



## **Best Management Practices (BMP) For Protecting Ground Water**

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### **For Photographic Processing Establishments Using Shallow Industrial Waste Disposal Wells**

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EPA recognizes that certain industrial waste disposal practices using drainage wells may pose unacceptable risks to Underground Sources of Drinking Water. These operations allow the discharge of various wastes to a drainage system neither designed for nor capable of treating them. Accordingly, BMPs for Industrial Disposal Wells focus on well closure and alternative disposal methods. We have also included BMPs for waste minimization to help facilities reduce waste disposal costs, regardless of the disposal method they use. In addition local, county, and State regulations may prohibit use of these wells. Note: these practices are recommendations only.

The BMPs listed below apply to photographic processing establishments. Fact Sheet Number 2 in this series lists BMPs that are applicable to industrial Disposal Wells (including those used by photographic processing establishments), particularly for closure and alternative disposal.

#### Waste Minimization

- \* Use as little water as possible (e.g. install water demand valves to control water use)
- \* Use timers to turn off continuous washers when film is not being processed to reduce wastewater volume
- \* Install a washless processing system
- \* Use film with less or no silver, or use silver fixers which allow silver to be filtered out of developing solutions
- \* Replace ferricyanide bleach with ferric EDTA (ethylenediaminetetraacetic) complex (Note: mixing EDTA complex from scratch may be dangerous) or regenerate spent ferricyanide bleach using ozone oxidation, electrolysis, persulfate salts, liquid bromine, ion exchange, or highly concentrated bleach-fix replenishment

- \* Use a closed-cycle system to enhance recovery of silver
- \* Configure chemical recovery cartridges in series to maximize silver recovery
- \* Recover silver by using metallic replacement, electrolytic recovery, chemical precipitation, ion exchange, reverse osmosis, and/or evaporation
- \* Recycle developer using an ion exchange system or an electrodialysis system
- \* Re-use tray method solutions until test strips indicate they are chemically exhausted
- \* Renew photo processing chemicals using replenisher concentrates and regenerators
- \* Use floating lids on bleach and developer to retard oxidation
- \* Replace rectangular process tanks with cylindrical ones to maximize efficiency and to distribute solutions better (by rolling the cylinder)

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Note: These BMPs are adapted from a May 1991 EPA report titled “Class V Well BMP Guidance - Phase I and Phase II” and have been modified in response to comments by EPA Regions. For a copy of the EPA report, please contact the Underground Injection Control Branch of the Office of Ground Water and Drinking Water, U.S. EPA