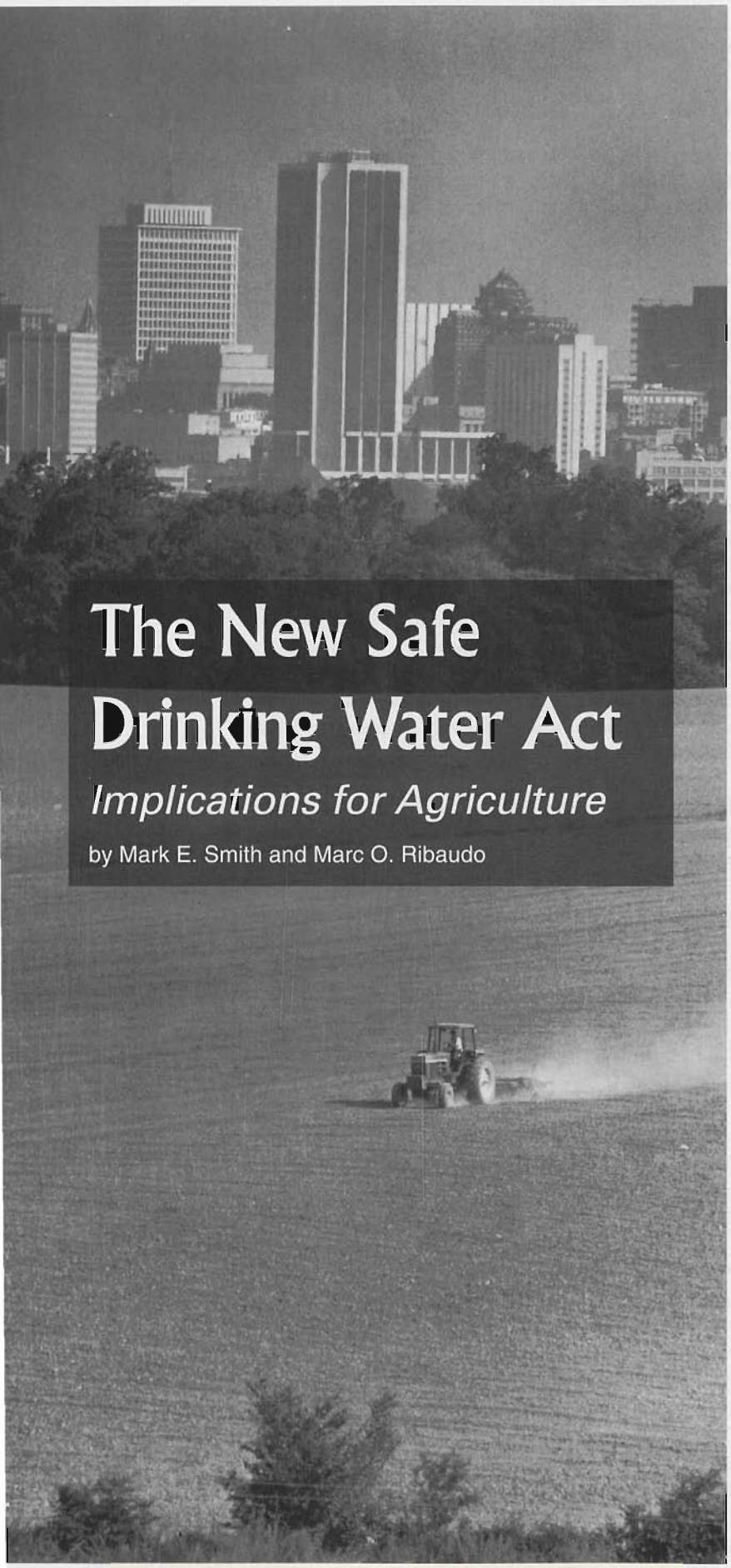

The New Safe Drinking Water Act

Implications for Agriculture

by Mark E. Smith and Marc O. Ribaudo

Revisions to the Safe Drinking Water Act (SDWA) by the Safe Drinking Water Act Amendments of 1996 have indirect but important implications for agricultural producers. Unlike earlier drinking water legislation, the 1996 Act places a significant emphasis on pollution prevention. Among its provisions, the Act requires states to identify, to the extent practicable, sources of contamination and provides an institutional framework to help prevent pollution of water supplies. Given that the Environmental Protection Agency's bi-annual report, *Water Quality Inventory,* routinely identifies agricultural activities as a principal source of water quality impairment, agricultural production practices will likely receive more scrutiny.

