United States
Environmental
Protection Agency

Office of Ground Water
and Drinking Water (4601)

EPA/816-R-99-014h
September 1999

The Class V Underground Injection Control Study

Volume 8

Wells That Inject Fluids From Laundromats Without Dry Cleaning

Table of Contents

WELLS THAT INJECT FLUIDS FROM LAUNDROMATS WITHOUT DRY CLEANING

The U.S. Environmental Protection Agency (USEPA) conducted a study of Class V underground injection wells to develop background information the Agency can use to evaluate the risk that these wells pose to underground sources of drinking water (USDWs) and to determine whether additional federal regulation is warranted. The final report for this study, which is called the Class V Underground Injection Control (UIC) Study, consists of 23 volumes and five supporting appendices. Volume 1 provides an overview of the study methods, the USEPA UIC Program, and general findings. Volumes 2 through 23 present information summaries for each of the 23 categories of wells that were studied (Volume 21 covers 2 well categories). This volume, which is Volume 8, covers Class V wells that inject fluids from laundromats without dry cleaning.

1. SUMMARY

Wells used to inject fluids from laundromats where no onsite dry cleaning is performed or where no organic solvents are used for laundering are classified as "laundromat wells" for the purpose of this study. These wells are located throughout the U.S. and can be found at coin-operated laundromats.

The characteristics of the fluids drained into these wells are similar to those of greywater from household washing machines. The limited data that are available from coin-operated washers indicate that none of the primary drinking water maximum contaminant levels (MCLs) or health advisory levels (HALs) are exceeded by laundromat washwater injectate. However, the injectate has exceeded the secondary MCLs for pH and total dissolved solids (TDS).

It is not a typical practice to locate laundromat wells in injection zones with specific geologic characteristics (laundromat wells do not tend to be located in areas with karst, fractured bedrock, or any other particular kind of subsurface feature).

Although there are no reported contamination incidents associated with laundromat wells, some wells may to be vulnerable to spills or illicit discharges. For instance, the unsupervised nature of coin-operated laundromats may make Class V wells at those facilities susceptible to contamination due to laundering of contaminated articles. For instance, an individual may wash highly contaminated articles, such as solvent-soaked or oily rags, that may result in increased contaminant concentrations in the wash water. As another example, it is reasonable to expect that any sinks or floor drains at the facility, which also may receive minor spills, would be hooked into the same plumbing system that collects and transfers wash water to the injection well.

The inventory results for laundromat wells are very uncertain because most responses to the state and USEPA Regional survey conducted for this study did not distinguish laundromat wells from other kinds of commercial or industrial wells. These results suggest that there are less than 700 documented laundromat wells in the U.S. The wells are documented in 12 states, with Alabama, West

Virginia, New York, Mississippi, and Iowa providing the highest estimates (collectively, these five states account for more than 90 percent of the estimated national inventory). Although many states estimate numbers of wells much higher than the numbers documented, most are unsure of the exact number of wells.

States with the majority of documented or estimated laundromat wells are implementing various kinds of regulatory programs to address these wells. Alabama and New York issue individual permits. Individual permits are also sometimes required in West Virginia. However, in Iowa, Mississippi, and West Virginia, the wells are permitted by rule; that is, as long as owners and operators meet certain requirements, they are allowed to operate a laundromat well.

2. INTRODUCTION

Using the existing list of Class V well types in 40 CFR §146.5(e), laundromat wells could be either "dry wells used for the injection of wastes into a subsurface formation" (per §146.5(e)(5)), or if the wastewater is disposed via a septic system, "septic system wells used to inject the waste or effluent from ... a business establishment" (per §146.5(e)(9)). In the *1987 Class V UIC Report to Congress*, laundromat wells were considered to be industrial process water and waste disposal (5W20) wells (USEPA, 1987).

On July 29, 1998 (63 FR 40586), USEPA proposed revisions to the Class V UIC regulations that would add new requirements for the following three types of wells that, based on available information, were believed to pose a high risk to USDWs when located in ground water-based source water protection areas: motor vehicle waste disposal wells, industrial wells, and large-capacity cesspools. All other types of Class V wells are to be studied further to determine whether they warrant additional UIC regulation.

In the July 29, 1998 notice, USEPA proposed to include "wells used to inject fluids from laundromats where no dry cleaning is performed or where no organic solvents are used for laundering" within the "other industrial" well category.[1] Such wells would be excluded from the more stringent regulations proposed for high-risk industrial wells. This approach was proposed because USEPA believed that laundromat wells, when defined in this narrow way, pose a lower risk than the wells that would be regulated under the proposal, because they inject wastewaters containing primarily water-soluble cleaners and normal laundry dirt, similar to domestic washing machines. This volume examines laundromat wells excluded from the July 29, 1998 proposal to help USEPA make more informed decisions about this type of Class V well.

[1] The wells in the proposed "other industrial well" category are: (1) wells used to inject fluids from carwashes that are not specifically set up to perform engine or undercarriage washing; (2) wells used to inject noncontact cooling water that contains no additives and has not been chemically altered; (3) wells used to inject fluids from laundromats where no onsite dry cleaning is performed or where no organic solvents are used for laundering; and (4) wells used to inject wastewater from food processing operations. The other three kinds of wells included in the other industrial well category are addressed in separate volumes of the Class V UIC Study.

Wells used to inject wastewater from laundries qualify as Class V injection wells as long as the wastewater is not a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA). Because most dry cleaners generate hazardous waste, by virtue of the perchloroethylene that is commonly used as a solvent, disposal of wastewater from dry cleaners in Class V wells is generally prohibited by the existing UIC regulations.

Facilities of interest for this study are coin-operated laundromats, which are typically self-service facilities that anyone can use. For the most part, the washing machines used, the detergents used, and the items washed in such "coin-ops" are the same as in a typical private home scenario, resulting in wastewater that is essentially identical to that from a household washing machine. However, there is a potential for people to use coin-ops to wash small loads of commercial items or unusually contaminated household items (e.g., towels or rugs soaked by spills), which are more typically washed at industrial laundries.

