**State of Illinois**
Rod R. Blagojevich, Governor

**Department of Public Health**
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# Non-community Public Water Supply Program Handbook

December 2006

Illinois Department of PUBLIC HEALTH

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## Introduction

Safe drinking water – although it is often taken for granted, everyone depends on it. It is essential for health, business prosperity and community growth. As an owner/operator of a public water supply system, your job is to provide safe water to all users. Preventing contamination and planning for future system needs will help you achieve this.

The Illinois Department of Public Health (IDPH) oversees construction and operation of non-community public water systems to make sure water is safe to drink and use. However, as legal manager of the water system, it is your job to monitor drinking water quality. This guide will help you to develop, assess and maintain a quality water supply so you can continue to provide consumers with safe drinking water.

## What are the safe drinking water requirements and where do they come from?

The federal Safe Drinking Water Act (SDWA) of 1974 sets health and safety standards for public drinking water in the United States. It was the nation's first comprehensive drinking water law. Under the law, the United States Environmental Protection Agency (USEPA) sets national standards for drinking water quality. States are responsible for monitoring individual supplies to ensure they meet these standards.

## What systems are regulated by the Safe Drinking Water Act?

The SDWA regulates public water systems. There are three types of public water systems in Illinois: community; transient, non-community; and non-transient, non-community water systems. The Illinois Environmental Protection Agency (IEPA) regulates community water systems and IDPH regulates non-community systems. This handbook focuses on the two types of non-community systems:

1. A **transient, non-community water system** regularly serves at least 25 individuals, but not the same individuals, for more than 60 days per year. For example, a rest area, campground or restaurant with less than 25 employee on its own water supply is considered a transient water system.

2. A **non-transient, non-community water system** regularly serves at least 25 of the same people more than six months per year. For example, a school or business with its own water supply is considered a non-transient system.

The regulations that govern the SDWA for Illinois non-community public water supplies are IDPH regulation, 77 Illinois Administrative Code (IAC) Part 900 (Drinking Water Systems Code), and Illinois Pollution Control Board regulation, 35 IAC Part 611 (Primary Drinking Water Standards).

## What is the Illinois Department of Public Health's responsibility?

Local health departments conduct inspections of non-community systems in their jurisdictions and assure compliance with the adopted drinking water regulations. Local health department and IDPH duties are explained below:

- Plan approvals. IDPH staff approve plans for construction or alteration of non-community water systems.

- Inspections. IDPH or local health department staff inspect water systems to evaluate them for the risk of contamination and well code compliance, and to ensure the well and system are in good condition. The technical, managerial and financial abilities of public water systems to consistently provide safe drinking water are also evaluated.
- Enforcement. IDPH staff enforces both applicable state and federal regulations.

## What are your responsibilities?

You must provide drinking water that meets state and federal drinking water standards. (A table listing maximum contaminant levels [MCLs] can be found on page 7 of this handbook.) Following are your basic responsibilities:

### Sampling

All non-community water systems are required to monitor for bacteria and nitrate. A number of systems sample quarterly for bacteria and nitrate, while others sample annually. Most non-community water systems receive water sample bottles from IDPH. Systems that choose not to receive bottles through IDPH are responsible for coordinating their sampling through a certified private lab. After you get the bottles, you must sample and return the bottle to the laboratory within the allowable holding time.

Several public health departments in Illinois provide sampling for non-community public water systems. Non-community public water systems in those counties will not receive a sample bottle in the mail. Local health department staff will take a water sample for you. Please contact your local health department for more information. If you take your own sample, complete the laboratory testing form included with the sampling bottles. If a private laboratory is used, the water system owner is responsible for providing the test results to the local health department.

### Well Construction

Your water system must be constructed and maintained according to state standards. Non-community water well and pump systems must meet construction requirements of the Illinois Water Well Construction Code and the Pump Installation Code. To meet these requirements, you should contact a licensed water well or pump installation contractor before making modifications to your water system. You should also discuss your plans with IDPH or the local health department.

### Maintenance

Maintain your water system in good sanitary condition to provide a safe, dependable water supply.

### Record Keeping

Keep copies of sampling results and inspections for your records. If your system changes owners, has a change in mailing address or moves to a new location, contact the IDPH office in Springfield to provide current information.

