

**ILLINOIS GENERIC MANAGEMENT PLAN
FOR PESTICIDES IN GROUNDWATER**

2006



Rod Blagojevich, Governor

Prepared by

**Pesticide Subcommittee
of the
Interagency Coordinating Committee on Groundwater**

PREFACE

This document is an update of the *Illinois Generic Management Plan for Pesticides in Groundwater* that was adopted by the Illinois Interagency Coordinating Committee on Groundwater in 2000. The U.S. Environmental Protection Agency (U.S. EPA) concurred with the state's plan in February 2001. The Generic Management Plan describes the framework used by the State of Illinois in addressing the risks of groundwater contamination by pesticides.

We are pleased to report that groundwater sampling of community water supply wells by the Illinois Environmental Protection Agency (IEPA) and shallow monitoring wells adjacent to cropland by the Illinois Department of Agriculture (IDA) has not detected any pesticide at concentrations exceeding a health-based reference value. The *Illinois Generic Management Plan for Pesticides in Groundwater* requires the IDA to conduct an investigation of the cause if pesticides are detected at concentrations greater than 10 percent of the groundwater reference value. Since U.S. EPA concurrence with the Generic Pesticide Management Plan, only one monitoring well sample contained pesticides at concentrations greater than 10 percent of the groundwater reference value (atrazine parent compound). The IDA immediately re-sampled the well and found the atrazine concentration had returned to a level less than 10 percent of the groundwater reference value. The IDA also notified the registrant and conferred with the Illinois Department of Public Health, which agreed that no further action was necessary.

Because of the success of the 2000 plan, these 2006 revisions are limited to updates of monitoring programs and results, the basis for assessment and planning, and non-regulatory preventive measures and programs.

Recently there has been increased concern about pesticides in surface water—both potential impacts on community water supplies and on aquatic life. The Illinois Environmental Protection Agency is the state lead agency for protection of public water supplies and aquatic life in Illinois. The Illinois Department of Agriculture, the state lead agency for implementation of state and federal laws regarding pesticides, will continue to assist the IEPA in responding to any pesticide-related exceedences of a drinking water standard or criteria to protect aquatic life.

Contents

List of Abbreviations	iv
Glossary	v
Introduction	1
Illinois Groundwater Protection Policy	1
Roles and Responsibilities	4
Legal Authority	10
Resources	11
Basis for Assessment and Planning	12
Monitoring	15
Preventive Measures	21
Response Actions	25
Enforcement Mechanisms	30
Public Awareness	32
Information Dissemination	34
Records and Reporting	34
Appendix A: Legal Authorities	

LIST OF ABBREVIATIONS

BMP	Best Management Practice
C-BMP	Illinois Council on Best Management Practices
CWS	Community Water Supply
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FSA	Farm Service Agency
IAC	Illinois Administrative Code
ICCG	Interagency Coordinating Committee on Groundwater
ICP	Interagency Committee on Pesticides
IDA	Illinois Department of Agriculture
IDNR	Illinois Department of Natural Resources
IDPH	Illinois Department of Public Health
IEPA	Illinois Environmental Protection Agency
IGPA	Illinois Groundwater Protection Act
ILCS	Illinois Compiled Statutes
IPCB	Illinois Pollution Control Board
ISGS	Illinois State Geological Survey
ISWS	Illinois State Water Survey
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
NRCS	Natural Resources Conservation Service
PMP	Pesticide Management Plan
SWCD	Soil and Water Conservation District
UIE	University of Illinois Extension
USDA	U.S. Department of Agriculture
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

GLOSSARY

Detection means the identification of a contaminant in a sample at a value greater than the:

“Method Detection Limit” or “MDL” which means the minimum concentration of a substance that can be measured as reported with 99 percent confidence that the true value is greater than zero, pursuant to 56 Fed. Reg. 3526-3597, incorporated by reference at 35 IAC 620.125; or

“Method Quantitation Limit” or “MQL” which means the minimum concentration of a substance that can be measured and reported pursuant to “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods”, incorporated by reference at 35 IAC 620.125.

