The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Consequences of the Clean Water Act and the Demand for Water Quality

David A. Keiser

Department of Economics and
CARD, Iowa State University
dkeiser@iastate.edu

Joseph S. Shapiro

Yale University Department of Economics
and NBER
joseph.shapiro@yale.edu

Selected Paper prepared for presentation at the 2016 Agricultural & Applied Economics Association
Annual Meeting, Boston, Massachusetts, July 31-August 2

Copyright 2016 by David A. Keiser and Joseph S. Shapiro. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Since the 1972 Clean Water Act, U.S. government and industry have invested about $1 trillion to abate water pollution, or $100 per person-year. But 44 percent of stream and river miles still have water quality so poor that they violate standards. This paper assembles the most comprehensive set of files ever compiled on U.S. water quality and its determinants to evaluate the Clean Water Act. The analysis studies three questions. First, we measure long-run trends in U.S. water quality. Second, we assess how the Act affected ambient water quality. Third, we assess how consumers valued any benefits.

From its inception, the Clean Water Act has invited controversy. President Nixon vetoed the Act due to its "unconscionable" cost but was later overturned by Congress (CQ Almanac 1972). As one of its provisions, the Clean Water Act provided billions of dollars in federal grants to local municipalities to help offset costs of constructing and updating wastewater treatment facilities. Through the early 1980s, these investments marked the federal government's second-largest infrastructure program. Yet, there is little empirical evidence that the Clean Water Act achieved its core objectives. Harrington (2004) writes, "Thirty years (1972-2002) is certainly enough time to observe the effects of the Clean Water Act . . . Unfortunately, these changes are very difficult to document systematically because the relevant data, when collected at all, are scattered in EPA regional offices, state DEQs [Departments of Environmental Quality], and POTWs (Publicly Owned Treatment Works)."

Several existing studies quantify trends in water pollution for a single pollutant or handful of sites. Smith and Wolloh (2012) find that dissolved oxygen levels in freshwater lakes did not change over the period 1975 to 2011, using data from 8,000 sites. USEPA (2000) compares dissolved oxygen in 311 river segments between the two periods 1961-1965 and 1986-1990. The stated goal of the USEPA analysis is to "document the water quality benefits" of the Clean Water Act via "data mining." Smith, Alexander and Wolman (1987) find that concentrations of some organic pollutants decreased between 1974 and 1981 at 388 monitors. Hayward (2011) reviews EPA reports and other sources and summarizes that water quality has improved in the last 40 years. Many studies lament the dearth of good data.

We report several preliminary findings. We first examine trends in water quality over time using regressions with numerous controls for spatial and temporal factors that affect water quality. We focus on pollutants directly regulated by the Clean Water Act. To examine how federal regulations influence local regulations, we study two main policy levers of the Clean Water Act: grants to municipalities and effluent limits placed on industrial dischargers. We examine how these provisions changed municipality and industry behavior and the resulting impact on water quality. Finally, we assess how consumers valued any resulting changes in water quality.

References

Adler, R.W., J.C. Landman, and D.M. Cameron. 1993. *The Clean Water Act 20 Years Later*. NRDC.

CQ Almanac. 1972. "Presidential Veto Message: Nixon Vetoes Water Pollution Act." Accessed Jan 13, 2015, http://library.cqpress.com/cqalmanac/document.php?id=cqal72-868-26690-1251951

Harrington, Winston. 2004. *Choosing Environmental Policy: Comparing Instruments and Outcomes in the United States and Europe*, Resources for the Future.

Hayward, S. F. 2011. *2011 Almanac of Environmental Trends*. Pacific Research Institute.

Smith, V. K., and C. V. Wolloh (2012): “Has Surface Water Quality Improved Since the Clean Water Act?," NBER Working Paper 18192.

Smith, R. A., R. B. Alexander, and M. G. Wolman. 1983. “Analysis and Interpretation of water-Quality Trends in Major U.S. Rivers, 1974-81," USGS Water-Supply Paper 2307.

USEPA. 2000. “Liquid Assets 2000: America's Water Resources at a Turning Point," Discussion paper, Office of Water.