

# RISKY

**WASTE DISPOSAL PRACTICES  
CAN COST YOU PLENTY**



**A MANAGER'S GUIDE TO PROTECTING  
COMMUNITY DRINKING WATER**

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# KNOW THE HIDDEN THREAT TO YOUR COMMUNITY'S WATER SUPPLY

## PROTECT

If you are the manager, administrator, or other local official of a city or county, you need to be aware of a hidden source of contamination that often goes undetected until it affects a community's water supply. This hidden source is an on-site drainage system in or near a facility that generates chemical and industrial-grade waste waters.

Some businesses, usually without access to sewer systems, pour their process wastes down the drain into a dry hole, cesspool, or septic tank and drainfield. These types of disposal can release untreated wastes directly into the ground and pollute the ground water. The pollutants can enter lakes, streams, other surface water bodies, private wells or public water supply systems and may have grave consequences for the community. Table 1 summarizes the waste characterizations associated with some common light industries and pathways for ground water contamination.

Just because your community's water supply comes from a surface source, such as a lake or a river, does not mean that it is safe from contamination. Consider that 40 percent of the water going into (or recharging) our lakes, rivers, and streams is derived from ground water, and most of our natural lakes come from this source. In humid regions, ground water may account for as much as 90 percent of this water recharge.

### INDUSTRIAL WELLS CAN ENDANGER PUBLIC HEALTH AND DEVASTATE THE FINANCIAL RESOURCES OF A COMMUNITY

Exposure to commonplace chemicals such as dry cleaning fluids, photographic solvents, and other everyday products contained in industrial waste waters can cause serious health problems ranging from skin rashes to death.

By Harriet Hubbard  
and Barbara Yuhas



**TABLE 1: SUMMARY OF INDUSTRIES AND WASTES GENERATED**

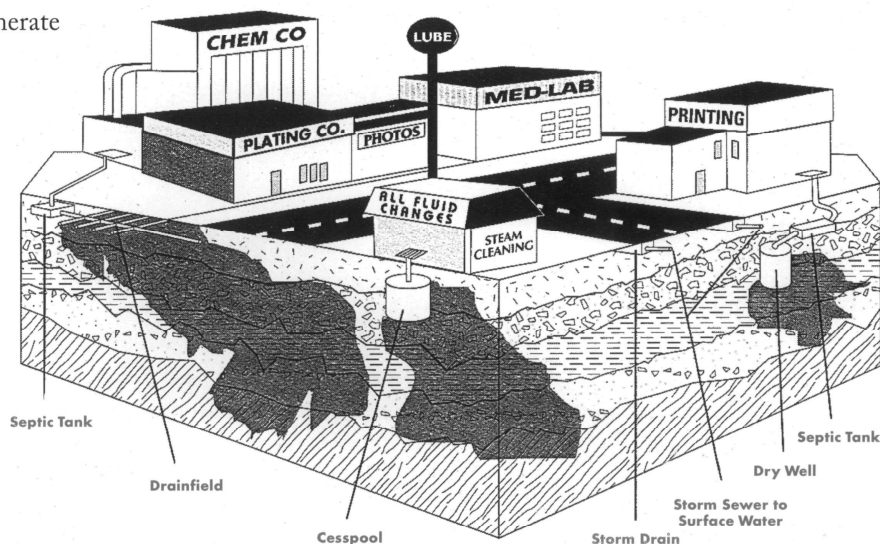
Industry	Examples of Waste Generated	Pathways to Contamination
Automotive Service & Repair	Oils, fuels, antifreeze, degreasing, steam-cleaning and paint solvents, used paint, kerosene, mineral spirits, detergents, metals, road salts	Floor drains to dry wells, discharge to septic systems or storm drains, leaks and spills, improperly stored drums and dumpsters, improper storage and disposal of batteries, waste oil and antifreeze
Dry Cleaning	Solvents, spent filter cartridges, still residues/bottoms, cooked powder residues, contaminated cooling water, vapor condensation, spotting board residue	Poor housekeeping, improper storage and handling of barrel and storage areas, dumping water from separator, discharges of cooling water to ground or septic systems, illegal connections to storm drains, improper vapor recovery, leaks and spills, floor drains to dry wells
Photographic Processing	Silver-bearing rinsewaters, bleaches, fixers, developers, thiosulfates, benzyl alcohol, sulfites	Discharges of rinse waters and spent solutions to septic systems or dry wells
Printing	Photographic processing, equipment cleaning and developing solutions, solvent-soiled rags, spent lubricants	Spills and leaks, floor drains, discharges to the septic system, improper handling and disposal of spent chemicals

The monetary costs required to clean up ground water contamination or replace a public water supply can range from tens of thousands to millions of dollars per site, as illustrated in Table 2.

## WAYS TO PROTECT YOUR COMMUNITY'S SOURCE OF DRINKING WATER FROM INDUSTRIAL WELLS

Consider the following steps:

- Identify the land area that will need to be managed to protect your community's drinking water supplies (i.e., your source water protection area).
- Involve business and community leaders early in this source water protection planning process.
- Offer incentives to businesses that generate chemical and industrial waste waters within that land area to employ best management practices and to restrict their use of on-site drainage systems.
- Use available management tools to control chemical and industrial waste water disposal (such as zoning ordinances, land-use plans, on-site drainage system design and operating standards, source prohibition, hazardous wastes collection programs, recycling, ground water monitoring and sewer hookups).
- Provide ongoing education to ensure community support.



