

Environmental Policy Field Exam

August 15-17, 2016

Exam Administration

The exam may be taken in the venue of your choice. Kelli Jacobs will e-mail the exam to you Monday, August 15 at 9:00 am. Your answers must be returned via an email attachment to Kelli Jacobs by 5:00 PM on Wednesday, August 17.

Instructions

- Your exam and responses should remain anonymous, identified only by a student number that Kelli will provide.
- Answer each of the two questions below. Your answers must be your own work. Show all calculations.
- Each question will be equally weighted in the evaluation.
- Answers should be carefully composed for clarity and brevity. Each answer should be no more than 5000 words, not including figures and tables.
- You can compose your answers on a laptop or computer of your choice. You can refer to books, articles, and reports during the course of the exam (electronic or hardcopy).
- You may also refer to electronic note files/or a composed annotated bibliography.
- Do not copy and paste text from previously composed answers.
- Within your answers, you may include parenthetical citations (e.g., Coase 1960), and then turn in a complete list of citations (e.g., Coase, R. 1960. The problem of social cost. *Journal of Law and Economics* 3: 1-44.) by email to Kelli by Thursday, August 18 by 5:00 PM.
- Be sure to provide citations for all major concepts and data. Where you are using other author's phrases or excerpts from their work, be sure to place the borrowed material in quotes with an appropriate citation.

Question 1.

You have just assumed your new position as “Most Excellent Policy Analyst” in the Ministry of Ecology and Natural Resources, national government of Veritablistan. Your very first assignment is to develop policy recommendations for how to address a new environmental health threat, Pentachloro-benzoic-simazine (PBS) and the related environmental contaminant Radium-benzoic-simazine (RBS).¹

Veritablistan is an industrialized country with a population of 10 million and a mean per capita income of 120,000 Veritablistan manat (VM 120,000 is equivalent to approximately US\$ 23,000). The land area of Veritablistan is 250,000 square miles. Although the country has a substantial industrial sector, its agricultural sector, and particularly its livestock industry, accounts for nearly 30 percent of the economy. The population is relatively literate, with average adult education levels equivalent to 14 years of school. The country’s nickname “Land of the Fresh Breeze” applies both literally and figuratively – political discourse is progressive and respectful and laundry is air-dried on clothes lines.

The environmental problems associated with PBS and RBS² have only recently emerged. The two chemicals are byproducts of the leather tanning industry, one of Veritablistan’s largest export industries, supported by over 2000 individual operations. PBS enters the environment as an air pollutant, generated during the final stage of the tanning. The chemical is carried in the air and deposited across the surrounding landscape – travelling as much as 500 miles. Its primary pathway into the human system is a bit odd – it deposits on air-dried laundry and is inhaled when people get dressed or sleep on bed linens. Current emissions are on the order of 500 tons per day.

It has been estimated that for every ton per day of emissions, daily inhalation per resident rises by 0.02 micrograms. As an organic compound, PBS can be assimilated by natural systems (including human systems) up to a point. However, after that point it becomes quite toxic (Figure 1). Hence, given current levels of emissions and, by implication, inhalation, initial inhalation abatement is quite valuable as expressed by the MAB curve, but then it flattens out

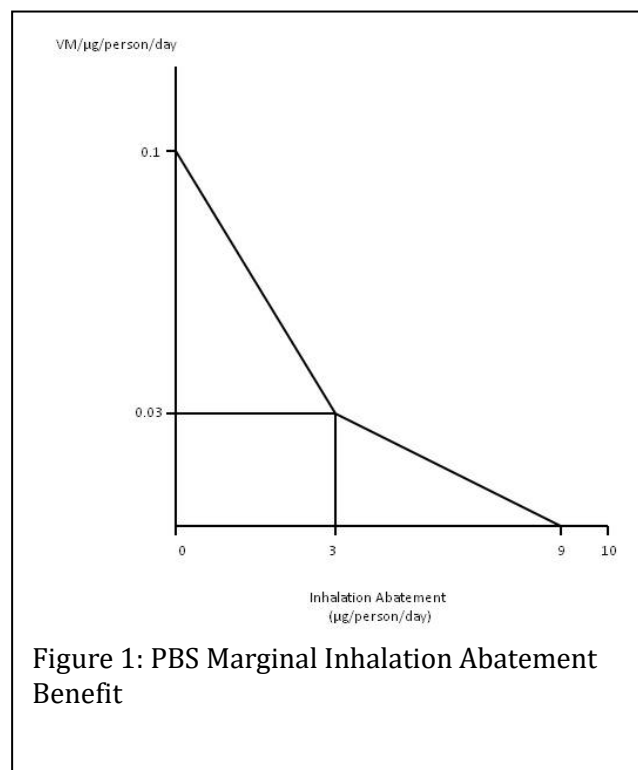


Figure 1: PBS Marginal Inhalation Abatement Benefit

¹ These chemical names are entirely fictitious. No actual chemical compounds were harmed in the process of developing this hypothetical.

² The two chemicals have been dubbed “Pretty Bad Stuff” and “Really Bad Stuff” by the media.

as more exposure is abated.

There are a number of ways to decrease exposure to PBS. Obviously, abating emissions is the most direct approach. One option is to install substantial scrubbers on the vent systems of tanneries designed to remove the chemical before it reaches the atmosphere. Another is to use a different completely different finishing step that does not generate the PBS at all. Just better industrial housekeeping is also expected to provide some emissions abatement benefits. Of course a reduction in the level of leather products could also reduce the amount of PBS generated. The tanning industry's trade association, however, claims that abatement will be costly. Although there is substantial uncertainty, the government's best estimates of the cost of emissions reduction is

$$MAC = 2000 + 10A + 0.01A^2$$

where, MAC is marginal abatement cost in VM/ton and A is the abatement measured in tons/day.