Groundwater reference value means a groundwater quality standard established in 35 IAC 620 or by the Illinois Pollution Control Board pursuant to that Section, or a Health Advisory Level established pursuant to 35 IAC 620.601 et seq. or by the U.S. Environmental Protection Agency.

Regulated entity means a facility or unit regulated for groundwater protection by any state or federal agency.

Response trigger level means 50 percent of the groundwater reference value.

INTRODUCTION

The *Illinois Generic Management Plan for Pesticides in Groundwater* was developed in response to the U.S. Environmental Protection Agency's Pesticides and Groundwater Strategy. The U.S. EPA's adopted approach is continued nationwide regulation of pesticide use and disposal, augmented by strong state and tribal roles in the local management of pesticide use to protect groundwater. The incentive for states and tribes to prepare these plans comes from the federal pesticide registration process. The future use of certain registered pesticides, identified by the U.S. EPA as a potential threat to groundwater, would depend on the presence and adequacy of a state or tribe's compound-specific pesticide management plan. In some situations, the U.S. EPA may require a state-specific label or supplemental label with PMP-prescribed, pesticide-management measures. If there is no adequate PMP that could reasonably be expected to prevent or reduce the threat of contamination, the U.S. EPA may take steps, up to including statewide cancellations, to control the use of a pesticide that poses a significant groundwater threat. The option of adopting special pesticide management measures to avoid U.S. EPA cancellation and the prevention of groundwater contamination have been the driving forces behind this plan's development.

The U.S. EPA, in its Pesticides and Groundwater Strategy (U.S. EPA 1987; 1991), proposed that (1) each state and tribe should have the major role in determining whether the use of a pesticide presents a hazard to its groundwater resources and (2) each state and tribe should have the flexibility to design protection programs that will be effective in protecting its resources. The generic program components described in this document should be considered as the framework within which compound-specific pesticide management plans will be developed. Also, the generic plan provides preventive guidance measures that, if followed, may allow the state to address possible groundwater contamination from pesticide use even before the U.S. EPA would determine that a compound-specific plan was warranted.

The components of this generic pesticide management plan are not all inclusive and may require adjustment or refinement over time, depending on the specific compound being addressed. The plan is

built on the premise that the people of Illinois are willing to support the development, implementation and enforcement of compound-specific management plans that may limit the use of certain compounds in certain areas of the state to prevent or reduce groundwater contamination. The components are reasonable compromises between an ideal basis for assessment and planning and what is practical given available resources. It is understood that possible use-limitations resulting from a compound-specific management plan may place some areas of the state at a competitive disadvantage. However, in the long term, the potential economic impacts from unchecked groundwater contamination in particularly vulnerable areas will place the entire state at an even more severe economic disadvantage for future generations.

ILLINOIS GROUNDWATER PROTECTION POLICY

The general groundwater policy of the State of Illinois was established in the Illinois Groundwater Protection Act (IGPA) which was signed by the Governor on September 24, 1987.

"It is the policy of the State of Illinois to restore, protect and enhance the groundwater of the State, as a natural and public resource. The State recognizes the essential and pervasive role of groundwater in the social and economic well-being of the people of Illinois and its vital importance to general health, safety and welfare. It is further recognized as consistent with this policy that groundwater resources of the State be utilized for beneficial and legitimate purposes, waste and degradation of the resource be prevented, and underground water be managed to allow maximum benefit for people of the State of Illinois." (415 ILCS 55/1 et seq.)

To this end, Illinois has adopted groundwater standards that establish a classification system for all groundwater in the State:

- Class I: Potable Resource Groundwater
- Class II: General Resource Groundwater
- Class III: Special Resource Groundwater
- Class IV: Other Groundwater

Class I Potable Resource Groundwater are groundwaters that are currently used as drinking water or have the potential for being used as drinking water. It is estimated that 80 percent of the groundwater in the State is Class I groundwater. The classification system for Potable Resource Groundwater uses a combination of existing potable water supply wells and their associated minimum setback zones as well as hydrogeologic criteria for defining areas of future potable use. The groundwater standards, which are applied to Class I groundwater are, for the most part, based on the U.S. EPA's maximum contaminant levels (MCL) for drinking water.