3. PREVALENCE OF WELLS

For this study, data on the number of Class V laundromat wells were collected through a survey of state and USEPA Regional UIC Programs. The survey methods are summarized in Section 4 of Volume 1 of the Class V Study. Table 1 lists the numbers of Class V laundromat wells in each state, as determined from this survey. The table includes the documented number and estimated number of wells in each state, along with the source and basis for any estimate, when noted by the survey respondents. If a state is not listed in Table 1, it means that the UIC Program responsible for that state indicated in its survey response that it did not have any Class V laundromat wells.

As indicated in the table, the documented number of wells at laundromats without drycleaning in the U.S. is relatively low (less than 700); however, states and USEPA Regions estimate that many more of these wells actually exist. The largest numbers are thought to exist in Mississippi and Iowa, which estimate 820 and 1,000 wells, respectively. (The estimated number in New York is 1,000, but includes not only laundromat wells, but also the three other kinds of wells included in the "other industrial" well category.) Although many other states also estimate numbers of wells much higher than the numbers documented, most are unsure of the exact number of wells. In many cases, all of the "other industrial" wells are inventoried and laundromat wells are a subset of this category, yet state staff are unable to differentiate the laundromat wells from others in the inventory.

Table 1. Inventory of Wells at Laundromats Without Drycleaning in the U.S.

State	Documented Number of Wells	Estimated Number of Wells	
		Number	Source of Estimate and Methodology[1]
USEPA Region 1			
MA	9	>9	State staff suspect more wells exist in MA than documented.
ME	80	<80	State staff suspect fewer wells exist in ME than documented.
USEPA Region 2			
NJ	<28	<28	N/A
NY	<174	1,000	Best professional judgement.
VI	0	50	Region estimate based on review of inspection reports and business directory.
USEPA Region 3			
WV	<223	>223	Best professional judgement.
USEPA Region 4			
AL	<162	>162	State staff estimate that more than the documented number of other industrial wells exist.
FL	4	>4	State staff suspect more wells exist, but no statewide inventory is available.
MS	6	820	Best professional judgement, based on 10 laundromats without dry cleaning per county times 82 counties.
TN	2	>2	State staff suspect more wells exist in TN than documented.
USEPA Region 5			
MI	4	4	N/A
WI	4	>4	State staff suspect more wells exist in WI than documented.
USEPA Region 6 -- None			
USEPA Region 7			
IA	N/A	1,000	Best professional judgement, based on ten years of IA experience and discussions with trade organizations and county sanitarians.
USEPA Region 8			
MT	0	10	Estimate based on USEPA Region 8 records.

Table 1. Inventory of Wells at Laundromats Without Drycleaning in the U.S. (Continued)

State	Documented Number of Wells	Estimated Number of Wells	
		Number	Source of Estimate and Methodology[1]
USEPA Region 9			
CA	0	50	Best professional judgement.
HI	4	4	N/A
NV	0	10-20	Best professional judgement and gross estimates.
USEPA Region 10			
AK	0	10	Best professional judgement.
OR	0	15	N/A
All USEPA Regions			
All States	< 700	> 3,495	Many of the estimated numbers are for all types of "other industrial" wells, of which laundromat wells are only a subset. Total estimated number counts the documented number when the estimate is NR.

[1] Unless otherwise noted, the best professional judgement is that of the state or USEPA Regional staff completing the survey questionnaire.
N/A Not available.

A representative of the Coin Laundry Association estimates that there are approximately 30,000 coin-operated laundromats nationwide. Most of these laundromats discharge their wastewater directly to the local sewer system. In fact, the Coin Laundry Association estimates that only about 100 laundromats discharge to a septic system, which is considered a Class V well (Vassalydes, 1998).

4. WASTEWATER CHARACTERISTICS AND INJECTION PRACTICES

4.1 Injectate Characteristics

Given that coin-operated laundries are used by most customers to launder their household items and clothing, the wastewater from these sites is expected to be very similar to the "greywater" resulting from washing machines in homes. Greywater is defined as the wastewater produced from baths and showers, clothes washers, and lavatory sinks (as opposed to the wastewater generated by toilets, kitchen sinks, and dishwashers, which is called "blackwater") (Agriboard Industries, 1998).

Very little quantitative information is available on the characteristics of laundromat well injectate. States often do not request sampling and analysis of injectate at these establishments. The limited

information and injectate data available on laundromat wells is discussed below. It includes analytical data from nine coin-operated laundromats in New York and data from three sampling events at a combination carwash and laundromat in Libby, Montana. The data from New York were received by USEPA in 1999, and the Montana sampling events took place in 1997 and 1998.

In New York, many of the laundromats engage in self sampling and analysis. However, the New York State Department of Environmental Conservation sampled several coin-operated laundromats in Suffolk and Nassau counties. Table 2 displays the discharge data for these laundromats, compared to applicable drinking water MCLs and HALs.

Table 2. Discharge Data for Coin-Operated Laundromats in New York

Parameter	Treatment Type									Drinking Water Standards (*)		Health Advisory Levels (**)	
	F&C	F&C	F & DAF	None	None	M/C	None	C&R	C&R	mg/l	P/S	mg/l	N/C
pH (SU)	9	NA	7	NA	NA	NA	9.1	NA	NA	6.5-8.5	S	-	
TSS (mg/l)	4	27	28	40	42	<5	8	21	30	-		-	
TDS (mg/l)	167	604	1130	NA	382	NA	726	NA	NA	500	S	-	
Oil & Grease (mg/l)	3	<5	<5	<5	<5	<5	<10	<5	6.3	-		-	
MBAS (mg/l)	0.31	16.4	50.1	50.1	47	0.92	75	22.9	2	-		-	

Source: New York Department of Environmental Conservation, 1999.
Treatment Types: F&C: Filters and Carbon F&DAF: Flocculation and Dissolved Air Flotation
M/C: Membrane/Carbon C&R: Chemical and Resin
* Drinking Water Standards: P= Primary; S= Secondary.
** Health Advisory Levels: N= Noncancer Lifetime; C= Cancer Risk.
- No standards or advisory levels available.

A&J Suds and Scrub in Libby, Montana submitted the results of three sampling events as part of the requirements for a UIC permit. The facility's well receives a combination of carwash and laundromat effluent. As a result, the injectate data are not entirely representative of laundromat well injectate. Table 3 summarizes the water quality data for injectate sampled at A&J Suds and Scrub. The complete data set is included as Table A-1 in Attachment A of this volume.

