

Chapter 19 Lecture - Toxic Substances and Environmental Justice

Econ 275 – Environmental Economics

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Environmental Justice Defined



- Environmental Justice is the *fair treatment* and *meaningful involvement* of all people regardless of race, color, national origin, culture, education, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

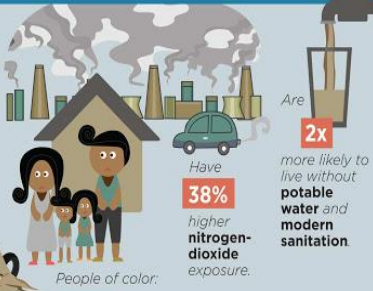
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Environmental Racism Is Nothing New

Race is the most significant predictor of a person living near contaminated air, water, or soil.

56%

of the population near toxic waste sites are people of color.



38%

Have higher nitrogen-dioxide exposure.

2x

Are more likely to live without potable water and modern sanitation.

People of color:

Have seen

95%

of their claims against polluters denied by the EPA

The Nation

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Toxic Substances and Environmental Justice

- Many laws and regulations are in place to deal with toxic substances and hazardous wastes.
- They deal with health effects, compensation to victims, responsibility, appropriate disposal, etc.
- Nature of Toxic Substance Pollution
 - A main objective of the current legal system for controlling toxic substances is to protect human health, although protecting other forms of life is a secondary objective.
 - The primary health concerns from exposure to toxic substances are the risk of cancer and the effects on reproduction.

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Policy Issues

Three important aspects must be considered when making a policy:

- the number of substances involved
- the period of latency
- the uncertainty on the based scientific evidence.



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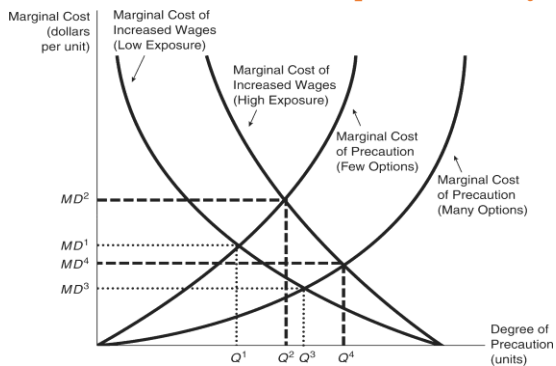
Market Allocations and Toxic Substances

Occupational Hazards

- Higher risks call for higher wages. The difference in wages is called a risk premium.
- The higher wages represent the real cost of risk to the employer.
- The higher wages should also produce incentives to create a safer work environment.
- Efficient markets will equate the marginal cost of the increase in wages with the marginal cost of precaution when determining the optimal degree of precaution.

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Market Provision of Occupational Safety



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Market Allocations and Toxic Substances

- Occupations with more risk will also attract workers who are less averse to risk.
- Empirical studies suggest that willingness to pay for risk reductions is substantial, but varies significantly across individuals.
- Market solutions to occupational hazards present ethical concerns.
- Another problem arises due to the lack of information about the degree of risk.
- Due to the inefficiencies of the market in providing information, some states have enacted "Right-to-Know" laws.

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Susceptible Populations in the Hazardous Workplace

Some employees are especially susceptible to occupational hazards. Pregnant women and women in the childbearing years are particularly vulnerable. When an employer attempts to manage a work situation that poses a hazardous threat, either the susceptible population can be separated from the hazard or the hazard can be controlled to a sufficient level that its risk is acceptable to even the most susceptible employees.

The economic aspects of this choice are easily deduced from Figure 19.1. Suppose that the firm has few control options and is on the uppermost of the two marginal cost of precaution curves. By removing the susceptible population, it could face the low-exposure curve. Removal of the susceptible population results in lower marginal risk to the workers, lower costs to the firm, and less precaution taken. But is it fair to those who are removed from their jobs?

