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Environmental Protection
Agency

Office of Ground Water
and Drinking Water
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EPA

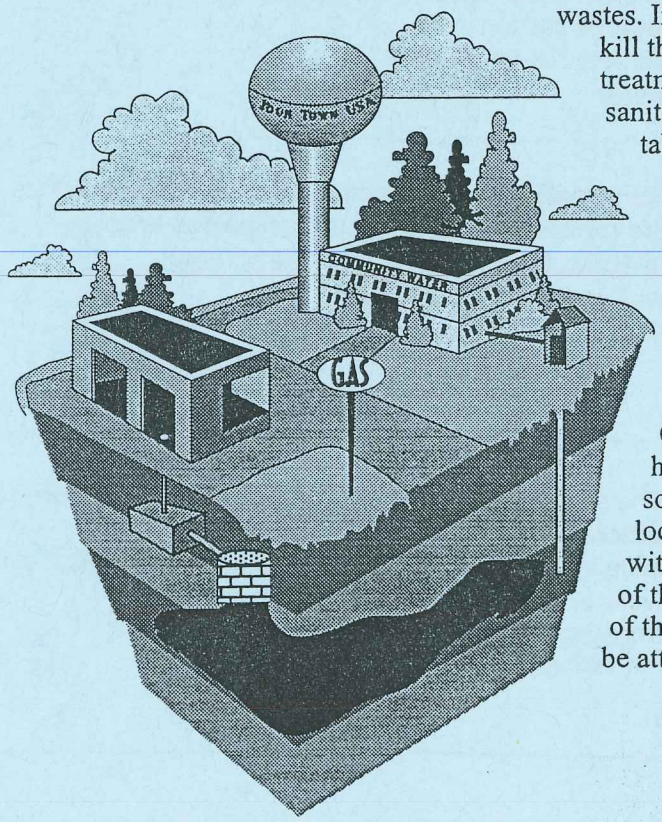
Is Your Community's Drinking Water At Risk?

Misused Septic Systems Can Cost Millions

Businesses throughout the United States generate wastewater from their commercial and industrial operations. Many manage their wastewater in an environmentally sound fashion by recycling or collecting it in holding tanks for later treatment off site, or they dispose of it in properly connected sewers. Unfortunately, some businesses, usually without access to sewer systems, rely on shallow underground disposal. They use dry holes or cesspools, or send their wastewaters into septic tanks. Any of these forms of disposal can lead to contamination of underground sources of drinking water with grave consequences for a community. This pamphlet describes some cases of ground water contamination caused by the improper disposal of wastewater.

The wastewater disposal practices of some kinds of business are of particular concern because the waste they generate is likely to contain toxic chemicals. This is of particular concern for certain types of businesses, such as automobile service stations, dry cleaners, electrical component or machine manufacturers, photo processors, and metal platers or fabricators. Such businesses are often found in strip malls, industrial parks, and many areas that are not served by municipal sewer systems. Without access to sewer systems, these businesses rely on shallow disposal wells such as septic systems to get rid of their wastes. The environmental consequences of this form of wastewater disposal, however, can be great.

Dry holes and cesspools introduce the wastes directly into the ground. Septic systems cannot, however, treat industrial wastes. They are only designed to treat sanitary wastes. Industrial wastes may contain harmful chemicals which can kill the bacteria in the septic tank necessary for the primary treatment of sanitary wastes. When this happens, poorly treated sanitary wastes percolate into the ground and can reach the water table. The industrial wastes will pass untreated through the system and can contaminate drinking water sources. This is of particular concern for certain types of businesses such as automotive service stations, dry cleaners, electrical component or machine manufacturers, photoprocessors, and metal platers or fabricators because the waste they generate is likely to contain toxic or cancer-causing chemicals.



Over the past decade, many communities in the United States have had to address the contamination of their underground sources of drinking water by the waste disposal practices of local businesses. As the next page shows, the costs associated with cleaning up ground water contamination ranges from tens of thousands to millions of dollars per site. These are just a few of the cases of ground water contamination nationwide that can be attributed to industrial disposal wells.

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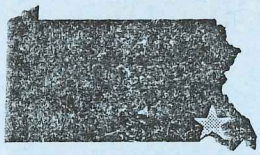
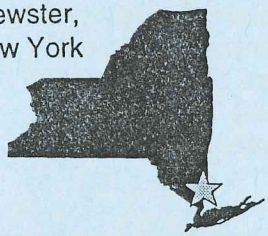
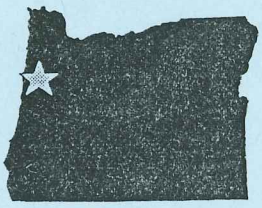
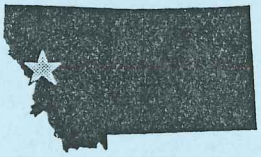
Cases of Contamination from Shallow Disposal Wells

