

Econ 325: Environmental and Natural Resource Economics
Fall 2007
Problem Set 5

Due in class: Thursday November 29, 2007

Instructions: Answer all 4 questions. Please show your work.

1. Evaluate the following statement using what you've learned from economics: *The only amount of acceptable pollution is no pollution at all.*

2. Assume that a society is composed of two polluters, with the marginal abatement (control) costs of polluters 1 and 2, respectively, equal to:

$$MAC_1 = 18 - E_1$$
$$MAC_2 = 12 - 2E_2$$

where MAC_1 refers to the marginal abatement costs of polluter 1, and E_1 refers to the level of emissions of polluter 1.

- a. What is the unregulated level of pollution for each polluter?

- b. Find the MAC of each firm if both were to reduce its pollution levels by 50% from the unregulated level of emissions. What is the total abatement cost associated with this system?

- c. Find the total level of emissions that would be generated if a per-unit pollution tax of \$4 were imposed.

 - d. Find the total level of emissions that would be generated if a per-unit pollution tax of \$6 were imposed.

 - e. Find the total level of emissions that would be generated if a per-unit pollution tax of \$8 were imposed.

 - f. How should regulators choose between these taxes? Hint: what further information would you need to choose the optimal tax?

 - g. Find the market price of a marketable pollution permit if pollution is limited to 18 units through the issuance of marketable pollution permits. What is the total abatement cost associated with this system? How does this compare to your answer in part b? Why?
3. What is the advantage of emission charges vs. standards?