Class II General Resource Groundwater are groundwaters that do not meet the provisions of the other classes. Therefore, this criterion places a burden on regulated entities to demonstrate that Class II geologic materials containing groundwater do not meet any of the Class I hydrogeologic criteria. Areas designated as Class II groundwater must meet the Class II groundwater standards unless the impairment is due to natural causes. The Class II standards are established at levels to which groundwater can be treated using the most economical, best available treatment technology.

Class III Special Resource Groundwater are groundwaters which are found by the Illinois Pollution Control Board to be demonstrably unique (e.g., irreplaceable sources of groundwater) and suitable for

application of a water quality standard more stringent than Class I groundwater or vital for a particularly sensitive ecological system. In addition, groundwaters that contribute to a dedicated nature preserve that is listed by the Illinois Environmental Protection Agency pursuant to 35 IAC 620.230 are Class III. More stringent standards for a specific Class III groundwater may be adopted by the Illinois Pollution Control Board pursuant to 35 IAC 620.260.

Class IV Other Groundwater(s) are located within the point of compliance of a hazardous waste landfill, within the zone of attenuation of a solid waste landfill, or have a concentration of greater than 10,000 mg/L total dissolved solids. In addition, Class IV groundwaters are groundwaters underlying potential primary or secondary sources where contamination is being controlled and minimized with no off-site migration within a 25-foot lateral by 15-foot vertical area. Class IV groundwaters are also established for certain coal mine surface impoundments and areas previously mined for coal.

Non-degradation Provisions in the groundwater regulations specify that no person shall cause, threaten or allow the release of any contaminant to a resource groundwater such that (1) treatment or additional treatment is necessary to continue an existing use or to assure a potential use of such groundwater, or (2) an existing or potential use of such groundwater is precluded.

Preventive Notification/Preventive Response provisions in the groundwater standards apply to regulated entities, public water supplies and state regulatory agencies that conduct groundwater monitoring. (Regulated entities are facilities or units regulated for groundwater protection by any state or federal agency.) Preventive notification and preventive response activities are intended to apply to contaminant concentrations below standards. If contaminant concentrations exceed the standards, corrective action versus preventive response applies. The preventive notification requirements of 35 IAC 620.305 apply to those pesticides listed in 35 IAC 620.310 (a)(3)(A), 620.410 (b) and 620.430, which include several commonly used compounds, such as alachlor, atrazine, 2,4-D and simazine. Preventive notification levels are established at method detection limits (MDL). The preventive notification requires that the Illinois Department of Agriculture (IDA) resample any monitoring well in which a listed pesticide is detected. If a pesticide were detected in a public water supply, the owner or operator would be responsible for resampling.

Preventive response activities for pesticide detections as a result of monitoring conducted by an agency such as IDA are not specified in the administrative rules (see 35 IAC 620.310). If a pesticide were detected in a community water supply, the IEPA would respond. If a pesticide were detected in a non-community well or in multiple private water supply wells, the Illinois Department of Public Health (IDPH) is responsible for conducting a wellhead sanitary survey. The IDA's response to the presence of pesticides in IDA monitoring wells or other monitoring not addressed in 35 IAC 620 is described in the **Response Actions** section of this plan. These measures are based on the nondegradation provisions of Sections 12(a) and (b) of the Illinois Environmental Protection Act (415 ILCS 5/12) and 35 IAC 620.301.

In the groundwater standards, "land utilized only for agricultural production" is excluded from the definition of the term "unit" and is, therefore, not a regulated entity subject to the preventive notice/preventive response provisions outlined in the groundwater standards. However, this management plan, through preventive measures, seeks to prevent groundwater contamination from agricultural production land by identifying areas of vulnerability and assisting producers in implementing preventive management practices. The **Response Actions** section in this plan outlines the actions to be taken in those areas based on the cause and extent of the groundwater contamination.

