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Adoption of Pollution Prevention: The Role of Information Spillover, Mandatory Regulation, and Voluntary Program Participation

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Introduction

- The Pollution Prevention Act of 1990 sought to encourage Pollution Prevention (P2) as the preferred method of pollution control



Figure 1. The P2 Hierarchy
Figure from www.maine.gov/dep/innovation/p2/whatsp2.htm

- P2 information clearinghouse and voluntary programs were established to promote a P2 ethic
- The 33/50 program was the first public voluntary initiative by the U.S. EPA to reduce toxic releases of 17 chemicals by 33% by the end of 1992, and by 50% by 1995, and to encourage P2
- 33/50 participating facilities adopted more P2 technologies than non-participating facilities

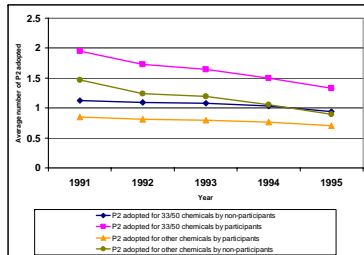


Figure2. Number of P2 technologies adopted by 33/50 eligible facilities

- Facilities adopted more P2 technologies if other facilities in the same county/industry had done so

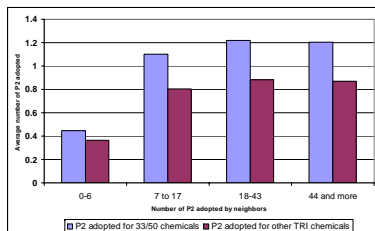


Figure3. P2 adoption by 33/50 eligible facilities and neighbors(1995)

Objectives

- Examine the extent to which the adoption of P2 technology was motivated by peers' prior experience of P2 adoption
- Examine the extent to which program participation led adoption of P2 technologies
- Examine the extent to which program participation indirectly motivated P2 adoption through demonstration

Data & Methods

- Focus on 6974 facilities eligible the 33/50 program over the period of 1991-1995
- Examine the adoption of P2 technologies for 33/50 chemicals and other chemicals in the Toxics Releases Inventory (TRI)
- Use the total number of P2 technologies adopted for 33/50 chemicals and other chemicals by peers as proxies for knowledge on P2
- Investigate two types of peers: facilities in the same county and facilities in the same industry
- Estimate the adoption of P2 technologies with respect to P2 adoption by peers in the last period, facility specific regulatory pressures, TRI releases and number of TRI chemicals
- Use instrumental variables to control for endogenous program participation
- Use location and industry fixed effects to control for exogenous contextual effects
- Use participation ratio in the same county/industry to investigate demonstration effect

Findings

- On average, participating facilities adopted more P2 activities than non-participants for 33/50 chemicals
- Program participation did not significantly motivate the adoption of P2 technologies for other TRI chemicals
- Higher participation ratios among the neighbors did not significantly increase the adoption of P2 by a facility
- Facilities adopted more P2 technologies for both 33/50 chemicals and other TRI chemicals when industry peers adopted more P2 in the previous period
- The effect of learning was small. A 50% increase in the number of P2 adopted by industry peers would lead to an 20% increase in the likelihood of P2 adoption by a facility
- After controlling for location fixed effects, learning from facilities in the same county did not significantly increase the adoption of P2 by a facility

Conclusions & Implications

- Voluntary programs targeted at certain toxic chemicals may not induce environmental technology change to address a wide spectrum of toxic pollution problems, as the direct effect of the 33/50 program on promoting P2 was limited to the targeted chemicals and program participants
- Information from industry peers should probably be given greater weights than information from the geographic neighbors when examining adoption and diffusion of environmental technology
- Future research could improve our understanding on the role of information spillover by examining the information on how to effectively use a new technology and information on the benefit of the new technology separately