## What sampling is required?

The table below shows the minimum testing frequency for several major contaminants. If a non-community public water system detects a contaminant, it must follow retesting procedures and instructions for informing the public about the problem. IDPH will help you with a public notice. Retesting and public notice is continued until the system can reliably show that it is free of contamination.

| CONTAMINANT | FREQUENCY | HEALTH RISKS |
|---|---|---|
| Bacteria | Annually, quarterly, or monthly depending on system size and type | Waterborne illness symptoms include diarrhea, cramps, nausea and vomiting. |
| Nitrate/Nitrite | Annually or quarterly | Levels over 10 mg/L nitrate as nitrogen or 1 mg/L nitrite as nitrogen may cause birth defects, miscarriages or "blue baby syndrome" in infants (shortness of breath, blueness of skin). |

Samples must be analyzed at a laboratory certified for drinking water analysis. A list is available from IEPA (http://www.epa.state.il.us/labs/combinedlist.html) or by contacting your IDPH regional office.

## Collecting samples for bacteriological, nitrate and nitrite tests

This is a brief synopsis of sampling procedures for coliform and nitrate. Further information can be obtained from the latest edition of *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation.

### Coliform Bacteria

Samples for microbiological examination must be collected in sterile bottles supplied by an approved laboratory. For samples expected to have any residual chlorine, the sample bottles must be treated with a dechlorinating agent such as sodium thiosulfate. Usually, the laboratory will provide the sample collector with the properly prepared container. The water sample should be taken at a tap that will be representative of the entire system. Outside locations are discouraged. Remove potential contamination sources such as screens, aeration devices and hoses. Threaded taps, which might harbor bacteria around the threads, should not be used. Leaking taps that allow water to flow around the stem and over the outside of the faucet should be avoided. In addition, a chlorine spray may be used to disinfect the fixture.

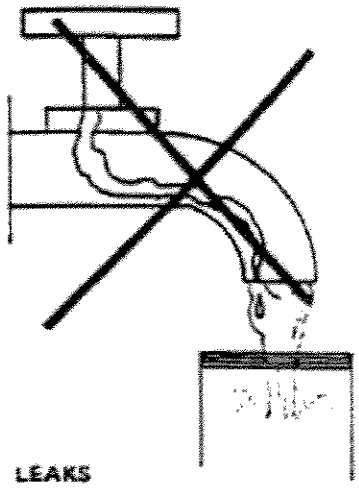
In all cases, the following techniques should be observed in order to avoid sample contamination:

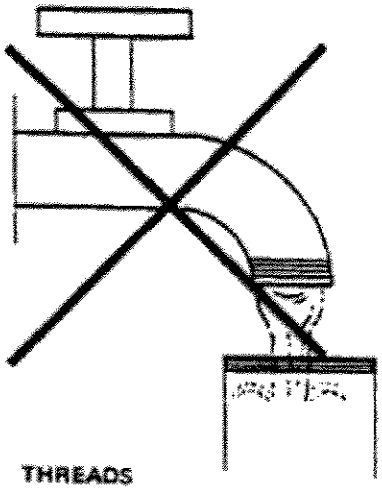
- Keep sterilized sample bottles closed until just before a sample is to be collected.
- Do not touch the inside of the cap or sample bottle or allow these surfaces to become contaminated.
- Do not contaminate the surface of the cap or inner neck of the bottle.

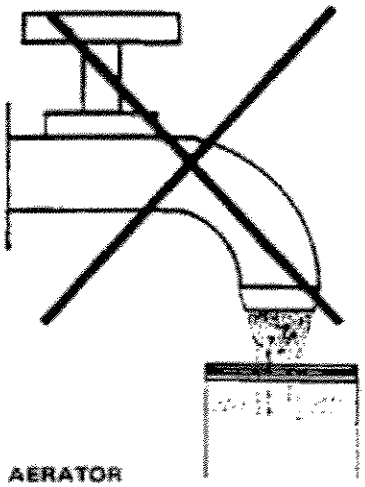
- Fill the container to the proper level without rinsing.
- Immediately replace the cap.

Because samples must be analyzed within 30 hours of collection, be sure to mail or deliver the samples to the laboratory as soon as possible after collection. Mailing samples on a Monday or Tuesday ensures adequate time for analysis. Samples may be packed in ice when transporting samples to the laboratory; however, do not allow samples to become submerged in water during transportation.