The data shown in Table 2 indicate that, even after treatment, fluids injected into laundromat wells have exceeded secondary MCLs for pH and TDS. In particular, two pH levels were 9 and 9.1,

Table 3. Summary of Injectate Quality Data from A&J Suds & Scrub, Libby, Montana

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
Aluminum, Total	13	NA	NA	0.05-0.2	S	-	
Antimony, Total	<0.003	NA	NA	0.006	P	0.003	N
Arsenic, Total	<0.025	NA	NA	0.05	P	0.002	C
Barium, Total	<1	NA	NA	2	P	2	N
Benzene	NA	<0.0005	<0.0005	0.005	P	0.1	C
Beryllium, Total	<0.002	NA	NA	0.004	P	0.0008	C
Bromodichloromethane	NA	<0.0005J †	<0.0005	0.1/0.08 ‡	P	0.06	C
Bromoform	NA	<0.0005	<0.0005	0.1/0.08 ‡	P	0.4	C
Bromomethane	NA	<0.0005	<0.0005	-		0.01	N
Cadmium, Total	0.0064	NA	NA	0.005	P	0.005	N
Carbon Tetrachloride	NA	<0.0005	<0.0005	0.005	P	0.03	C
Chlorodibromomethane	NA	<0.0005	<0.0005	0.1/0.08 ‡	P	0.06	N
Chloroform	NA	0.015	0.009	0.1/0.08 ‡	P	0.6	C
Chloromethane	NA	<0.0005	<0.0005	-		0.003	N
2-Chlorotoluene	NA	<0.0005	<0.0005	-		0.1	N
4-Chlorotoluene	NA	<0.0005	<0.0005	-		0.1	N
Chromium, Total	<0.05	NA	NA	0.1	P	0.1	N
Copper, Total	<0.5	NA	NA	1.3	P	-	
1,2-Dichlorobenzene	NA	<0.0005	<0.0005	0.6	P	0.6	N
1,3-Dichlorobenzene	NA	<0.0005	<0.0005	-		0.6	N
1,4-Dichlorobenzene	NA	<0.0005	<0.0005	0.075	P	0.075	N
Dichlorodifluoromethane	NA	<0.0005	<0.0005	-		1.0	N
1,2-Dicholoroethane	NA	<0.0005	<0.0005	0.005	P	0.04	C
1,1-Dichloroethene	NA	<0.0005	<0.0005	0.007	P	0.007	N
cis-1,2-Dichloroethene	NA	<0.0005	<0.0005	0.07	P	0.07	N
trans-1,2-Dichloroethene	NA	<0.0005	<0.0005	0.1	P	0.1	N
1,2-Dichloropropane	NA	<0.0005	<0.0005	0.005	P	0.06	C
Ethylbenzene	NA	<0.0005	<0.0005	0.7	P	0.7	N
Fluorotrichloromethane	NA	<0.0005	<0.0005	-		2	N
Hexachlorobutadiene	NA	<0.0005	<0.0005	-		0.001	N

Table 3. Summary of Injectate Quality Data from A&J Suds & Scrub, Libby, Montana (Continued)

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
Iron, Total	12.5	NA	NA	0.3	S	-	
p-Isopropyltoluene	NA	0.0012	<0.0005J †	-		-	
Lead, Total	0.0453	NA	NA	0.015	P	-	
Manganese, Total	0.474	NA	NA	0.05	S	-	
Mercury, Total	<0.001	NA	NA	0.002	P	0.002	N
Methylene chloride	NA	<.0005	0.00081	0.005	P	-	
Naphthalene	NA	<0.0005J †	0.00056	-		0.02	N
Nickel, Total	<0.05	NA	NA	0.1	P	0.1	N
Selenium, Total	<0.025	NA	NA	0.05	P	-	
Silver, Total	<0.005	NA	NA	0.1	S	0.1	N
Styrene	NA	<0.0005	<0.0005	0.1	P	0.1	N
1,1,1,2-Tetrachloroethane	NA	<0.0005	<0.0005	-		0.07	N
1,2,3-Trichloropropane	NA	<0.0005	<0.0005	-		0.04/0.5	N/C
Tetrachloroethene	NA	0.00085	0.00085	0.005	P	-	
Thallium, Total	<0.001	NA	NA	0.002	P	0.0005	N
Toluene	NA	<0.0005J †	0.0021	1	P	1	N
1,2,4-Trichlorobenzene	NA	<0.0005	<0.0005	0.07	P	0.07	N
1,1,1-Trichloroethane	NA	<0.0005	<0.0005	0.2	P	0.2	N
1,1,2-Trichloroethane	NA	<0.0005	<0.0005	0.005	P	0.003	N
Vinyl Chloride	NA	<0.0005	<0.0005	0.002	P	0.0015	C
Xylenes	NA	<0.0005J †	0.00059	10	P	10	N
m+p Xylene	NA	<0.0005J †	0.00059	10	P	10	N
o Xylene	NA	<0.0005	<0.0005	10	P	10	N
Zinc, Total	<2.5	NA	NA	5	S	2	N

Source: USEPA Region 8, 1999.

* Drinking Water Standards: P= Primary; S= Secondary.

** Health Advisory Levels: N= Noncancer Lifetime; C= Cancer Risk.

† Estimated value. Present, but less than the limit of quantitation.

‡ 0.1 is the current MCL, 0.08 is the proposed rule for Disinfectants and Disinfection By-products: Total for all THMs combined cannot exceed 0.08.

- No standards or advisory levels available.

compared to the upper end of 8.5 for the secondary MCL. Three measurements of TDS levels exceeded the secondary MCL.

At the A&J Suds and Scrub facilty, several of the metals were reported above the MCLs: aluminum, cadmium, iron, lead, and manganese (see Table 3). The cadmium concentration also exceeded the noncancer HAL. None of the organic constituents were present in concentrations above the MCLs or HALs.

4.2 Well Characteristics

No information on the design characteristics of laundromat wells is available.

4.3 Operational Practices

Laundromat wells are generally owned and operated by small laundromats. The only other information available on operational practices is that lint filters may be commonly used. For example, the Arkansas Department of Pollution Control and Ecology recommends that lint filters be included in the design of laundromat facilities (ADPC&E, 1996).