The revised SDWA mandates greater public dissemination of information on drinking water contaminants. The Act requires reporting of *detections* of certain chemical contaminants, not only violations of standards. Water quality monitoring studies commonly detect agricultural chemicals, though usually at levels below established standards. Since standard municipal water treatment technology does not remove frequently detected agricultural chemicals, the Act may focus public attention on agricultural contaminants in tap water.

The SDWA amendments authorize assistance for locally based, voluntary efforts to identify and deal with water quality problems. USDA can be an important source of assistance for these projects. The Federal Agriculture Improvement and Reform Act of 1996 authorizes substantial assistance to the agricultural sector for environmental and conservation improvements, which, in turn, could help public water systems (PWSs) meet their regulatory objectives. As we discuss below, the SDWA, while bringing no new regulatory burden to bear on agricultural producers, is likely to heighten awareness of water pollution from agricultural sources as it also facilitates establishment of local institutions to reduce contaminant levels in an efficient manner.

SDWA amendments call for more public disclosure

The Safe Drinking Water Act, first passed in 1974, promotes the supply of safe drinking water by public water systems. The Act set drinking water standards for potential water contaminants. In 1986, amendments to the Act established an optional Wellhead Protection Program for states to protect groundwaters that supply wells and wellfields that supply drinking water to public water supply systems. States that wished to participate could prepare a wellhead protection program and receive EPA grants to establish wellhead protection areas. Forty-three states currently participate in the program.

The 1996 amendments place even greater atten-

tion on pollution prevention. Under the Act, states must conduct assessments to delineate areas providing surface and groundwaters used by PWSs, and identify the origins of certain contaminants in those areas. Source water assessments are meant to provide a basis for developing, implementing, and improving source water protection. Public input in development of the assessments is required and the completed assessments, including sources of contaminants, are to be made available to the public.

The SDWA also requires that community water systems (CWSs, a category of PWSs that supply water to a community year-round) provide information to their customers annually about the level of certain detected drinking water contaminants, not only violations of federal standards. Such consumer confidence reports are to include, among other items, information on levels of specified contaminants detected in purveyed water and federal standards of such contaminants. The reports are to be mailed or made otherwise known to customers. To the extent reported contaminants are from agricultural sources, the practices of farmers and livestock operators may be brought under greater public scrutiny.

Presence of agricultural chemicals in water supplies

Water quality studies commonly detect agricultural chemicals (pesticides and nutrients) in water supplies, though usually at low levels. In 1997, the U.S. Geological Survey reported that at least one pesticide was detected in every sampled stream and about half of sampled groundwater in twenty major U.S. watersheds. The Environmental Protection Agency (EPA 1992) sampled over 560 public drinking water wells and estimated that 14 million people served by CWS wells are exposed to at least one pesticide, though exposures are rarely above health-based levels. No national estimate exists of the number of individuals exposed to agrichemicals from surface water supplies. Most commonly detected farm chemicals are not controlled by conventional drinking water treatment technologies.

Nutrient contamination of water, principally nitrogen in the form of nitrate, may pose a threat to human health. The EPA well-water survey found that nitrate was the most frequently detected chemical in well water, present in more than half of the CWS wells and almost 60 percent of rural domestic wells. (SDWA provisions do not apply to domestic wells.) The EPA (1992) estimated that about 85 million people served by CWS wells were exposed to nitrates, with about 3 million people (including 43,500 infants) using CWS water with nitrate concentrations above the federal maximum contaminant level (MCL). While agriculture is only one source of nitrates in the environment, it is an important source in rural areas where fertilizer is used heavily on cropland.

In sum, many individuals are exposed to pesticides and nitrates in drinking water, though violations of MCLs or health advisory levels for specific chemicals are very uncommon. However, SDWA requires public reporting not only of violations but of detections as well. Hence, the Act is likely to increase consumers' awareness of the presence of farm chemicals in their tap water in many areas.

Potential consumer response

If consumers care about drinking water contaminants, even if amounts fall below the maximum contaminant level, they will take action to reduce exposure. Willingness-to-pay (WTP) studies give some idea of consumer interest in drinking water quality. Crutchfield and coauthors in 1997 and Boyle and coauthors in 1994 reviewed a number of groundwater protection valuation studies and found that consumers were willing to pay to protect themselves from unwanted chemicals in drinking water sources. WTP estimates ranged from over $100 to more than $1,000 per household per year.