## Proper Coliform Sample Site

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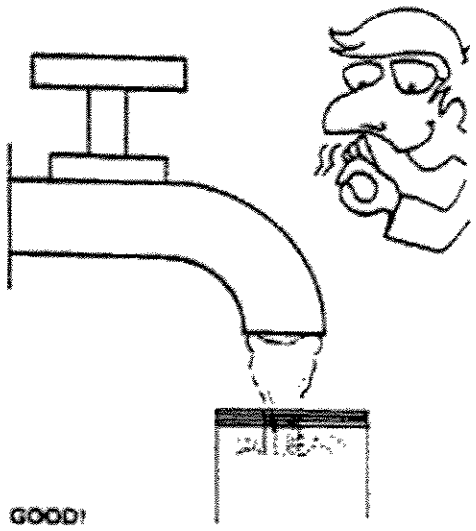


## Nitrate/Nitrite

These contaminants can be sampled in either plastic or glass containers. Minimum sample size for each contaminant is 100 ml. An approved laboratory should provide you with the proper sampling containers and preservatives.

Open the faucet and thoroughly flush the line for at least two minutes. Open the container without rinsing or contaminating the inner surface. Fill the container to the proper level. Tightly seal the container for transport. Mail or deliver the samples to the laboratory as soon as possible after collection. The maximum elapsed time between collection of these samples and analysis is 48 hours.

## What happens if I don't monitor correctly?

Failure to test water quality according to the proper schedule or failure to submit the results to IDPH violates the monitoring and reporting provisions of the SDWA and the Illinois Drinking Water Systems Code. You will be required to post a public notice, describing the violation.

## Maximum Contaminant Levels

The SDWA sets standards drinking water must meet. These are called maximum contaminant levels (MCLs). The MCL is the maximum allowable level of a substance in your water system. The table on page 7 lists the most current MCLs. The contaminant levels can change as the regulations change. If you're not sure or if you have questions, please contact the IDPH regional or Springfield office.

## How will I know when my water has exceeded an MCL?

A certified laboratory must perform all of the analyses required by the state drinking water regulations. Certified laboratories will know if any of your analysis results exceeded an MCL, and they will notify you of the results. In addition, results of all analyses must be submitted to your local health department or IDPH within 10 days of receipt from the laboratory. IDPH reviews the results and informs you of any violations and follow-up sampling needed.

## Coliform Bacteria

If the routine sample is total coliform-positive, the certified laboratory will also analyze the sample to determine if fecal coliform or E. coli are present. Repeat samples then must be collected within 24 hours of your notification of the total coliform-positive result.

If a routine sample is total coliform-positive, a system that normally collects one sample per month, quarter or year shall collect four repeat samples. A system collecting more than one routine sample per month shall collect three repeat samples for each total coliform-positive sample found. All repeat samples must be collected on the same day and they must be 100 mL samples. If all repeat samples are negative for total coliforms, no further repeat sampling is required.

If one or more repeat samples in the set is positive for total coliforms, **the MCL has been exceeded.** The laboratory must again analyze for the presence of fecal coliform or E. coli.

If a system has one or more routine or repeat samples test positive for total coliforms, it must take five additional samples during the next month the system provides water to the public.

For more information on compliance with the requirements for total coliforms at small systems serving fewer than 3301 population visit the following Website:
http://www.epa.gov/safewater/disinfection/tcr/pdfs/stepguide_tcr_smallsys-3300.pdf

## Nitrate/Nitrite

If the nitrate result for a non-transient, non-community system is greater than 50 percent of the MCL, one sample per calendar quarter is required until further notice. Quarterly sampling must continue until the results of at least four consecutive quarterly samples are below the MCL.

Drinking water with nitrates greater than the MCL of 10 mg/L as nitrogen or with nitrites over the MCL of 1 mg/L as nitrogen is a serious health threat to infants. Public notification is required for supplies with nitrate or nitrite levels over the MCL. Supplies must not allow water with nitrate levels over 20 mg/L as nitrogen to be used for human consumption.

## What do I do if my water exceeds an MCL?

If your water exceeds an MCL, you must issue a public notice to users of the system and take immediate action to correct the violation. The degree of follow-up action depends on the type and amount of contamination. The local health department and/or IDPH will work closely with you to determine the action necessary for your water system.