5. POTENTIAL AND DOCUMENTED DAMAGE TO USDWs

5.1 Injectate Constituent Properties

The primary constituent properties of concern when assessing the potential for Class V laundromat wells to adversely affect USDWs are toxicity, persistence, and mobility. The toxicity of a constituent is the potential of that contaminant to cause adverse health effects if consumed by humans. Appendix D of the Class V UIC Study provides information on the health effects associated with contaminants found above drinking water standards or health advisory limits in the injectate of laundromat wells and other Class V wells. As discussed in Section 4.1, the contaminants that have been observed above drinking water MCLs or HALs in laundromat well injectate are pH and TDS.[2]

Persistence is the ability of a chemical to remain unchanged in composition, chemical state, and physical state over time. Appendix E of the Class V UIC Study presents published half-lives of common constituents in fluids released in laundromat wells and other Class V wells. All of the values reported in Appendix E are for ground water. Caution is advised in interpreting these values because ambient conditions have a significant impact on the persistence of both inorganic and organic compounds. Appendix E also provides a discussion of mobility of certain constituents found in the injectate of laundromat wells and other Class V wells.

---

[2] The injectate quality data for the combination laundromat/carwash well at A&J Suds & Scrub indicated the presence of several metals above the MCLs. Because of the similarity of these results to other carwash injectate data, the metals are presumed to be a result of the car washing operations at the facility and not related to the laundromat operation (see Volume 4 of the Class V UIC Study for a summary of carwash wells).

5.2 Observed Impacts

No contamination incidents involving laundromat wells were reported in responses to the survey of state and USEPA Regional UIC programs. In addition, no contamination incidents involving laundromat wells were found in the literature.

6. BEST MANAGEMENT PRACTICES

One alternative to laundry wastewater injection is wastewater reuse. Laundries are motivated to save water to reduce water costs. However, laundries are often small facilities lacking the space to install complete wastewater treatment facilities. Smaller laundries also may find many recycling alternatives unaffordable. The best water recycling systems for laundries may be small, relatively advanced treatment systems such as coagulation, flocculation, or a combination of the two processes (California Water Resources Commission, 1989).

7. CURRENT REGULATORY REQUIREMENTS

Several federal, state, and local programs exist that either directly manage or regulate Class V laundromat wells. On the federal level, management and regulation of these wells falls primarily under the UIC program authorized by the Safe Drinking Water Act (SDWA). Some states and localities have used these authorities, as well as their own authorities, to extend the controls in their areas to address concerns associated with laundromat wells. Discharges from industrial laundries are also being evaluated under the Clean Water Act (CWA), but these efforts do not include coin-operated laundries.

7.1 Federal Programs

7.1.1 SDWA

Class V wells are regulated under the authority of Part C of SDWA. Congress enacted the SDWA to ensure protection of the quality of drinking water in the United States, and Part C specifically mandates the regulation of underground injection of fluids through wells. USEPA has promulgated a series of UIC regulations under this authority. USEPA directly implements these regulations for Class V wells in 19 states or territories (Alaska, American Samoa, Arizona, California, Colorado, Hawaii, Indiana, Iowa, Kentucky, Michigan, Minnesota, Montana, New York, Pennsylvania, South Dakota, Tennessee, Virginia, Virgin Islands, and Washington, DC). USEPA also directly implements all Class V UIC programs on Tribal lands. In all other states, which are called Primacy States, state agencies implement the Class V UIC program, with primary enforcement responsibility.

Laundromat wells currently are not subject to any specific regulations tailored just for them, but rather are subject to the UIC regulations that exist for all Class V wells. Under 40 CFR 144.12(a), owners or operators of all injection wells, including laundromat wells, are prohibited from engaging in any injection activity that allows the movement of fluids containing any contaminant into USDWs, “if the

presence of that contaminant may cause a violation of any primary drinking water regulation . . . or may otherwise adversely affect the health of persons."

Owners or operators of Class V wells are required to submit basic inventory information under 40 CFR 144.26. When the owner or operator submits inventory information and is operating the well such that a USDW is not endangered, the operation of the Class V well is authorized by rule. Moreover, under section 144.27, USEPA may require owners or operators of any Class V well, in USEPA-administered programs, to submit additional information deemed necessary to protect USDWs. Owners or operators who fail to submit the information required under sections 144.26 and 144.27 are prohibited from using their wells.

Sections 144.12(c) and (d) prescribe mandatory and discretionary actions to be taken by the UIC Program Director if a Class V well is not in compliance with section 144.12(a). Specifically, the Director must choose between requiring the injector to apply for an individual permit, ordering such action as closure of the well to prevent endangerment, or taking an enforcement action. Because laundromat wells (like other kinds of Class V wells) are authorized by rule, they do not have to obtain a permit unless required to do so by the UIC Program Director under 40 CFR 144.25. Authorization by rule terminates upon the effective date of a permit issued or upon proper closure of the well.

Separate from the UIC program, the SDWA Amendments of 1996 establish a requirement for source water assessments. USEPA published guidance describing how the states should carry out a source water assessment program within the state's boundaries. The final guidance, entitled *Source Water Assessment and Programs Guidance* (USEPA 816-R-97-009), was released in August 1997.

State staff must conduct source water assessments that are comprised of three steps. First, state staff must delineate the boundaries of the assessment areas in the state from which one or more public drinking water systems receive supplies of drinking water. In delineating these areas, state staff must use "all reasonably available hydrogeologic information on the sources of the supply of drinking water in the state and the water flow, recharge, and discharge and any other reliable information as the state deems necessary to adequately determine such areas." Second, the state staff must identify contaminants of concern, and for those contaminants, they must inventory significant potential sources of contamination in delineated source water protection areas. Class V wells, including laundromat wells, should be considered as part of this source inventory, if present in a given area. Third, the state staff must "determine the susceptibility of the public water systems in the delineated area to such contaminants." State staff should complete all of these steps by May 2003 according to the final guidance.[3]

7.1.2 CWA

In the late 1970s and early 1980s, USEPA considered the development of effluent limitations guidelines and standards for the "Auto and Other Laundries Point Source Category," which included

[3] May 2003 is the deadline including an 18-month extension.

coin-operated laundries (USEPA, 1980). This point source category was mandated for study and possible regulation pursuant to a 1976 settlement agreement and the 1977 Clean Water Act Amendments. However, in 1982, the auto and other laundries category was excluded from regulation. Among other reasons, this decision was made because assessments had determined that 95 percent of the industry-charged pollutants could be treated by publicly owned treatment works (POTWs), and did not pass through, interfere with, or otherwise prove incompatible with the operation of POTWs. Since 1987, USEPA has been focusing on industrial laundry effluent limitations guidelines and pretreatment standards; however, coin-operated laundries are not covered under these efforts.