Health Advisory Provisions are also included in the regulations. In the absence of numerical groundwater quality standards, 35 IAC 620, Subpart F provides a means to determine appropriate health-based

numbers for chemical contaminants by utilizing a health-advisory procedure. These health advisory levels will be used as the protective reference point for pesticides for which groundwater standards have not been set. Such procedures would be consistent with U.S. EPA's Pesticides and Groundwater Strategy.

Copies of the Illinois groundwater standards regulation, referred to as 35 Illinois Administrative Code 620, can be obtained from the Illinois Environmental Protection Agency, Division of Public Water Supplies, Groundwater Section, 1021 North Grand Avenue East, P. O. Box 19276, Springfield, Illinois 62794-9276 or the Illinois Pollution Control Board's web site at "<http://www.ipcb.state.il.us/>"

It is the intent of the Interagency Coordinating Committee on Groundwater (ICCG) to be consistent with the State's groundwater protection policy in this Generic Pesticide Management Plan. The committee also understands the importance of agriculture to the state and its people and believes that both the protection of groundwater and the continued viability of an agricultural production system, which benefits from the judicious and proper use of agrichemicals, can be realized through the implementation of a pesticide management plan. It is also understood that groundwater and surface water are not completely separate. The pesticide management plan will not specifically address the interrelationship between groundwater and surface water. However, it is not the intent of the state to protect groundwater at the expense of surface water. The current Class I and III groundwater classifications allow for the protection of groundwater which is closely hydrologically connected to surface waters. This follows the mandate contained in the U.S. EPA's "Comprehensive State Groundwater Protection Program (CSGWPP) Guidance" and the U.S. EPA-approved CSGWPP for Illinois.

ROLES AND RESPONSIBILITIES

The State's accomplishments in erosion- and sediment-control programs and the progress made in addressing pesticide issues have been achieved through the actions of all members of Illinois's conservation partnership. The success of this generic management plan and any future compound-specific plan will largely depend on the continued cooperation of a large number of federal, state and local agencies and agricultural and environmental organizations

FEDERAL AGENCIES

U. S. Environmental Protection Agency

The U.S. EPA is responsible for regulating pesticide use; protecting the quality of the nation's ground and surface water; and regulating the storage, disposal and response to releases of pesticides. Its role and responsibilities are derived from several federal statutes: the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

U. S. Department of Agriculture

The U. S. Department of Agriculture (USDA), through its various divisions, provides both technical assistance and incentives to individual landowners that can affect the management of land and water resources. USDA offices in Illinois include the Natural Resources Conservation Service (NRCS), Farm Service Agency (FSA), National Agricultural Statistics Service (NASS) and the Agricultural Research Service (ARS).

STATE AGENCIES AND COMMITTEES

Illinois Department of Agriculture (<http://www.agr.state.il.us/>)

The IDA is the designated state lead agency for pesticide regulation and will serve as the liaison with the U.S. EPA for all matters relative to generic or compound-specific state pesticide management plans. The IDA will initiate development of compound-specific plans when necessary. The IDA will further identify rules and resources needed to fulfill its responsibilities to enforce the requirements of a compound-specific pesticide management plan.

The IDA will solicit input from and coordinate with other agencies through existing committees formed by the Illinois General Assembly and other advisory groups formed by the IDA. These existing committee structures include the Interagency Committee on Pesticides (ICP) and the Interagency Coordinating Committee on Groundwater (ICCG). Each committee has specific mandates and responsibilities which will be directly related to the success of a compound-specific pesticide management plan. A brief description of these committees and advisory councils is as follows:

Interagency Committee on Pesticides

The purposes of the Interagency Committee on Pesticides (ICP) are:

- 1) to study and advise on the use of pesticides on State property,
- 2) to advise any state agency in connection with quarantine programs or the protection of the public health and welfare, and
- 3) to recommend needed legislation concerning pesticides.

The members of the ICP are, by statute:

the Director of the Department of Agriculture
the Director of the Department of Natural Resources
the Director of the Illinois Environmental Protection Agency
the Director of the Department of Public Health
the Secretary of the Department of Transportation
the Chief of the Natural History Survey
the Dean of the College of Agricultural, Consumer and Environmental Sciences of the University of Illinois.