Source: Ground Water Bulletin/Fall 1995

**TABLE 2: CASES OF CONTAMINATION FROM SHALLOW WELL DISPOSAL**

Place	Incident	Remediation	Financial Impact
Tacoma, Washington (pop. 177,000)	A dry cleaner disposed of solvents in a septic system and contaminated wells that supplied water to 30,000 people	The contaminated wells were taken out of service and the ground water was cleaned by using air stripping	The remediation costs are approximately \$1.5 million in capital expenditures and \$85,000 per year in operation and maintenance costs
Exton, Pennsylvania (pop. 14,335)	Solvents used to clean engines at an automotive repair facility contaminated an on-site water supply well and threatened the water supply to 77,000 people living within three miles of the site.	EPA placed the site on the National Priorities List of Superfund sites.	Remediation is expected to cost approximately \$10,967,000. It will include carbon filtration, the disposal of contaminated soils, and air stripping to treat the ground water
Boulder, Colorado (pop. 85,000)	A printed circuit board manufacturer used its septic system to dispose of process waste water containing chlorinated solvents, primarily trichlorethane. A plume of volatile organic chemicals has contaminated drinking water wells	Long-term remediation plans include connecting affected residents to the Boulder municipal water system. Bottled water has been supplied in the interim	Residents sued the manufacturer and were awarded \$4.1 million (\$3 million for neighborhood; \$750,000 for a new water supply; \$225,000 for medical monitoring; and \$165,000 for loss of use and enjoyment of property)
Brewster, New York (pop. 1,650)	A dry cleaner disposed of waste water in a dry well. A community well field, which served 2,100 residents, was contaminated	Remediation plans include the excavation and disposal of 100 cubic yards of dry well sediment, sludge, and soil	The remedial action is expected to cost \$241,940



## HOW TO LEVERAGE AVAILABLE RESOURCES TO PROTECT YOUR COMMUNITY'S SOURCE OF DRINKING WATER

Federal and state resources are available that can provide you with technical and/or financial assistance:

- **Contact your local or U.S. Environmental Protection Agency (EPA) Underground Injection Control (UIC) program**—The UIC program regulates industrial waste water disposal into on-site drainage systems and other types of "Class V" injection practices. The program also can help you prepare a model health regulation, review drafts of local regulations prior to adoption, coordinate meetings with other managers to encourage information exchanges, and facilitate communication between relevant stakeholders.
- **Petition your state for assistance**—The 1996 Safe Drinking Water Act Amendments require states to define the areas that supply the water used by public water systems and identify threats to drinking water quality within those areas. They also provide funding for state and local initiatives for source water protection.

## BUILDING PARTNERSHIPS WITHIN THE COMMUNITY IS ESSENTIAL TO SUSTAINING A SOURCE WATER PROTECTION EFFORT

- **Enlist the aid of other local officials**—For example, local government authorities such as police, fire, and transportation and highway departments can monitor on-site drainage systems in their own vehicle maintenance facilities and look for industrial wells at other facilities within the community. Local boards of health can educate applicants for septic system permits.
- **Enlist the aid of professional associations**—For example, state and local builders associations, mortgage bankers associations, and the local chapters of the American Planning Association can help ensure that real estate transactions recognize and prevent the occurrence of industrial wells. Other examples include the service station and automotive repair association and the automotive dealers association, which can disseminate information regarding best management practices to their members.
- **Volunteer organizations also are an extremely important and valuable resource**—These organizations can help you locate industrial wells by canvassing the community's source water protection area. For example, organizations such as the Retired Senior Volunteers Program and the American Association of Retired Persons can assist with the inspection of and outreach to specific facilities. Chambers of commerce and service organizations can inform businesses of the hidden dangers of industrial wells. The Farm Bureau Federation and 4H Clubs can help with outreach to the farming community.

## CONCLUSION

On-site drainage systems in or near facilities that generate chemical and industrial grade waste waters are a potential source of serious contamination to your community's water supplies. Once ground water is contaminated, it is costly and often impossible to restore its quality, safety, and health standards. By investing in proper planning, leveraging available technical and financial resources, and forming partnerships within the community, you can help ensure that your community's source of drinking water and its public and financial health are protected from industrial wells. To learn more about this important issue, contact one or more of the resources listed on the right.

## INFORMATION RESOURCES

**Sources of information used in this article and available for future reference include:**

*Best Management Practices for the Protection of Groundwater: A Local Official's Guide to Managing Class V UIC Wells.* Oswald Ingles, Jr., P.E., 1992, Connecticut Department of Environmental Protection.

*Building Local Partnerships: A Guide for Watershed Partnerships.* Conservation Technology Information Center, West Lafayette, Indiana.

*Ground Water Contamination in the United States.* Pye, Patrick and Quarles, 1983, University of Pennsylvania Press, Philadelphia.

*Septic Systems and Ground-Water Protection: An Executive's Guide and Septic Systems and Ground-Water Protection: A Program Manager's Guide and Reference Book.* USEPA, July 1986.

Further **U.S. Environmental Protection Agency information** can be obtained through the National USEPA Office of Groundwater and Drinking Water, Washington, D.C. Contact Harriet Hubbard at 202/260-9554 (voice) Hubbard.Harriet@epamail.epa.gov (e-mail).

For information from the **International City/County Management's Environmental Programs**, contact Barbara Yuhas at 202/962-3539 (voice) or BYuhas@ICMA.org (e-mail).



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