7.2 State and Local Programs

As presented in Section 3 above, more than more than 80% of the documented and more than 90% of the estimated laundromat wells in the nation exist in five states: Alabama, Iowa, Mississippi, New York, and West Virginia. Attachment B of this volume describes how each of these states currently regulate laundromat wells. The attachment also describes the Wyoming program to provide an additional examples of existing state controls.

The statutory and regulatory framework for injection wells associated with laundromat facilities (without dry cleaning) in the states that current records indicate contain the largest numbers of such injection wells fall into two major groups.

- In states in which the UIC Class V program is directly implemented by USEPA --including Iowa and New York-- the USEPA Region applies inventory requirements and a permit by rule program to ensure non-endangerment of USDWs. In some cases, the state has no other statutory or regulatory authorities that apply directly to laundromat injection wells, but it may have requirements that indirectly apply. For example, Iowa does not have regulations that specifically address industrial wells, including injection wells used at laundromats without dry cleaning. If such wells discharge into septic tanks, however, the septic tanks will be classified as industrial wells and Iowa's requirements for on-site wastewater systems will apply to them. New York also does not have regulations that apply specifically to laundromat wells. If such wells discharge in such a way that they violate New York's water quality standards and ground water effluent limitations, however, the state can require the well to obtain a State Pollution Discharge Elimination System (SPDES) permit. Detailed information about the discharge must be supplied and the permit sets both effluent limits and monitoring and reporting requirements. All laundromat wells in New York, however, have not been permitted under the SPDES program.

- Primacy states for Class V wells also apply a range of requirements to laundromat wells. Mississippi, for example, has incorporated the USEPA's Class V UIC requirements by reference. The state applies inventory requirements and a permit by rule program. West Virginia, on the other hand, has issued individual permits to approximately six laundromat wells under its state UIC program, while the majority of laundromat wells in the state are authorized by rule. Alabama requires sufficient information to be submitted under its Class V UIC requirements to determine whether or not to require an individual permit for the well (based on

its likelihood of adversely impacting a USDW). Wyoming plans to issue individual permits to large-scale commercial laundromat operations under its Class V UIC rules that are currently in the planning stage.

ATTACHMENT A
INJECTATE QUALITY DATA FOR
WELLS THAT INJECT FLUID FROM LAUNDROMATS WITHOUT DRY CLEANING

Table A-1. Injectate Quality Data from A&J Suds & Scrub, Libby, Montana[a]

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
Aluminum, Total	13	NA	NA	0.05-0.2	S	-	-
Aluminum, Dissolved	0.494	NA	NA	-	-	-	-
Antimony, Total	<0.003	NA	NA	0.006	P	0.003	N
Antimony, Dissolved	<0.003	NA	NA	-	-	-	-
Arsenic, Total	<0.025	NA	NA	0.05	P	0.002	C
Arsenic, Dissolved	<0.025	NA	NA	-	-	-	-
Barium, Total	<1	NA	NA	2	P	2	N
Barium, Dissolved	<1	NA	NA	-	-	-	-
Benzene	NA	<0.0005	<0.0005	0.005	P	0.1	C
Beryllium, Total	<0.002	NA	NA	0.004	P	0.0008	C
Beryllium, Dissolved	<0.002	NA	NA	-	-	-	-
Bromobenzene	NA	<0.0005	<0.0005	-	-	-	-
Bromochloromethane	NA	<0.0005	<0.0005	-	-	0.01	N
Bromodichloromethane	NA	<0.0005J †	<0.0005	0.1/0.08 ‡	P	0.06	C
Bromoform	NA	<0.0005	<0.0005	0.1/0.08 ‡	P	0.4	C
Bromomethane	NA	<0.0005	<0.0005	-	-	0.01	N
n-Butylbenzene	NA	<0.0005	<0.0005	-	-	-	-
sec-Butylbenzene	NA	<0.0005	<0.0005	-	-	-	-
tert-Butylbenzene	NA	<0.0005	<0.0005	-	-	-	-
Cadmium, Total	0.0064	NA	NA	0.005	P	0.005	N
Cadmium, Dissolved	0.0064	NA	NA	-	-	-	-
Carbon Tetrachloride	NA	<0.0005	<0.0005	0.005	P	0.03	C
Chlorobenzene	NA	<0.0005	<0.0005	-	-	-	-
Chlorodibromomethane	NA	<0.0005	<0.0005	0.1/0.08 ‡	P	0.06	N
Chloroethane	NA	<0.0005	<0.0005	-	-	-	-
Chloroform††	NA	0.015	0.009	0.1/0.08 ‡	P	0.6	C

Table A-1. Injectate Quality Data from A&J Suds & Scrub, Libby, Montana[a] (Continued)