This issue came to a head in 1978 when American Cyanamid decided to respond to an occupational risk by banning all fertile women from jobs in the section manufacturing lead chromate pigment at Willow Island, West Virginia. After reviewing the decision, the Occupational Safety and Health Administration (OSHA) cited the company under the general duty clause of the Occupational Safety and Health Act, which requires an employer to provide a workplace free of hazards, and fined it \$10,000. That was not the end of the story. In early 1980, the Oil, Chemical, and Atomic Workers Union sued the company under the 1964 Civil Rights Act on the grounds that the company had discriminated unfairly against women. In March 1991, the Supreme Court ruled that banning fertile women from any workplace posing a risk to a fetus was not an acceptable way to control risk. The workplace must be made safe for all.

Source: *International Union v. Johnson Controls*, 499 U.S. 187 (1991).

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Market Allocations and Toxic Substances

Product Safety

- Safer products are typically more expensive and thus, somewhat analogous to the risk premium in wages; the higher price tag should represent the reduced risk.
- Products with varying degrees of safety should be supplied by the market. Uniform product safety would not be economically efficient.
- However, the market does not have complete enough information to provide such self-regulation.

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Market Allocations and Toxic Substances

Third Parties

- Third parties have the least power to influence producers and consumers and thus the argument for government intervention is strongest for these individuals.
- Liability law provides a method for internalizing the external costs to third parties.
- Liability law can force sources to choose efficient levels of precaution and unlike regulation, provides compensation to the victims.

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The Incidence of Hazardous Waste Siting Decisions

- Environmental Justice Research and the Emerging Role of GIS
- The application of geographic information system (GIS) can be combined with U.S. Census data and the EPA's Toxic Release Inventory data to analyze the distribution of hazardous waste.
 - Race
 - Income
 - House values

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Do New Polluting Facilities Affect Housing Values and Incomes? Evidence in New England

Combining census data for New England for 1980 and 1990 with Toxics Release Inventory (TRI) data for manufacturing firms that began operations during that period, Hanna (2007) explores the effect of polluting facilities on the surrounding neighborhoods. The study looks specifically at how prices, wages, pollution, and incomes vary among census tracts in the New England states.

TRI data have only been collected since 1987, so Hanna uses data on new plants in order to measure how pollution changed over the 1980s. Hanna created an index of pollution exposure calculated as a weighted sum of the distance between the census tract and the pollution source times the TRI-reported releases for that pollution source. Some 167 New England sites were in the TRI data. Ten percent of the new plant emissions were of dichloromethane, an airborne contaminant classified as a probable human carcinogen. Significant negative effects of pollution on house values and incomes were found. Their estimates suggest that a house located 1 mile closer to a polluting manufacturing plant reduces its value by 1.9 percent.

Source: Hanna, B. G. (2007). House values, incomes, and industrial pollution. *Journal of Environmental Economics and Management*, 54, 100-112.

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The Incidence of Hazardous Waste Siting Decisions

The Economics of Site Location

- **Need to consider the incentives from the owners of the proposed facility and the recipient community**
 - **Owners: low cost**
 - **Recipient community: benefits outweigh costs**
- **Low-income communities are attractive.**
- **Race also becomes a more important predictor.**

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The Incidence of Hazardous Waste Siting Decisions

The Role of Risk Perception

- **Not-In-My-Backyard attitude**
- **Delayed clean-up negatively affects property value.**

Compensation as a Policy Instrument

- **Paying compensation or hose fees to communities accepting waste facilities is one feasible policy device.**
- **Both benefits and costs accrue to the local community.**
- **It would internalize cost.**
- **However, it is not always effective.**

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The Incidence of Hazardous Waste Siting Decisions

International Agreements

- **The Basal Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was developed in 1989.**
- **It requires OECD countries to obtain written permission from the government of any developing country before sending toxic waste there for disposal.**
- **In 1994 an additional agreement prohibited the export of toxic wastes from any OECD country to a non-OECD country.**

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