

87.202 - PRINCIPLES OF EARTH & ENVIRONMENTAL SYSTEMS II  
STUDY QUESTIONS AND PROBLEMS VII

1. Define air pollution.
2. Distinguish between point and area sources of air pollutants.
3. What are the two major types of smog and what are their characteristics?
4. During the early morning hours an inversion develops. At 8 AM the depth of the inversion is 200 m and the average wind velocity is  $0.5 \text{ m s}^{-1}$ . Calculate the ventilation rate. By 4 PM the inversion has essentially dissipated and the mixing depth is now 1500 m and the average wind speed is  $4.8 \text{ m s}^{-1}$ . Calculate the ventilation rate under these conditions. (ans: 8am –  $100 \text{ m}^2 \text{ s}^{-1}$ ; 4pm –  $7,200 \text{ m}^2 \text{ s}^{-1}$ )

5. Write Bryson's heat budget equation and discuss the various terms with regards to the temperature of the earth.

6. What is meant by the term "excess deaths"?

7. Briefly discuss three different ways that are used to assess the effect of air pollution on human health.

8. What is meant by a "threshold" and what is its significance?

9. What is cost-benefit analysis? Give an example of how cost-benefit analysis can be used in air pollution control.

10. A coal-fired power plant emits air pollutants. Discuss three strategies that could be used to reduce emissions from this plant.