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The Effectiveness of Incomplete and Overlapping Pollution Regulation: Evidence from Bans on Phosphate in Automatic Dishwasher Detergent

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Abstract

This paper examines the effectiveness of command-and-control policies in the presence of incomplete and overlapping regulations. We study how recent bans on phosphate in household dishwasher detergent affect pollution loads to waterways, costs at wastewater treatment facilities, and consumer behavior. We show that the effectiveness of the bans in reducing effluent depends critically on regulations at receiving treatment facilities. As cost minimizers, facilities with an emissions standard on phosphorus face no incentive to deviate from the standard. We show that bans have weak effects on effluent, especially in the most polluted waterways. We also use an early, isolated ban in Spokane, Washington to study the effect of the bans on consumers. We find that this ban shifted approximately 40 percent of dishwasher detergent sales from Spokane to bordering counties until a state-wide ban was implemented. Using these estimates, we find that the welfare loss to consumers from recent bans is likely greater than the cost-savings to treatment plants.

Keywords: Environmental Regulation, Policy Interactions, Water Quality, Phosphorous

JEL Codes: Q50, Q53, Q58, H11, H23, D23

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