Willingness to pay for improvements in drinking water quality seems to increase with uncertainty (Jordan and Elnagheeb). If greater awareness of contaminants in drinking water increases consumer uncertainty about the safety of their water, some will take action to avoid exposure. Uncertainty compounds when consumers do not believe that government safety standards provide adequate protection. In a 1985 national opinion poll cited by Batie, only 23 percent of respondents were willing to accept as "safe" that water which contained only small amounts of chemicals but which met government standards.

In sum, when consumers are made aware of contaminants in their drinking water, a large segment will likely respond actively to that information. Some may simply switch to bottled or filtered water, but others may demand that the PWSs more adequately treat source water or that the chemicals be prevented from entering source water. In the latter cases, farmers may bear the brunt of negative public opinion.

Programs to assist public water systems and producers

The revised Safe Drinking Water Act authorizes a new Source Water Quality Partnership Petition Program to foster local, voluntary, incentives-based action to address source water protection. Agricultural producers may find it in their interest to become involved in the program given that the one-third of community water systems that currently implement source water protection measures often use zoning or land use controls to protect source water (EPA 1997).

The program would start with a CWS or local government submitting a source water quality protection partnership petition. The petition would ask the state to assist in the development of a local, voluntary, incentive-based partnership among the water system or local government and other persons likely to be affected by the recommendations of the partnership. The purpose of the partnership would be to (1) reduce the presence of certain drinking water contaminants, (2) obtain financial or technical assistance, and (3) develop recommendations regarding voluntary and incentive-based strategies for long-term source water protection [SDWA, sec. 1454 (a) (1)]. Upon approval, a state is to provide information on the technical, financial, and other assistance it will provide and assistance available under a variety of different authorities (for example, the Clean Water Act, USDA programs).

If a state chooses, a portion of funds from the new Drinking Water State Revolving Fund (DWSRF), authorized by the 1996 Act, may be used to help finance pollution prevention activities. In the SDWA Amendments of 1996, Congress authorized $1 billion annually to capitalize state revolving funds and related activities. While most of the $1 billion would be available to assist PWSs to finance needed infrastructure, 15 percent of a state's capitalization grant may be used to establish and implement wellhead protection programs, delineate or assess source water protection areas, provide loans to PWSs to acquire land or conservation easements, loan CWSs money to implement source water protection measures or implement recommendations in source water protection petitions, and other activities. While funding for delineation and assessment of source water protection areas was only available in fiscal 1997, all states indicated that they would use DWSRF funds for such use; the Act allows states several years to obligate the funds. Given proposed fiscal 1999 funding of $775 million (and assuming no transfer between the DWSRF and the Clean Water State Revolving Fund), about $100 million would be potentially available for source water protection under the DWSRF.

EPA funding is also available under section 319 (the Nonpoint Source Program) of the Federal Water Pollution Control Act (otherwise known as the Clean Water Act). Under this program, EPA grants funds to states to develop and promote management plans of nonpoint source pollution. The proposed fiscal 1999 program level for section 319 programs is $200 million.

While SDWA provides some funds for prevention programs, such amounts are small compared to the amount of assistance available under USDA programs designed to help producers deal with natural resource problems. Indeed, while the bulk of

the DWSRF may be used by PWSs to treat source water, USDA offers the bulk of federal funds whose use may reduce or prevent nonpoint source water quality problems related to agriculture. Principal USDA programs include land retirement, as well as educational, technical, and financial assistance to help producers reduce soil, water, and related natural resource problems. The largest such program is the Conservation Reserve Program (CRP), through which annual per acre rent is provided in exchange for retiring highly erodible or environmentally sensitive cropland for ten to fifteen years. USDA provides an additional incentive to producers to participate in the program through payments for half the cost of establishing a permanent land cover. The proposed fiscal year 1999 program level for the CRP is about $1.7 billion. Enrollment under the CRP's continuous sign-up will also assist USDA's National Conservation Buffer Initiative. This initiative, tied partly to the CRP, encourages installation of vegetative buffers to reduce soil erosion, protect water quality, enhance wildlife habitat, and achieve other conservation objectives.

The Wetlands Reserve Program (WRP), targeted at restoring and protecting wetlands, provides permanent and thirty-year easements and wetland restoration cost-share agreements to participating producers. Wetlands can be used to filter agricultural contaminants from water supplies. The proposed fiscal 1999 program level is about $124 million. (Only a maximum of 975,000 acres may be enrolled in the WRP, compared to the CRP maximum of 36.4 million acres.)