## Public Notification

When an MCL is exceeded, you must notify the public water system users of the condition. The notification must contain, at a minimum, the contaminant found and its concentration, health effects of exposure, measures being taken to alleviate the problem, and the name and telephone number of someone who can provide the consumer with more information. This notice must be posted at all drinking water outlets. The type of notification required will depend on the severity of the contamination, the type of population being served and the urgency of the situation. IDPH will help you determine what language to put in your notification and can provide notification posters.

## Additional requirements for surface water supplies

Surface water systems are easily contaminated because they are exposed to direct water runoff and the atmosphere. Therefore, state regulations require these systems to filter and disinfect their water.

Additional monitoring and design requirements for surface water systems are contained in 77 IAC Part 900 (Drinking Water Systems Code), 35 IAC Part 611(Primary Drinking Water Standards), and 77 IAC 930 (Surface Source Water Treatment Code). These requirements get much more detailed and complex than groundwater system requirements. For more information please contact the IDPH regional or Springfield office.

## Additional requirements for non-transient, non-community supplies

### Lead and Copper

Two consecutive six-month monitoring periods are established starting in the first six months of operation. Collection of one set of samples is required during each monitoring period. For systems serving fewer than 3,301 people:

- One first draw sample (1 liter each) after a six-hour standing time from each sample site required by population as follows:

| Population | Sample Sites Required |
|---|---|
| Less than 100 | 5 |
| 101 to 500 | 10 |
| 501 to 3,300 | 20 |

- If action levels for lead and copper are met in 90 percent of samples in two consecutive rounds of sampling, sampling requirements are reduced to one round per year at half the original number of sample sites (a minimum of five sites). After three years of acceptable annual monitoring, monitoring is reduced further to one round of sampling every three years.
- If action levels for lead or copper are not met in 90 percent of samples, corrective action and public education is required.

## Inorganic Chemicals (IOCs)

One sample is taken every three years from each source of water. After nine years of acceptable sample results, monitoring is reduced to one sample every nine years. Arsenic was added to IOCs in 2006 and may be on a separate schedule from the other IOCs.

## Volatile Organic Chemicals (VOCs)

If no sampling has been performed to date (i.e., a new water system), four consecutive quarterly samples must be taken within the first year of operation. If the quarterly samples do not detect VOCs, one sample must be drawn every six years.

If a regulated VOC is detected at any time,

- Quarterly sampling is required until the results of at least two quarterly samples are below the MCL.
- If quarterly samples do not detect VOCs, one sample must be collected annually for three years.
- If annual samples do not detect VOCs, one sample must be collected every six years.
- See contaminant list on page 7 for required VOC MCLs.

## Pesticides and Synthetic Organic Chemicals (SOCs)

- Four consecutive quarterly samples must be taken within the first year of operation. Phase 5 SOCs not used in Illinois are tested only once during the first year of operation.
- For systems serving fewer than 3,300 individuals, one sample must be collected every three years if quarterly samples do not detect SOCs.
- For systems serving more than 3,300 individuals, two samples must be collected every three years if quarterly samples do not detect SOCs.

If a regulated SOC is detected at any time,

- Quarterly sampling is required until the results of at least two quarterly samples are below the MCL.
- If quarterly samples do not detect SOCs, one sample must be collected annually for three years.

- For systems serving fewer than 3,300 individuals, one sample must be collected every three years if annual samples do not detect SOCs.
- For systems serving more than 3,300 persons, two samples must be collected every three years if annual samples do not detect SOCs.
- See the contaminant listing below for required SOC MCLs.

## Additional Requirements for Supplies that Disinfect

### Disinfection Byproducts (DBPs)

Supplies that disinfect with chlorine must monitor at least yearly for DBPs. Additional requirements apply to surface water supplies and supplies that use ozone or chlorine dioxide as disinfectants. Monitoring can be reduced based on sampling results.

