

“Regulatory Impact:  
The Rise and Fall of Arsenic”

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Discussant:

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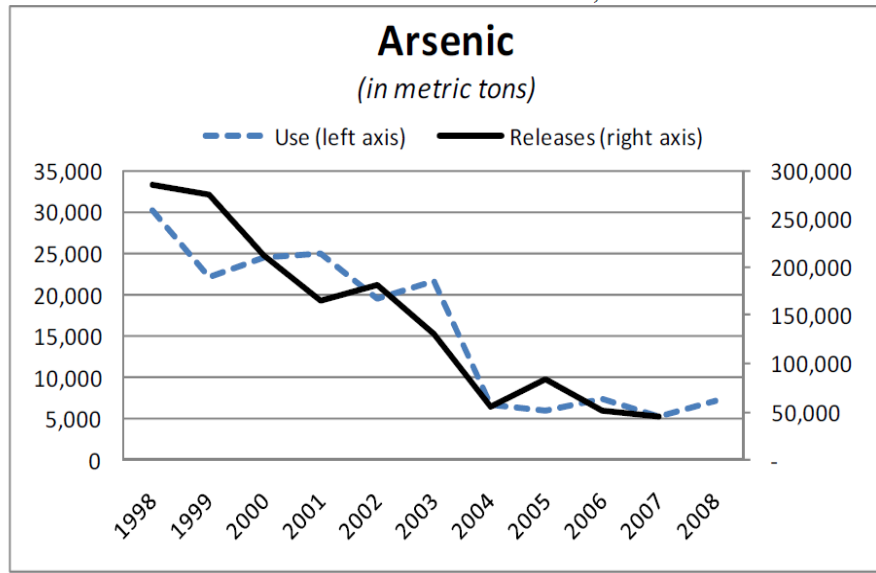
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# Overview

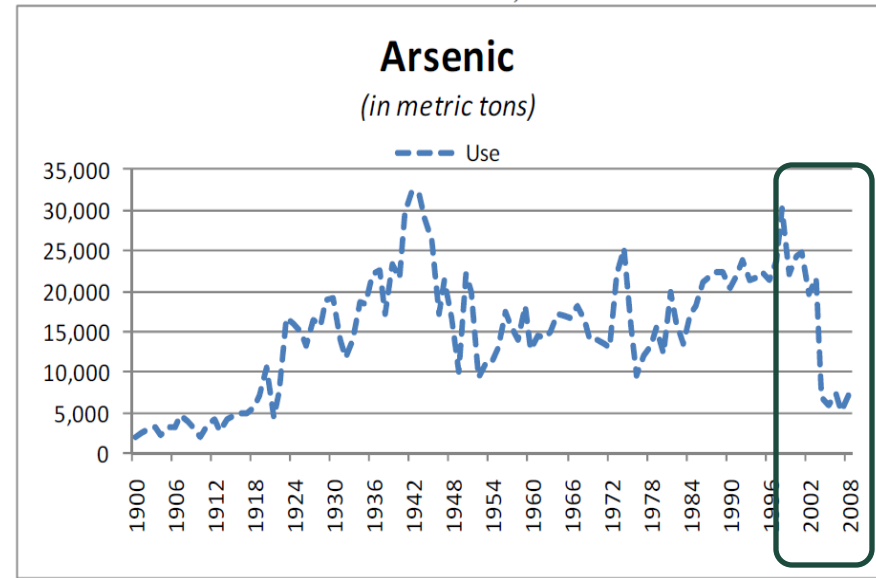
- Consumption/use as proxy for emissions (outcome that we care about)
- Research question: To what degree is the observed reduction in arsenic use (emissions) attributable to government regulations?
- First empirical attempt to explain changes in consumption of a toxic pollutant that includes data pre-dating federal regulations through present.

# 1. To what degree is consumption/use a reasonable proxy for emissions?

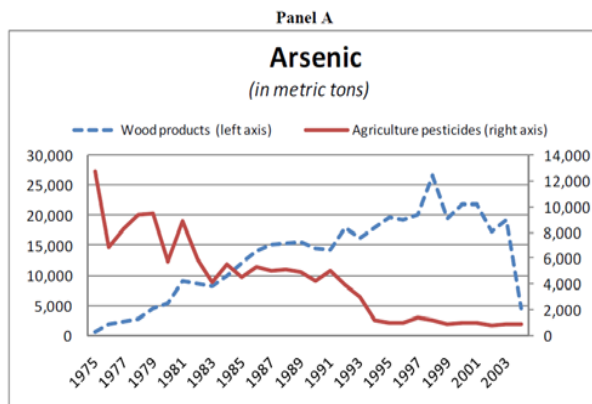
**Figure 1**  
Arsenic Use and Emissions in the U.S., 1998-2008



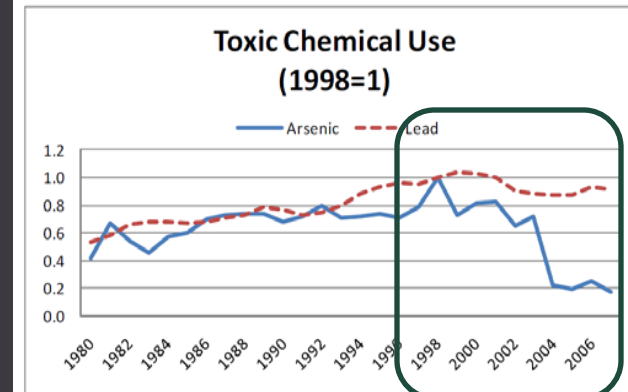
**Figure 2**  
Arsenic Use in the U.S., 1900-2008



**Figure 3**  
Arsenic Use Across Sectors, 1975-2004



**Figure 4**  
Toxic Chemical Use, 1980-2007



2. Ideally we would estimate the impact of policy relative to a non-regulated path of arsenic use.

- Necessitates counterfactual based on an explicit model of
  - supply
  - demand
  - regulation

- Supply side only
    - MSC?
    - Innovations for arsenic use in semi-conductors
  - Supply/Demand
    - Prices for arsenic trioxide are used as controls.
    - To what degree are arsenic markets differentiated?
  - Demand
    - Daniel Edelstein. “Arsenic”, Minerals Yearbook, U.S. Geological Survey. 1995.
      - “Future demand for arsenic is expected to closely follow that for new home construction...”
      - “...carry-over from the 13% growth in housing starts in 1994 may have served to maintain apparent demand.”
- <http://minerals.usgs.gov/minerals/pubs/commodity/arsenic/160495.pdf>

- Government regulation

- Characterization of the explicit pathway by which a given regulation is expected to lead to a change in arsenic consumption (or emissions).

- Example: Safe Water Drinking Act

- Arsenic in Drinking Water (Kennedy School of Government, case report: CR14-03-1680.0, 2003):

- “Arsenic occurs both naturally, in soil and rocks, and as a product of industrial processes, such wood treatment and mining. Natural arsenic is the most common cause of elevated arsenic in drinking water, especially in parts of the West, Midwest, and New England where arsenic often leaches from the rock and soils into underground and surface waters.” (p.2)

- “The SDWA forced public water systems throughout the country to upgrade the quality of their treatment facilities.” (p. 4)

- Puzzling results: CWA 1972 and CERCLA/ Superfund 1980 both positively correlated with arsenic consumption

# 3. Unintended consequences story

- Could it be the case that regulation of agricultural use lead to a price decline that made adoption for wood products attractive?

Figure 3  
Arsenic Use Across Sectors, 1975-2004

Panel A