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
Chloromethane	NA	<0.0005	<0.0005	-	-	0.003	N
2-Chlorotoluene	NA	<0.0005	<0.0005	-	-	0.1	N
4-Chlorotoluene	NA	<0.0005	<0.0005	-	-	0.1	N
Chromium, Total	<0.05	NA	NA	0.1	P	0.1	N
Chromium, Dissolved	<0.05	NA	NA	-	-	-	-
Copper, Total	<0.5	NA	NA	1.3	P	-	-
Copper, Dissolved	<0.5	NA	NA	-	-	-	-
1,2-Dibromo-3-chloropropane	NA	<0.001	<0.001	-	-	-	-
1,2-Dibromoethane	NA	<0.0005	<0.0005	-	-	-	-
Dibromomethane	NA	<0.0005	<0.0005	-	-	-	-
1,2-Dichlorobenzene	NA	<0.0005	<0.0005	0.6	P	0.6	N
1,3-Dichlorobenzene	NA	<0.0005	<0.0005	-	-	0.6	N
1,4-Dichlorobenzene	NA	<0.0005	<0.0005	0.075	P	0.075	N
Dichlorodifluoromethane	NA	<0.0005	<0.0005	-	-	1.0	N
1,1-Dichloroethane	NA	<0.0005	<0.0005	-	-	-	-
1,2-Dicholoroethane	NA	<0.0005	<0.0005	0.005	P	0.04	C
1,1-Dichloroethene	NA	<0.0005	<0.0005	0.007	P	0.007	N
cis-1,2-Dichloroethene	NA	<0.0005	<0.0005	0.07	P	0.07	N
trans-1,2-Dichloroethene	NA	<0.0005	<0.0005	0.1	P	0.1	N
1,1-Dichloropropene	NA	<0.0005	<0.0005	-	-	-	-
1,2-Dichloropropane	NA	<0.0005	<0.0005	0.005	P	0.06	C
1,3-Dichloropropane	NA	<0.0005	<0.0005	-	-	-	-
cis-1,3-Dichloropropene	NA	<0.0005	<0.0005	-	-	-	-
trans-1,3-Dichloropropene	NA	<0.0005	<0.0005	-	-	-	-
2,2-Dichloropropane	NA	<0.0005	<0.0005	-	-	-	-
Ethylbenzene	NA	<0.0005	<0.0005	0.7	P	0.7	N
Fluorotrichloromethane	NA	<0.0005	<0.0005	-	-	2	N
Hexachlorobutadiene	NA	<0.0005	<0.0005	-	-	0.001	N
Iron, Total	12.5	NA	NA	0.3	S	-	-

Table A-1. Injectate Quality Data from A&J Suds & Scrub, Libby, Montana[a] (Continued)

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
Iron, Dissolved	0.44	NA	NA	-	-	-	-
Isopropylbenzene	NA	<0.0005	<0.0005	-	-	-	-
p-Isopropyltoluene	NA	0.0012	<0.0005J †	-	-	-	-
Lead, Total	0.0453	NA	NA	0.015	P	-	-
Lead, Dissolved	0.0084	NA	NA	-	-	-	-
Manganese, Total	0.474	NA	NA	0.05	S	-	-
Manganese, Dissolved	0.216	NA	NA	-	-	-	-
Mercury, Total	<0.001	NA	NA	0.002	P	0.002	N
Mercury, Dissolved	<0.001	NA	NA	-	-	-	-
Methylene chloride	NA	<.0005	0.00081	.005	P	-	-
Naphthalene	NA	<0.0005J †	0.00056	-	-	0.02	N
Nickel, Total	<0.05	NA	NA	0.1	P	0.1	N
Nickel, Dissolved	<0.05	NA	NA	-	-	-	-
n-Propylbenzene	NA	<0.0005	<0.0005	-	-	-	-
Selenium, Total	<0.025	NA	NA	0.05	P	-	-
Selenium, Dissolved	<0.025	NA	NA	-	-	-	-
Silver, Total	<0.005	NA	NA	0.1	S	0.1	N
Silver, Dissolved	<0.005	NA	NA	-	-	-	-
Styrene	NA	<0.0005	<0.0005	0.1	P	0.1	N
1,1,1,2-Tetrachloroethane	NA	<0.0005	<0.0005	-	-	0.07	N
1,1,2,2-Tetrachloroethane	NA	<0.0005	<0.0005	-	-	-	-
1,2,3-Tetrachlorobenzene	NA	<0.0005	<0.0005	-	-	-	-
1,2,3-Trichloropropane	NA	<0.0005	<0.0005	-	-	0.04/0.5	N/C
1,2,4-Trimethylbenzene	NA	<0.0005J †	<0.0005	-	-	-	-
1,3,5-Trimethylbenzene	NA	<0.0005	<0.0005	-	-	-	-
Tetrachloroethene	NA	0.00085	0.00085	.005	P	-	-
Thallium, Total	<0.001	NA	NA	0.002	P	0.0005	N
Thallium, Dissolved	<0.001	NA	NA	-	-	-	-
Toluene	NA	<0.0005J †	0.0021	1	P	1	N

Table A-1. Injectate Quality Data from A&J Suds & Scrub, Libby, Montana[a] (Continued)

Parameter	Concentrations (mg/l)			Drinking Water Standards (*)		Health Advisory Levels (**)	
	11/05/97	1/12/98	7/27/98	mg/l	P/S	mg/l	N/C
1,2,4-Trichlorobenzene	NA	<0.0005	<0.0005	0.07	P	0.07	N
1,1,1-Trichloroethane	NA	<0.0005	<0.0005	0.2	P	0.2	N
1,1,2-Trichloroethane	NA	<0.0005	<0.0005	0.005	P	0.003	N
Trichloroethene	NA	<0.0005	<0.0005	-	-	-	-
Vinyl Chloride	NA	<0.0005	<0.0005	0.002	P	0.0015	C
Xylenes	NA	<0.0005J †	0.00059	10	P	10	N
m+p Xylene	NA	<0.0005J †	0.00059	10	P	10	N
o Xylene	NA	<0.0005	<0.0005	10	P	10	N
Zinc, Total	<2.5	NA	NA	5	S	2	N
Zinc, Dissolved	<2.5	NA	NA	-	-	-	-

Source: USEPA Region 8, 1999.

[a]The well receives a combination of laundromat and carwash effluent.

* Drinking Water Standards: P= Primary; S= Secondary.

** Health Advisory Levels: N= Noncancer Lifetime; C= Cancer Risk.

† Estimated value. Present, but less than the limit of quantitation.

‡ 0.1 is the current MCL, 0.08 is the proposed rule for Disinfectants and Disinfection By-products: Total for all THMs combined cannot exceed the 0.08.

†† Chloroform is a disinfection byproduct.

ATTACHMENT B
STATE AND LOCAL PROGRAM DESCRIPTIONS

This section describes the controls for injection wells associated with laundromat facilities (without dry cleaning) in the five states that current records indicate contain the largest number of such wells. Altogether, these states are estimated to contain approximately 92 percent of the estimated national inventory of laundromat wells. The Wyoming program is also described to provide an additional example of existing state controls.