## Listing of Regulated Contaminants and Their MCLs

| | Chemical | MCL |
|---|---|---|
| **Lead and Copper Action Levels** | Lead | .015mg/L |
| | Copper | 1.3 mg/L |
| **DPBs** | Total Trihalomethanes (TTHM) | .080 mg/L |
| | Haloacetic Acids (HAA5) | .060 mg/L |
| **Volatile Organic Chemicals (VOCs)** | | |
| | 1,1 – Dichloroethylene | 0.007 mg/L |
| | 1,1,1 – Trichloroethane | 0.20 mg/L |
| | 1,2 – Dichloroethane | 0.005 mg/L |
| | 1,2 – Dichloropropane | 0.005 mg/L |
| | 1,1,2 – Trichloroethane | 0.005 mg/L |
| | 1,2,4 – Trichlorobenzene | 0.07 mg/L |
| | Benzene | 0.005 mg/L |
| | Carbon tetrachloride | 0.005 mg/L |
| | cis-1,2-Dichloroethylene | 0.07 mg/L |
| | Dichloromethane | 0.005 mg/L |
| | Ethylbenzene | 0.7 mg/L |
| | Monochlorobenzene | 0.1 mg/L |
| | o-Dichlorobenzene | 0.075 mg/L |
| | Para-dichlorobenzene | 0.075 mg/L |
| | Styrene | 0.1 mg/L |
| | Tetrachloroethylene | 0.005 mg/L |
| | Toluene | 1.0 mg/L |
| | Trans-1,2-Dichloroethylene | 0.1 mg/L |
| | Trichloroethylene | 0.005 mg/L |
| | Vinyl Chloride | 0.002 mg/L |
| | Xylene | 10.0 mg/L |
| **Inorganic Chemicals (VOCs)** | | |
| | Antimony | 0.006 mg/L |
| | Arsenic | 0.010 mg/L |
| | Asbestos | 7 MFL |
| | Barium | 2.0 mg/L |
| | Beryllium | 0.004 mg/L |
| | Cadmium | 0.005 mg/L |

**Listing of Regulated Contaminants**

**Inorganic Chemicals (VOCs)** **continued**

| Chemical | MCL |
|---|---|
| Chromium | 0.2 mg/L |
| Cyanide | 0.2 mg/L |
| Mercury | 0.002 mg/L |
| Selenium | 0.005 mg/L |
| Thallium | 0.002 mg/L |

## Synthetic Organic Chemicals (SOCs)

| Testing Initial | Required Triennial | | |
|---|---|---|---|
| x | x | 1,2-Dibromo-3-Chloropropane (DBCP) | 0.0002 mg/L |
| x | x | 2, 4-D | 0.07 mg/L |
| x | x | 2,4,5-TP (Silvex) | 0.05 mg/L |
| x | x | Alachlor | 0.002 mg/L |
| x | x | Atrazine | 0.003 mg/L |
| x | x | Carbofuran | 0.04 mg/L |
| x | x | Chlordane | 0.002 mg/L |
| x | x | Ethylene Dibromide | 0.00005 mg/L |
| x | x | Heptachlor | 0.0004 mg/L |
| x | x | Heptachlor Expoxide | 0.0002 mg/L |
| x | x | Lindane | 0.0002 mg/L |
| x | x | Methoxychlor | 0.04 mg/L |
| x | x | PCBs | 0.005 mg/L |
| x | x | Pentachlorophenol | 0.001 mg/L |
| x | x | Toxaphene | 0.003 mg/L |
| | | 2,3,7,8-TCDD(Dioxin) | 3 x 10-8 mg/L |

### Phase V Contaminants

| | | | |
|---|---|---|---|
| x | | Benzo(a)pyrene | 0.0002 mg/L |
| x | | Dalapon | 0.2 mg/L |
| x | | Di(2-ethylhexyl)adipate | 0.4 mg/L |
| x | | Di(2-ethylhexyl)phthalate | 0.006 mg/L |
| x | | Dinoseb | 0.007 mg/L |
| x | x | Diquat | 0.02 mg/L |
| x | x | Endothall | 0.1 mg/L |
| x | | Endrin | 0.002 mg/L |
| x | x | Gylphostate | 0.7 mg/L |
| x | | Hexachlorobenzene | 0.001 mg/L |
| x | | Hexachlorocyclopentadiene | 0.05 mg/L |
| x | x | Oxamyl (Vydate) | 0.2 mg/L |
| x | x | Picloram | 0.5 mg/L |
| x | x | Simazine | 0.004 mg/L |