Another unusual aspect of PBS is that some of the exposure reduction is within the control of the affected population. Simply shaking their laundry thoroughly before folding it or wearing it will reduce exposure.³ Also, a brisk ironing of the clothes or sheets before use will neutralize some of the inhalation exposure. It has been estimated that if all citizens would just consistently adopt these two practices the exposure associated with any given level of emissions would be reduced by 50 percent. The cost of adopting these practices obviously is quite low, though perhaps not costless.

In contrast to PBS, RBS actually is "really bad stuff". It is produced as a by-product of a relatively new softening process adopted during the last five years in the tanning industry – radioactive cellular bombardment (RCB). The RCB practice reduces the costs of tanning by about two percent and increases the quality of the leather so that it receives a slightly higher price on the world market. The RBS is discharged to waterways after its use in the softening stage at the tanneries. While the full extent of its environmental effects is still unclear, it has been unquestionably linked to a startling rise in the occurrence of deformities in frogs (Figure 2), a number of sudden massive fish kills in the country's largest estuary, and a decline in the level of oysters in the same estuary. It may also contribute to a number of health effects in humans – including a decline among children in the ability to concentrate in class – but the results of scientific studies have been inconclusive.

The press and citizens of the country have expressed reasonable and serious concern over these contaminants. At the same time, the leather lobby has suggested that their industry is at the core of the national identity and any attempt to stop

³ Apparently PBS is a heavy organic compound and a sharp snap of the linens or clothes will shake some of the PBS off the cloth.



Figure 2: Evidence of environmental mutagenesis in Veritablistan

their operations would be “cultural self-defacement.” They favor waiting for new technologies to develop (as they always eventually do) to replace the RCB process. The newly-elected prime minister – conservative by national standards – ran on a platform of increased private citizen (and by implication, private business) autonomy. “Let the people decide for themselves!” was his slogan.

Your new boss has come to you with your first assignment; you suspect he is passing a hot potato. Your boss’ boss (grandboss?), the permanent secretary of the ministry, will be meeting with the prime minister in two days. She will need a memo describing options for dealing with PBS and RBS.

- Is it reasonable to ask or require industry to reduce releases of each pollutant, and if so by how much?
- How should the government bring about the needed change? Should they, for example, use regulations or marketable allowances? Subsidies or taxes? Other approaches?
- How does the fact that citizens have some control over their own exposure to PBS affect the choice of instrument? The choice of emissions abatement level?

As all politicians do, the Prime Minister has latched onto a concept that he really doesn’t fully comprehend, summarized in his frequent comment “property rights for right decisions.” No one actually knows what it means, but it suggests that if you do not at least address the potential role of property rights in your memo, your recommendation will not receive serious consideration.

Your assignment is to write a memo addressed to your superior providing recommendations regarding the appropriate national policy goal and implementation. Be sure to outline alternatives and to explain why your approach

is likely to be the best option. Discuss any contextual issues that may influence your recommendation and identify where more information would be helpful.⁴ Your memo to the Permanent Secretary should be carefully written and will be no more than 5000 words. You may choose to include graphs, tables and calculations if they help your explanation.

Since the Secretary is trained as a policy analyst, it will substantially help your case if you refer to the research literature to support your reasoning. However, for the moment you may limit your reference to line cites containing the author names and year of publication for each reference. You may take another 24 hours after you submit the memo to submit a bibliography. She will get back to you if she needs more detail.

Sample heading for a Veritablistan government memo:

Memorandum

To: The Honorable Shirley McClain Beatty, Permanent Secretary
Veritablistan Ministry of Ecology and Natural Resources

From: *your name*
Most Excellent Policy Analyst

Re: Policy Options for Addressing Environmental Threats from Pentachloro-benzoic-simazine (PBS) and Radium-benzoic-simazine (RBS) in the Leather Industry

Date: 17 August, 2016

⁴ However, missing information is no excuse to avoid making a recommendation.

Question 2.

One of the most important decisions faced by elected officials is where to place authority for choosing and implementing policies. In recent decades, many policy makers and scholars have argued that decentralization of environmental policy is a good idea. Others have argued that this type of decentralization is misguided. In the U.S. context, the argument typically centers on whether policy authority should be devolved from the federal government to state and local governments. In the international context, the argument focuses on whether nation-states, rather than supra-national institutions (e.g., those created through international environmental agreements) should have control over environmental policy.

Please assess the merits of the arguments for and against decentralized control of environmental policy. ***Note: This question can be answered in the framework of domestic environmental policy or international environmental policy. Choose one framework.***

A complete answer must address the following:

First, summarize the theoretical arguments on both sides of the “decentralization divide.” What are the purported benefits/drawbacks of decentralization, and what, specifically, are the processes and behaviors leading to these benefits and drawbacks? Your answer should be well grounded in the scholarly literatures in economics, political science, etc. (i.e., you should ***not*** simply rely upon intuition and inductive logic, but instead cite specific arguments from these literatures).

Second, the effects of decentralization can be observed in policy adoption, policy implementation, and environmental outcomes. Summarize the empirical literature assessing the consequences of decentralization in each of these three areas. Given the evidence, what conclusions do you draw about the decentralization debate?

Third, what are the remaining questions in the decentralization debate that require scholarly analysis? What types of evidence and research approaches would move this area of study forward?