Alabama

Alabama is a UIC Primacy state for Class V wells. The Alabama Department of Environmental Management (ADEM) has promulgated requirements for Class V UIC wells under Chapter 335 of the Alabama Administrative Code (AAC).

Permitting

The operator of an existing or proposed Class V well must submit a permit application to ADEM including the following information (335-6-8-.14(a) through (e) AAC):

- facility name and location;
- name of owner and operator;
- legal contact;
- depth, general description, and use of the injection well; and
- description of pollutant injected, including physical and chemical characteristics.

ADEM is required by the AAC to assess the possibility of adverse impacts on a USDW posed by the well, and to determine any special construction and operation requirements which may be required to protect a USDW (335-6-8-.15(1) AAC). If ADEM determines that the proposed action may have an adverse impact on a USDW, the applicant may be required to submit a permit application in the manner prescribed for Class I and Class III wells. When those permit application requirements are applied, the permit application processing and issuance procedures will follow the rules set forth for Class I and III wells (335-6-8-.15(2) AAC). The AAC specifies that "Class V wells may be allowed insofar as they do not cause a violation of primary drinking water regulations under 40 CFR Part 142" (335-6-8-.07 AAC).

Siting and Construction Requirements

The AAC specifies that injection wells shall be sited so that they inject into a formation that is beneath the lowermost USDW located within five miles of the well (335-6-8-.20 AAC). However, Class V wells are specifically exempted (335-6-8-.25 AAC).

Construction requirements also are specified for all injection wells. However, Class V wells are specifically exempted (335-6-8-.25 AAC). They are required to be constructed in such a manner that

they may not cause a violation in USDWs of primary drinking water regulations under 40 CFR Part 142, and when required by ADEM must be constructed by a well driller licensed by ADEM (335-6-8-.25 AAC).

Operating Requirements

Class V wells are required to be operated in a manner that may not cause violation of primary drinking water regulations under 40 CFR 142. ADEM may order the operator to take necessary actions to prevent violation, including closure of the well (335-6-8-.16 AAC).

Before operation of the well can begin, a method of obtaining grab and composite samples of pollutants after all pretreatment and prior to injection must be provided at all sites. Spill prevention and control measures sufficient to protect surface and ground water from pollution must be taken at all sites (335-6-8-.22 AAC).

Monitoring requirements may be specified in the permit, by administrative order, by directive, or included in the plugging and abandonment plan (335-6-8-.28 AAC).

Plugging and Abandonment

A plugging and abandonment plan may be required by permit or administrative order. If necessary, aquifer cleanup procedures may be included. If pollution of a USDW is suspected, ground water monitoring may be required after well abandonment (335-6-8-.27 AAC).

Iowa

USEPA Region 7 directly implements the UIC program for Class V injection wells in Iowa. In addition, the state has enacted regulations addressing onsite wastewater treatment and disposal systems that collect, store, treat, and dispose of wastewater from four or fewer dwelling units or other facilities serving the equivalent of 15 persons (1,500 gallons per day (gpd) or less) (Chapter 567-69 Iowa Administrative Code (IAC)). Onsite wastewater treatment and disposal system is defined in these rules as a system that includes domestic waste whether residential or nonresidential, "but does not include industrial waste of any flow rate" (567-69.1(2) IAC). Estimates of flow rate appended to the rule include an estimate for laundromats. If wastewater from laundromats without dry cleaning can be shown clearly to be only sanitary waste it is not banned from such systems. Similarly, under the rules pertaining to large capacity septic systems (i.e., 567-60 to 567-64 IAC), waste that does not meet the definition of industrial waste could be placed in such systems.

Mississippi

Mississippi is a UIC Primacy state for Class V wells. The state's wastewater permit regulations provide that unless otherwise required, owners or operators of Class V wells and all applicants for UIC permits shall comply with 40 CFR 144, 146, 147.1250 subpart Z, and 148, which are incorporated and adopted by reference (Wastewater Permit Regulations IV.K.2.e. and IV.K.3.).

For Class V wells associated with laundromats, no additional requirements or exceptions have been enacted. Therefore, only the requirements in 40 CFR apply.

New York

USEPA Region 2 directly implements the UIC program for Class V injection wells in New York. However, under the state's Environmental Conservation Law, the Department of Environmental Conservation, Division of Water Resources (DWR) has promulgated regulations in the State Code Rules and Regulations, Title 6, Chapter X, Parts 703, 750, 754, and 756. These regulations establish water quality standards and effluent limitations, create a state pollutant discharge elimination system requiring permits for discharges into the waters of the state (including ground waters), specify that such discharges must comply with the standards in Part 703, and provide for monitoring in Part 756.

Part 703 of New York's water quality regulations sets both surface and ground water quality standards and ground water effluent standards. They include narrative standards for taste, color and odor-producing toxic and other deleterious substances for all three of the state's classes of ground water and narrative standards for thermal discharges to ground water. They also include standards for pH, dissolved solids, odor, color, turbidity, and total coliform for class GA ground water (potable ground water). Finally, Part 703 includes water quality standards for class GA ground water for numerous listed contaminants. Section 703.6 establishes ground water effluent limitations applying to discharges from a point source to waters of the state. These are the maximum allowable concentrations for over 100 contaminants (including foaming agents and oil and grease). Part 756 provides for such monitoring requirements as may be "reasonable required," as well as recording and monthly reporting of monitoring results, unless otherwise specified in a SPDES permit.

Permitting

Applications for a SPDES permit must be submitted on a required form, describe the proposed discharge, supply such other information as the DWR requests, and are subject to public notice. SPDES permits must ensure compliance with effluent limitations and standards, and will include schedules of compliance, monitoring requirements, and records and reports of activities (Parts 751 - 756).

Operating Requirements

Both effluent limits (Part 703) and monitoring and reporting requirements (Part 756) in an SPDES permit for releases to ground water must be met.

West Virginia

West Virginia is a UIC Primacy state for Class V wells. Regulations establishing the UIC program are found in Title 47-13 West Virginia Code of State Regulations. The state does not identify a separate category of Class V industrial wells or laundromat wells (47-13-3.4.5. WVAC).