Place	Incident	Remediation	Financial Impact
Exton, Pennsylvania 	Solvents used to clean engines at an automotive repair facility contaminated an on-site water supply well and threatened the water supply for 77,000 persons living within 3 miles of the site.	EPA placed the site on the National Priorities List of Superfund sites and issued a Record of Decision in September 1995.	Remediation is expected to cost approximately $10,967,000. It will include carbon filtration, the excavation and off-site disposal of contaminated soils, and air stripping to treat ground water.
Boulder, Colorado	A manufacturer of printed circuit boards used its septic system to dispose of process wastewater containing chlorinated solvents, primarily trichloroethane. A plume of volatile organic chemicals has contaminated area drinking water wells.	Long-term remediation plans include connecting affected residences to the Boulder municipal water system. Bottled water is being supplied in the interim.	Residents sued the manufacturer and were awarded $4.1 million ($3 million for neighborhood cleanup; $750,000 for a new water supply; $225,000 for medical monitoring; and $165,000 for loss of use and enjoyment of property).
Ft. Lauderdale, Florida	A manufacturer of solderless electrical terminals disposed of process wastewater contaminated with trichloroethylene, heavy metals, oil, grease, and dye into a dry well and drain fields. As a result, ground water in the area was contaminated.	The selected remedial action includes the excavation, aeration, and replacement of soil contaminated with volatile organic compounds, and the extraction, treatment, and reinjection of contaminated ground water.	Capital costs of the remedial action are expected to be $653,730. Operation and maintenance costs are expected to run $364,215 per year.
Brewster, New York 	A dry cleaner disposed of wastewater 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.
Vancouver, Washington	An electroplating company discharged hexavalent chrome into a dry well, which contaminated local ground water. A well field that serves 10,000 residents is threatened.	The selected remedial action includes the installation of extraction wells to remove chrome from the ground water by ion exchange.	The remedial action is expected to cost approximately $3.8 million.

Cases of Contamination from Shallow Disposal Wells

Place	Incident	Remediation	Financial Impact
South Cairo, New York	A thermostat manufacturer poured trichloroethylene and tetrachloroethylene sludges into drains that led to an abandoned septic system. As a result, the community's drinking water source was contaminated.	Remediation includes cleanup of ground water using spray aeration and air stripping, while supplying the affected community with an alternative water supply.	The remedial action, which includes the installation of a new well and pipeline, is expected to cost $2.3 million. Annual operation and maintenance costs will run $100,000.
Tacoma, Washington	A dry cleaner disposed of solvents in a septic system and contaminated 2 municipal wells that supplied water for 30,000 persons.	The contaminated wells were taken out of service, and the ground water was cleaned up by using air stripping.	The costs of the two remedial actions are approximately $1.5 million in capital expenditures and $85,000 per year in operation and maintenance.
Corvallis, Oregon 	An electroplater disposed of floor drippings, washings, and product rinse in a dry well, contaminating soil and ground water.	The selected remedial action includes the installation of wells to extract chromium-contaminated ground water for treatment, and the excavation and removal of contaminated soil.	Capital costs of remediation are expected to run approximately $1.6 million. Annual operation and maintenance costs are expected to be approximately $261,000.
Gilford, New Hampshire	Floor drains from several vehicle maintenance shops contaminated a local public water supply with tetrachloroethylene and other volatile organic compounds.	The floor drains were sealed, and the septic systems were removed and replaced.	Removal of the sludge from the septic tanks alone was estimated to cost $20,000.
Missoula, Montana 	Wastewater seeping from drainage wells at an automotive service station contaminated a community water supply well that served 45,000 persons.	Three wells were closed, but no remedial action was taken.	Costs include the loss of water supply wells.

What Can You, as a Local Official, Do to Protect Your Drinking Water Supply?

There are several important actions that you, as a local official, can take whether you are a county executive, mayor, health officer, drinking water supplier, or in some other way have a stake in protecting your community's drinking water. Actions taken now to prevent contamination can protect your community's water supply and save millions of dollars in site remediation and new drinking water source development.

- **Promote the use of best management practices (BMPs)** and voluntary methods by encouraging pollution prevention, waste minimization, and recycling. BMPs are standardized operating procedures that businesses can use to reduce, or better manage, the waste they produce. BMPs can be as simple as "good housekeeping," such as using absorbent clay to clean up small spills of petroleum products and solvents, rather than wash the liquid down the drain. Local officials who have used education and outreach tools to promote best management practices among the businesses in their communities have found that these efforts save money, protect ground water, and forge strong public-private partnerships.

- **Use local authority to implement a ground water protection program.** Thousands of communities nationwide are developing programs following the steps for delineating the area that needs to be protected, identifying the potential sources of contamination, and managing those sources through a variety of regulatory and voluntary methods. Some communities have used senior volunteers, students, and other private organizations to make wellhead protection a great success.

- **Work with State and Federal ground water and drinking water protection programs.** Promote the closure of shallow underground wells that dispose of industrial wastewater. Disposal of hazardous waste in a shallow underground well could be a violation of the Safe Drinking Water Act, the Resource Conservation and Recovery Act, as well as state and local law, and subject to enforcement orders. By first asking and finding out where the drains lead, local officials have found shallow underground disposal wells in their communities and made sure that the wells complied with the requirements under these laws.