

Green Chemistry
An Interdisciplinary Approach to Sustainability
Sustainable Biofuels Development
Chem, ESPM, SPH 234

Class 18: Toxic Substances Control Act and Cost/Benefit Analysis

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Prevailing Welfare Maximization Decision-Making Structure

(1) Environmental regulation must often pass a cost-benefit test.

Disadvantages

- uneven distribution of costs and benefits

- cumulative impacts of individually assessed damages

Advantages

- overcomes skepticism of conservatives


- disciplines government to act in public interest

(2) Allocation of burden of proof to government

- Does it really matter?

- How common is lack of knowledge material?

- What interest is protected as default?



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The U.S. Toxic Substances Control Act of 1976



Presidential Executive Order 12866

“Regulatory Planning and Review” (58 FR 51735; Oct. 4, 1993) §§ 1(a), 1(b), 1(b)(6)

Section 1.

.....

(b) *The Principles of Regulation.* To ensure that the agencies’ regulatory programs are consistent with the philosophy set forth above, agencies should adhere to the following principles, **to the extent permitted by law** and where applicable:

.....

(6) **Each agency shall** assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, **propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.**

TSCA § 6(a) [15 U.S.C. 2605(a)]:

“If the Administrator finds that there is a reasonable basis to conclude that . . . a chemical substance . . . **presents . . . an unreasonable risk of injury to health or the environment**, the Administrator shall by rule apply one or more of the following requirements to such substance . . . to protect adequately against such risk . . . “

TSCA §6 (c) [15 U.S.C. §2605(c)]:

(c) PROMULGATION OF SUBSECTION (a) RULES.—(1) In promulgating any rule under subsection (a) . . . the Administrator shall consider

- (A) the effects of such substance . . . on **health** and the magnitude of the exposure,
- (B) the effects of such substance . . . on the **environment** and the magnitude of the exposure,
- (C) the **benefits** of such substance . . . for various uses and the availability of substitutes for such uses, and
- (D) the reasonably ascertainable **economic consequences** of the rule

TSCA Inventory (TSCA §8)

62,000 “existing chemicals” were placed on Inventory in 1979

22-24,000 “new chemicals” that have gone through §5 new chemical
Pre-Manufacture Notice Program

Inventory Update Rule

About 10,000 chemicals used at 25,000 lbs/year or more

About 3,000 HPV chemicals (1,000,000 lbs/year or more)

HPV chemicals comprise more than 99% of TSCA chemicals by weight

92% of HPV chemicals are “existing chemicals” and 8% have been
introduced since 1979.

TSCA New Chemicals Program (TSCA §5)

- Manufacturer, importer of new chemical submit PMN with 90 days notice (1,500/yr)
- PMN includes identity, production volume, uses, exposure and release information, and any existing available test data
- 67% of PMN's include no test data and 85% include no health data
- EPA uses QSARs and other tools to evaluate PMN's
- If EPA can show there is insufficient information to evaluate chemical and it “**may present unreasonable risk**” OR there may be “substantial exposure,” then EPA can restrict use (**SNUR's**), require controls, require testing (**§4**), etc.
- EPA negotiates some voluntary restrictions or withdrawals for about 10% of PMN's
- For about 50% of PMN's, a Notice of Commencement is received and chemical goes on TSCA Inventory

Hazard Data Gathering Under TSCA

1. TSCA §4: EPA may require testing if it shows it has insufficient information to evaluate safety and chemical may present unreasonable risk or there may be high exposure. **Has produced information on 200 chemicals.**
2. TSCA §5 PMN's (**67% no testing, 85% no health data**)
CBI claims for 90% PMN's, 67% of NOC's and Inventory
3. TSCA §8 requires companies to submit information that “reasonably supports conclusion of substantial risk.” EPA has issued rules calling in unpublished information on testing of chemicals. **Thousands of submissions.**
CBI claims for chemical identity (not §14 health and safety data).
4. Voluntary programs: HPV Challenge Program (**SIDS data for HPV Chemicals**);
Voluntary Children's Chemical Evaluation Program

Structural Weaknesses Of TSCA

M.P. Wilson and M.R. Schwarzman, "Toward a New U.S. Chemicals Policy: Rebuilding the Foundation to Advance New Science, Green Chemistry, and Environmental Health," 117 *Environmental Health Perspectives* 1202-09 (2009).

Data Gap: Producers are not required to investigate and disclose sufficient information on the hazard traits of chemicals to government, the public, or businesses that use chemicals.

Safety Gap: Government lacks the legal tools it needs to efficiently identify, prioritize, and take action to mitigate the potential health and environmental effects of hazardous chemicals.

Technology Gap: Industry and government have invested only marginally in green chemistry research, development, and education.

THE POSITION OF GOVERNMENT

Is EPA able to use TSCA to prevent chemicals from contributing to the excessive global human footprint?

Is EPA able use TSCA to avoid or prevent threats from chemicals to public health and the environment?

Is EPA able to use TSCA to apply cost-benefit analysis to implement regulations that improve net social welfare?

THE POSITION OF INDUSTRY

Existing Industries

Does TSCA motivate industry to produce information about the hazards of chemicals?
Submit existing information to public domain?

Does TSCA motivate industry to produce misleading information about the hazards of chemicals? (David Michaels, "Doubt is Their Product.")

Does TSCA motivate industry to invest in green chemistry so as to develop and market safer products and contribute to sustainable economy?

New Industries

Should greater responsibility be placed on new industries, like the biofuels industry, that have enormous potential for social benefit?

Why or why not?

Should these industries voluntarily take on new responsibilities? Can they?

THE POSITION OF DOWNSTREAM USERS/CONSUMERS

1. Can they evaluate the safety of chemicals in products?
2. Can they choose safer chemical products?
3. Can the demand for safer chemicals be felt by producers?
4. Is the operation of supply and demand in the chemicals market flawed by lack of publicly available information?
5. What is the impact of this market flaw on the incentives for industry to invest in green chemistry?