Permitting

Class V injection wells are authorized by rule unless the Office of Water Resources of the Division of Environmental Protection requires an individual permit (47-13-12.4.a. and 47-13-13.2 WVAC). Injection is authorized initially for five years under the permit by rule provisions. DEP has lacked sufficient resources to individually permit all categories of Class V wells. The state has individually permitted six laundromat wells in the industrial or commercial well category but other laundromat wells are currently permitted by rule (WVDEP/OWR, 1999).

Operating Requirements

Owners or operators of Class V wells are required to submit inventory information describing the well, including its construction features, the nature and volume of injected fluids, alternative means of disposal, the environmental and economic consequences of well disposal and its alternatives, operation status, and location and ownership information (47-13-12.2 WVAC).

Rule-authorized wells must meet the requirements for monitoring and recordkeeping (requiring retention of records pursuant to 47-13-13.6.b. WVAC concerning the nature and composition of injected fluids until three years after completion of plugging and abandonment); immediate reporting of information indicating that any contaminant may cause an endangerment to USDWs or any malfunction of the injection system that might cause fluid migration into or between USDWs; and prior notice of abandonment.

The rules enact a general prohibition against any underground injection activity that causes or allows the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of any primary drinking water regulations under 40 CFR Part 142 or promulgated under the West Virginia Code or may adversely affect the health of persons. If at any time a Class V well may cause a violation of the primary drinking water rules the well may be required to obtain a permit or take such other action, including closure, that will prevent the violation (47-13-13.1 WVAC). Inventory requirements for Class V wells include information on operating factors such as pollutant loads and schedules for attaining compliance with water quality standards (47-13-13.2.d.1 WVAC).

If it is deemed necessary to protect a USDW, the owner or operator may be required to satisfy corrective action, monitoring, reporting, or operation requirements that are not contained in the regulations outlining the West Virginia's UIC program (47-13-13.2.c.1.C. WVAC).

Mechanical Integrity

A Class V well required to obtain an individual permit may be required to demonstrate that the well has mechanical integrity (47-13-13.7.g WVAC). The need for such a demonstration is determined in a case-by-case basis, depending on whether, for example, the well is located in karst terrain or passes through certain formations. Based on their construction and use, mechanical integrity

testing is not considered necessary for laundromat wells that are individually permitted or permitted by rule (WVDEP/OWR, 1999).

Plugging and Abandonment

A Class V well required to obtain an individual permit is subject to permit conditions pertaining to plugging and abandonment to ensure that the plugging and abandonment of the well will not allow the movement of fluids either into a USDW or from one USDW to another. A plan for plugging and abandonment is required.

Financial Responsibility

A Class V well required to obtain an individual permit will be required to demonstrate financial responsibility for plugging and abandonment.

Wyoming

Although state staff in Wyoming did not report the presence of any laundromat wells in the Class V study survey, presented below is a brief summary of some of the state's regulatory requirements for laundromat wells if they were to exist.

Wyoming is a UIC Primacy State for Class V wells. Chapter 16, Water Quality Rules and Regulations, defines all laundromat facilities as Class 5C3 commercial and industrial discharges and requires individual UIC permits (WYDEQ/WQD, 1999).

Permitting

To date, no facility in Wyoming has submitted a commercial laundromat application, and the State of Wyoming has not attempted any specific outreach to this industrial group. Laundromat wells are required to operate under individual permits, and there is no grandfather clause for existing facilities. Each individual permit specifies monitoring requirements and operating limits based on the information provided in the facility's application (WYDEQ/WQD, 1999).

Construction Requirements

The State of Wyoming has standards for construction of septic systems serving laundromats. The standards for self-service facilities include design flows of 600 gpd per machine or 50 gpd per cycle. Typically, 600 gpd is used as a standard for self-service laundromats open to the public. Laundries built in conjunction with other facilities, such as motels, are subject to the 50 gpd per cycle standard, with the Wyoming Department of Environmental Quality estimating the number of cycles for the facility (WYDEQ/WQD, 1999).

Plugging and Abandonment

Plugging and abandonment are allowed in place if the owner or operators can show that no hazardous waste was discharged through the system (WYDEQ/WQD, 1999).

REFERENCES

Arkansas Department of Pollution Control and Ecology (ADPC&E). 1996. Application Procedures for a No-Discharge Water Pollution Control Permit. June 21, 1996.

Agriboard Industries, L.C. 1998. Sustainable Building Sourcebook http://www.greenbuilder.com/sourcebook/Greywater.html#Define (28 August 1998).

The Cadmus Group. 1999. State-by-State Notebooks Compiling Results from the Class V Underground Injection Control Study. February 1, 1999.

California Water Resources Commission. 1989. Industrial Water Conservation References of Industrial Laundries. The Resources Agency, Department of Water Resources. State of California.

Cerra, F.J., and J.W. Maisel, eds. 1979. Wastewater Engineering: Treatment, Disposal, Reuse. Boston: Metcalf and Eddy. pp. 11-58.

New York State Department of Environmental Conservation (NYDEC). 1999. Email from William Spitz, New York Department of Environmental Conservation, to Robyn Delehanty, USEPA Office of Water, transmitting injectate data for carwashes and laundromats. March 10, 1999.
USEPA. 1980. Development Document for Effluent Limitations Guidelines and Standards for the Auto and Other Laundries Point Source Category. Washington, D.C. OMB0704-0188. October 1980.

USEPA. 1987. Report to Congress: Class V Injection Wells. Office of Water. Washington, D.C. EPA 570/9-87-006. September 1987.

USEPA Region 8. 1999. Correspondence from Douglas Minter, USEPA Region 8, to Robyn Delehanty, USEPA Office Water, transmitting sampling data for automotive and industrial Class V wells. March 3, 1999.

Vassalydes, J. 1998. Coin Laundry Association. Telephone Communication with Scott Hines, ICF Consulting. August 27, 1998.

West Virginia Department of Environmental Protection Office of Water Resources (WVDEP/OWR). 1999. Telephone conversation between Tina Parsons, WDEP/OWR, and Craig Dean, ICF Consulting. August 19, 1999.

Wyoming Department of Environmental Quality/Water Quality Division (WYDEQ/WQD). 1999. Memorandum from Robert Lucht, Wyoming DEQ/WQD, to Amber Moreen, USEPA Office of Water, on Review of Class V Study documents. July 12, 1999.