The interagency committee shall:

- 1) review the current status of the sales and use of pesticides within the State of Illinois;
- 2) review pesticide programs to be sponsored or directed by a government agency;
- 3) consider the problems arising from pesticide use with particular emphasis on the possible adverse effects on human health, livestock, crops, fish and wildlife, business, industry, agriculture, or the general public;
- 4) recommend legislation to the Governor, if appropriate, which will prohibit the irresponsible use of pesticides;
- 5) review rules and regulations pertaining to the regulation or prohibition of the sale, use or application of pesticides for approval prior to promulgation and adoption;
- 6) contact various experts and lay groups, such as the Illinois Pesticide Control Committee, to obtain their views and cooperation; and
- 7) advise on and approve of all programs involving the use of pesticides on state-owned property, state-controlled property, or administered by state agencies.

Interagency Coordinating Committee on Groundwater

The purpose of the ICCG is to coordinate all the activities of Illinois state government regarding groundwater protection issues. Due to its interagency membership, this committee is uniquely suited to receive and review findings concerning pesticides in groundwater in Illinois and to consider the need for compound-specific pesticide management plans. Members of the ICCG include:

Illinois Environmental Protection Agency (IEPA), chair
Illinois Department of Natural Resources (IDNR)
Illinois Department of Agriculture (IDA)
Illinois Department of Public Health (IDPH)
Illinois Department of Transportation (IDOT)
Illinois Department of Commerce & Economic Opportunity (IDCEO)
Illinois Department of Nuclear Safety (IDNS)
Illinois Emergency Management Agency (IEMA)
Office of the State Fire Marshall (OSFM)

Pesticide Subcommittee of the ICCG

The pesticide subcommittee of the ICCG developed this generic management plan for pesticides in groundwater and will develop and coordinate subsequent compound-specific pesticide management plans for presentation to the ICCG and ICP. The members of the pesticide subcommittee of the ICCG are:

Illinois Department of Agriculture (IDA), chair
Illinois Environmental Protection Agency (IEPA)
Illinois Department of Natural Resources (IDNR)
 Illinois State Water Survey (ISWS)
 Illinois State Geological Survey (ISGS)
 Illinois Natural History Survey (INHS)
Illinois Department of Public Health (IDPH)
United States Department of Agriculture (USDA)
 Natural Resources Conservation Service (USDA-NRCS)
University of Illinois Extension (UIE)

Illinois Department of Public Health (<http://www.idph.state.il.us/>)

The IDPH is responsible for administration of the Structural Pest Control Act (225 ILCS 235/1 et seq.) and the Structural Pest Control Code (77 IAC 830). Under this Act, the IDPH licenses individuals who perform structural pest control activities for hire, registers individuals who use restricted-use pesticides on a not-for-hire basis on behalf of an employer, and certifies individuals in the use of both general and restricted-use pesticides. The IDPH regulates the use, storage, and handling of pesticides by individuals engaged in structural pest control. Routine compliance inspections and complaint investigations are performed in accordance with the Act. Any compound-specific management plan use-restrictions and prohibitions adopted by the State of Illinois affecting structural pest control products will be administered and enforced by the IDPH.

The IDPH also has the responsibility to license individuals who construct water wells and install water well pumps for hire and for the regulation of private, semi-private, non-community and non-potable water systems through the Water Well and Pump Installation Contractor's License Code, Illinois Water Well Construction Code, Illinois Water Well Pump Installation Code and the Drinking Water Systems Code.

Illinois Environmental Protection Agency (<http://www.epa.state.il.us/>)

The IEPA is responsible for establishing groundwater quality standards to protect human health and the environment. The IEPA's rules are intended to maintain and preserve the quality of groundwater, prevent and abate pollution and contamination of the waters of the State, protect public health, and permit management of the groundwater for its best use by the citizens of Illinois.

The IEPA will respond to requests from the IDA to develop and propose appropriate health-based standards for pesticides under compound-specific pesticide management plans when those standards do not already exist. The agency will collect, analyze and interpret groundwater monitoring data from community water supply wells and share the data with the IDA for administration of the plan.

