carbon dioxide
water vapor
nitrogen oxides
unburned hydrocarbons
carbon monoxide
sulfur oxides
hazardous air pollutants
particulate matter
ozone
energy intensity
stage length
landing-takeoff cycle
National Ambient Air Quality Standards
criteria pollutants
non-attainment area
state implementation plan

f. Climate

troposphere
stratosphere
carbon dioxide
water vapor

nitrogen oxides
methane
condensation trails
radiative forcing
emissions trading
alternative fuels

The student will be able to perform the following:

- a. Estimate noise impacts for different aircraft types and different numbers of operations.
- b. Estimate air-quality impacts for different aircraft types and different numbers of operations.
- c. Estimate fuel consumption and CO₂ production for different aircraft types and different numbers of operations.