## Estimated Sampling Costs

## for

## Non-Transient, Non-Community

## Public Water Supplies

| 1st Year | 2nd Year | 3rd Year | 4th Year | 5th Year | 6th Year | 7th Year |
|---|---|---|---|---|---|---|
| SOCs-$2,720 | | once every three years if <3,300, twice if >3,300 | SOCs-$520 | | | SOCs-$520 |
| VOCs-$720 | | | | | once every 6 years | VOCs-$180 |
| IOCs-$152<br><br>Arsenic - $10 | | once every 3 years | IOCs-$152<br><br>Arsenic - $10 | | | IOCs-$152<br><br>Arsenic - $10 |
| LEAD AND COPPER $240 for <100 | LEAD AND COPPER $120 for <100 | LEAD AND COPPER $120 for <100 | LEAD AND COPPER $120 for <100 | | once every 3 years | LEAD AND COPPER $120 for <100 |
| DBPs-$240 | DBPs-$240 | DBPs-$240 | DBPs-$240 | DBPs-$240 | Once every 3 years | DBPs-$240 |
| **Year Total-$4,092** | **Year Total-$365** | **Year Total-$365** | **Year Total-$1,437** | **Year Total $240** | **Year Total-$240** | **Year Total-$1,617** |

**Assuming a groundwater supply serving less than 100 people, the estimated cost for chemical sampling, if all samples are negative, amounts to $8,356 the first seven years. This does not include coliform or nitrate sampling.**

## Operator Certification

All non-transient, non-community public water systems are required to have a certified operator. There are two ways to acquire the services of a certified operator. The system can either contract with a certified operator or the owner or a staff member can attend an IDPH approved training course and pass the certified operator examination. Anyone currently holding an IEPA water system operator classification qualifies as a certified operator. Contact IDPH at 217-782-5830 for operator certification training course dates and locations. Operators certified through IDPH are required to complete a recertification course every three years to maintain their certification.

## Typical duties and responsibilities of a certified operator for a non-community supply

- Be responsible for the day-to-day operation and management of the public water system
- Ensure the delivery of safe drinking water at all times by complying with the drinking water regulations of Illinois
- Inspect the water system routinely (source, storage, treatment and distribution)
- Test, flush, clean and disinfect the water distribution system and storage tanks when necessary
- Develop and maintain a site plan showing the water source, a map of the water distribution system and sample locations, and a description of all treatment processes
- Collect or oversee the collection of water samples as specified by IDPH
- Ensure that all samples are delivered to, and analyzed by, an IDPH-certified laboratory
- Report all results to IDPH within the time frames specified
- Notify IDPH of any violation and issue public notices when necessary
- Review the sample monitoring schedule and locations annually
- Protect the water distribution system and storage facilities from corrosion
- Routinely observe pump motors to detect unusual noises, vibrations or excessive heat
- Inspect, adjust and clean pump seals, packing glands and any mechanical seals when necessary
- Be present during water system repairs and maintenance and/or oversee the maintenance of the public water system conducted by other individuals such as staff or contractors
- Be present within 24 hours of fecal coliform-positive, total coliform-positive or other water system failures to ensure corrective actions are taken
- Identify all potential sources of contamination near the well
- Troubleshoot mechanical equipment, water quality and quantity problems and take corrective actions as necessary
- Keep abreast of changes in the drinking water regulations
- Attend training programs and workshops for certification renewal when necessary
- Accompany regulatory agency staff during inspections
- Keep accurate records and maintain all correspondence
- Add chemicals for disinfection when necessary
- Measure and record the chlorine dosage daily and make dosage adjustments as necessary

**Estimated Time**

The annual estimated time required to perform all the duties and responsibilities listed above is approximately 180 to 360 hours.

## Who do I call for information?

General information on non-community public water systems is available at local health departments and at IDPH regional offices. Call the nearest one to talk to an environmental health specialist. He/she can answer your non-community public water system questions. Please refer to the map on page 13 to determine the appropriate regional office for contact information.