Illinois Department of Natural Resources (<http://www.dnr.state.il.us/>)

The IDNR, through its scientific surveys, provides other government agencies and the general public with technical information and serves as the repository for groundwater quantity and quality data. The IDNR also manages a groundwater education program for teachers, school children, local and state officials, and the general public. The Illinois State Water Survey (ISWS) and Illinois State Geological Survey (ISGS), two of IDNR's scientific surveys, have assisted the IDA in the identification of areas of the state where groundwater may be susceptible to contamination from normal pesticide use.

In addition, the ISGS and the ISWS, under contract to the IDA, installed and sampled monitoring wells adjacent to agricultural production fields in support of future compound-specific pesticide management plans. The assistance of the ISGS and ISWS, through their memberships on the ICCG and their efforts on the IDA monitoring well network, will be important to the success of future compound-specific PMPs.

Illinois Pollution Control Board (<http://www.ipcb.state.il.us/>)

The Illinois Pollution Control Board (Board) was created when the Illinois Environmental Protection Act (Act) was enacted in 1970. The Board is a quasi-legislative and quasi-judicial body that adopts environmental regulations and hears contested cases, effectively acting as a court of environmental law. The Board was accorded the authority to adopt environmental standards and regulations for the state, and to adjudicate contested cases arising from the Act and from the regulations adopted under the Act. It determines, defines, and implements environmental control standards in accordance with the Act. Board cases generally fall into one of six categories: enforcement action, permit appeal, variance, adjusted standard ruling, administrative citation, or landfill siting appeal.

The Board consists of seven technically qualified members appointed to three-year terms by the Governor and confirmed by the Illinois Senate. Board members bring various qualifications and backgrounds to the environmental cases they consider including expertise in law, engineering and the biological, geological and environmental sciences. The Board also publishes the *Environmental Register*, a newsletter on Board matters. This newsletter is available on the Board's web site or in hard copy for a small subscription fee.

University of Illinois Extension (<http://www.ag.uiuc.edu/>)

The UIE delivers educational and training programs to promote the proper use of pesticides and adoption of best management practices to reduce the potential for groundwater contamination. The UIE also informs decision-makers and the general public of the pesticide-user community's actions to preserve groundwater and overall environmental quality. Information generated by research at the state agricultural experiment stations and elsewhere will be extended to agricultural producers, other pesticide users and the general public. UIE staff will assist in communicating the requirements of a compound-specific pesticide management plan at the local level and provide education and training to pesticide users. In addition, the UIE will continue its lead role in providing accredited training for private and commercial applicators, and assist in the development, promotion, and training of persons interested in the Certified Crop Adviser (CCA) program.

University of Illinois extension and research specialists involved in the areas of crop science, plant pathology, entomology, soil science, hydrogeology, and other areas may be requested to assist the IDA and the various committees in the evaluation and development of strategies to minimize the impact of pesticides on the environment.

Soil and Water Conservation Districts (SWCDs)

The SWCDs have been instrumental in the planning and implementation of various practices that aid in the conservation of the State's natural resources. Most of the practices also aid in the prevention of runoff or leaching of pesticides into water. The SWCDs will continue these efforts and provide technical resources that will help in implementing compound-specific pesticide management plans.

Pesticide Registrants

Pesticide registrants will have very important roles and responsibilities in the successful implementation of compound-specific pesticide management plans. In accordance with the Illinois Pesticide Act, every product sold or offered for sale as a pesticide must be registered with the IDA prior to sale. Product registration, payment of authorized fees and submittal of necessary supporting information are the responsibility of the registrant. The registrant is subject to the labeling and product-quality provisions of the FIFRA and the Illinois Pesticide Act.

Generally, registrants are expected to provide analytical methods and laboratory standards for use in product analyses to evaluate label claims. In addition, the registrant is expected to provide, upon request by the IDA, analytical methods to determine the presence of pesticides in foods, feed, and various environmental media including soil, water, and plant or animal tissues.

