

## Chapter 7: Air Pollution HA Problems

### Part 1 (Due: February 16, 2011)

Problems: 7.12, 7.15, 7.19, 7.21, 7.24 and Following

20.1 For an emission rate of 200 g/s, an effective stack height of 80m, Class C stability, and a wind speed at stack height of 8 m/s, calculate the ground-level concentration of a nonreactive pollutant: (a) 1000 m directly downwind; and (b) 5000 m directly downwind.

20.3 On a clear night with a surface wind speed of 2 m/s, 50 g/s of a nonreactive pollutant is released at ground level ( $H=0$ ). Calculate the ground-level concentration: (a) 500 m directly down-wind and (b) 1000 m directly downwind.

20.4 At noon on a summer day with a surface wind speed of 4 m/s,  $\text{SO}_2$  is released over rough terrain from a 90 m stack at a rate of 400 g/s. Assume that the plume rise is 60 m. Calculate the ground-level concentration: (a) 3000 m downwind; (b) 3000 m downwind and 100 m crosswind; and (c) 3000 m downwind and 500 m crosswind.

21.1 A welding chamber is of  $160 \text{ m}^3$  and the shift starts at 6.00 AM. Welding operations inside the room emit chromium at a rate of  $50 \mu\text{g/s}$ . The room is ventilated at the rate of  $3 \text{ m}^3/\text{s}$ . Ambient chromium concentration is zero and so is the concentration within the chamber at the beginning of the shift at 6.00 AM. Calculate chromium concentration at (1) 8.00 AM, (2) 10.00 AM, and (3) 2 PM.

### Part 2 (Due: Yet to be decided)

Problems: 7-33; 7-48; 7-55; 7-56