**ROCKFORD REGIONAL OFFICE**
4302 N. Main St.
Rockford, IL 61105
815-987-7511

**MARION REGIONAL FFICE**
2309 W. Main St., Suite. 106
Marion, IL 62959
618-993-7010

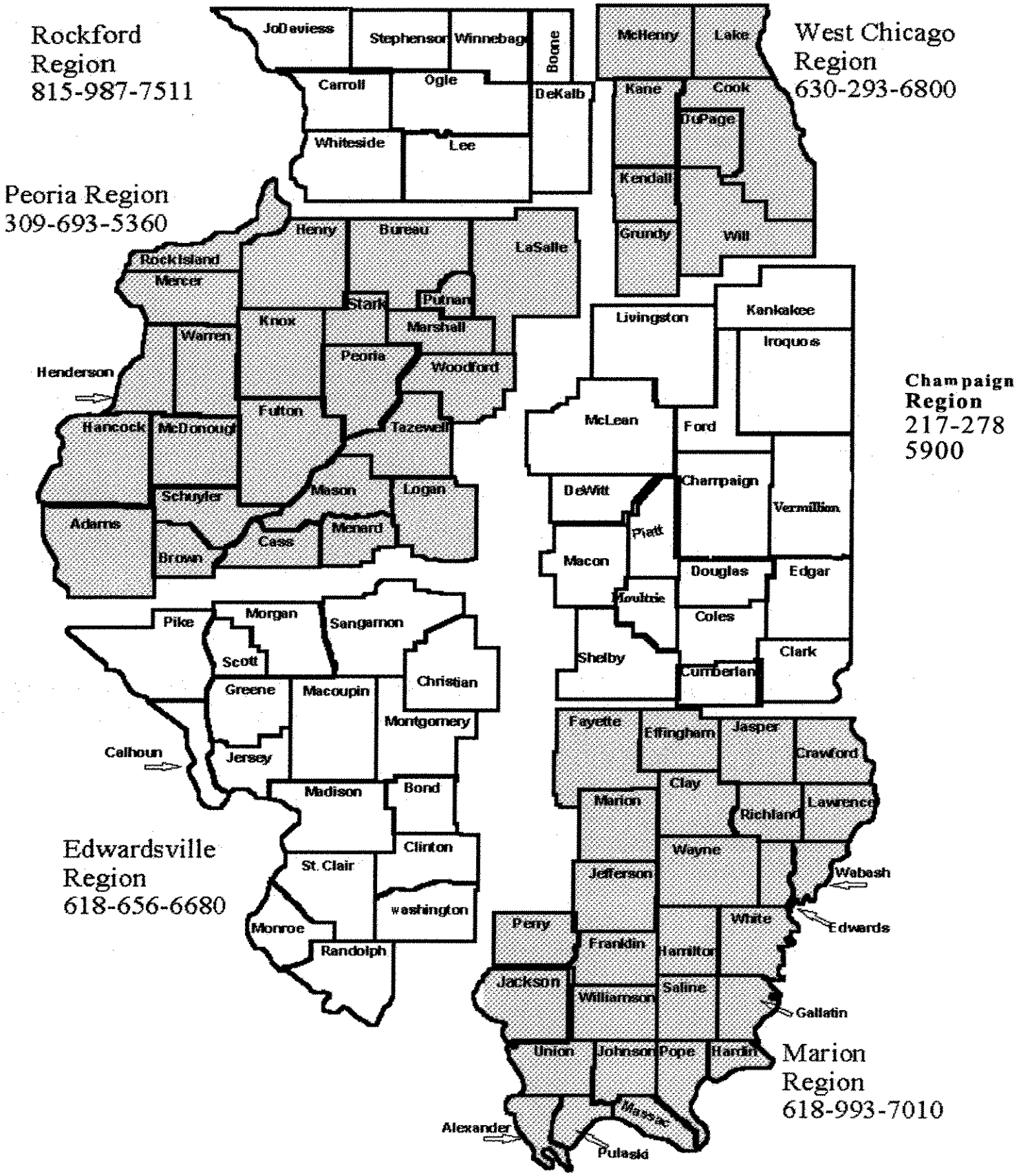
**PEORIA REGIONAL OFFICE**
5415 N. University
Peoria, IL 61614
309-693-5360

**CHAMPAIGN REGIONAL OFFICE**
2125 S. First St.
Champaign, IL 61820
217-278-5900

**EDWARDSVILLE REGIONAL OFFICE**
#22 Kettle River Drive
Glen Carbon, IL 62034
618-656-6680

**WEST CHICAGO REGIONAL OFFICE**
245 W. Roosevelt Road, Building 5
West Chicago, IL 60185
630-293-6800

Illinois Department of Public Health
Division of Environmental Health
525 W. Jefferson St.
Springfield, IL 62761
Telephone: 217-782-5830
Fax: 217-557-1188






# IDPH REGIONAL OFFICES

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