The USDA's Environmental Quality Incentives Program (EQIP) assists crop and livestock producers to make environmental and conservation improvements in the operation of their enterprises. It provides educational and technical assistance, and cost-share and incentive payments. EQIP's proposed program level for fiscal 1999 is $300 million.

While USDA may provide about $2.1 billion to help agricultural producers deal with natural resource problems (under CRP, WRP, and EQIP), public water systems, which are responsible for dealing with drinking water contaminants and meeting federal standards, do not have access to such funds. Both the PWSs and agricultural producers stand to benefit from collaborative efforts. If agricultural producers prevent source water impairment, PWSs may be able to reduce treatment costs and perhaps have a lesser need for new treatment facilities. Agricultural producers can benefit by reduced likelihood of regulation or exercise of land-use controls. Fear of regulation is commonly cited in producer surveys as a reason for participation in voluntary programs. Provisions of the SDWA facilitate such collaboration.

Collaborative efforts: some successful cases

Drinking water utilities and agricultural producers are already collaborating in some localities though few cases have been documented in the literature. A municipality or utility may face potentially high costs to meet EPA filtration requirements or contaminant standards, or it may be concerned with sediment reducing the useful life of its reservoir. Working with producers and other stakeholders, the municipality may add to funds provided by USDA, EPA, and the state for educational, technical assistance, and cost-sharing. In some areas, agricultural producers in a watershed are eligible to receive 100 percent cost-sharing.

The New York City case (McGuire) provides an example of collaboration. To avoid an estimated $6 billion in required filtration facilities plus further operating expenses, New York City initially proposed a regulatory and land acquisition approach in its largest watersheds. After agricultural producers protested, and recognizing that suburban development might also threaten watershed quality (as it has in the Croton reservoir), federal, state, and city agencies and local agricultural interests took a collaborative approach to obviate the need for filtration. Under this approach, the city has provided 100 percent cost-sharing to producers to implement best management practices with the intent to preserve water quality. According to Gale Sheradin, executive director of the Watershed Agricultural Council, the program has achieved a goal of enrolling 85 percent of farms in the watershed.

Syracuse, New York, is using a similar approach to avoid filtration. Watershed Coordinator Lee Macbeth reports that about 80 percent of producers (accounting for approximately 95 percent of agricultural land) in the Skaneateles watershed have pledged to cooperate in a plan whereby the city provides 100 percent cost share for specified best management practices. Farm participants in the program will be exempted from city watershed rules and regulations. At a total cost of $17 million in federal, state, and city funds, the city hopes to avoid $50–$65 million in capital costs for a filtration plant.

In Wichita, Kansas, Jerry Blain, superintendent of production and pumping, says that the utility is working with producers and others in the watershed to reduce sediment and phosphate loadings to the reservoir. The utility adds to other funds to provide a 100 percent cost-share payment to producers to utilize best management practices. It is estimated that these efforts will increase the useful life of the reservoir by 50 to 100 percent.

In the West Lake Reservoir in Iowa, sediment, pesticides, and nutrients from the predominantly agricultural drainage basin polluted the reservoir

(EPA 1994). Sediment was rapidly reducing the reservoir's storage capacity and damaging pumps and filtration systems. Atrazine and cyanazine were detected at levels above the federal drinking water standards. Without preventive steps, expensive water treatment equipment would have been required to meet federal water quality standards. In 1990, the Clarke County Soil and Water Conservation District developed a watershed management plan for implementing alternative management practices to reduce chemical loadings and soil erosion. With education, technical assistance, and financial assistance from a variety of state and federal sources, alternative management practices were adopted on a significant amount of cropland. Soil erosion was reduced by more than one-half, and atrazine and cyanazine use in the watershed were cut significantly. As a result, atrazine and cyanazine concentrations in the reservoir dropped below maximum contaminant levels (EPA 1994).

Win-win strategy: cooperation

The SDWA will heighten awareness of drinking water contamination and its sources. The Act requires development of information necessary to help prevent pollution but does not require prevention activities. Neither agricultural producers nor public water systems are required to take source water protection measures. However, greater public awareness of chemicals detected in drinking water and their sources may create pressure to increase treatment and to reduce source water contamination. To the extent that PWS owners can avoid costly treatment and agricultural producers can avoid calls for regulation or land-use controls, both have incentives to collaborate. The result may be cleaner drinking water at a lower cost to society. ◙

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■ For more information

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