Registrants are expected to promote good product stewardship through voluntary best management practices developed to avoid or minimize impacts of product use on groundwater. As part of a compound-specific plan, registrants may be required to develop informational materials, conduct outreach, and survey product usage within specific vulnerability areas. Registrants may also be required to provide groundwater monitoring data from studies conducted by the registrant within the state as well as in other states. In addition, registrants may be required to initiate new monitoring programs in various areas of the state as a result of the requirement for a compound-specific PMP. In all cases, monitoring programs must be conducted under IDA- and U.S. EPA-approved procedures.

Agrichemical Dealers and User Groups

Agrichemical dealers and pesticide-user groups are also clear beneficiaries of the use of pesticides and should take an active role in the promotion of good stewardship practices. The desired situation is for pesticides to not impact groundwater. Therefore, it is incumbent upon agrichemical dealers, structural pest control operators, nurserymen, farmers, and other users of pesticides to assist in the development and adoption of best management practices and other good stewardship activities. These groups also should take an active role in the pesticide advisory council. Under a compound-specific management plan, agrichemical dealers and user groups should help to describe the plan to users and encourage its implementation.

Illinois State Technical Committee

The Illinois State Technical Committee consists of federal and state natural resource agencies, agribusiness representatives, environmental organizations, non-profit organizations with conservation expertise and agricultural producers with conservation interests. The committee is chaired by the USDA-NRCS and conducts public meetings quarterly. The formation of the committee was authorized by the Food Security Act of 1985, as amended by the Food, Agriculture, Conservation and Trade Act of 1990. The committee functions in an advisory capacity to the USDA-NRCS on the implementation of the conservation provisions of the federal farm bills. In particular, the committee provides input to the NRCS on the Environmental Quality Incentives Program, the Wetlands Reserve Program, the Wildlife Habitat

Incentives Program and the Conservation Reserve Enhancement Program. The committee may provide an avenue to ensure coordination between components of pesticide management plans and NRCS farm bill compliance plans which will be important to the success of pesticide management plans.

Local Governmental Units

Local units of government and local offices of state and federal agencies will also be an integral component in the successful implementation of management plans. The soil and water conservation districts, county extension units or centers, USDA-NRCS, USDA-FSA, and county health departments will provide a direct link to producers and thus will be very important during the education and implementation phases of management plans. The success of a management plan will be dependent on timely dissemination of information to these groups and the coordination of all outreach efforts.

Environmental Organizations

Various environmental groups, such as the Illinois Environmental Council (IEC) and Business and Professional People for the Public Interest (BPI), continue to be very active in shaping public policy on the protection of the state's natural resources and environment. Pesticide management plans will only be successful if these organizations are informed of the plan and supportive of their implementation.

LEGAL AUTHORITY

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Illinois Pesticide Act, the Illinois Groundwater Protection Act, the Illinois Environmental Protection Act, and various rules and regulations adopted thereunder provide the authority under which the IDA develops and implements a pesticide management plan (PMP).

The authority of the Illinois Department of Agriculture to regulate pesticides is derived from the FIFRA and the Illinois Pesticide Act (415 ILCS 60/1 et seq.). Under the FIFRA, the Department is the state lead agency for the regulation of pesticides and their use. The Department enters into annual cooperative agreements with the U.S. EPA to conduct pesticide-use programs for certification and training, enforcement, worker protection, endangered species protection, and groundwater protection.

The legal authorities of the Illinois Environmental Protection Agency relative to a pesticide management plan are in the Illinois Environmental Protection Act (415 ILCS 5/1 et seq.), the Illinois Groundwater Protection Act (IGPA) (415 ILCS 55/1 et seq.) and various federal pass-through authorities from the U.S. EPA associated with the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA).

The Illinois Department of Natural Resources (IDNR) comprises several divisions including the State Geological Survey, State Natural History Survey, and State Water Survey, and has specific obligations relative to groundwater under the Illinois Groundwater Protection Act. The IDNR provides other governmental agencies and the public with technical information and serves as the repository for data on groundwater quantity and quality. The IDNR serves as a member of the ICCG. However, the IDNR has no specific legal authority to regulate groundwater or pesticides.

The authority of the Illinois Department of Public Health to regulate structural pest control pesticides is derived from Section 3 of the Illinois Pesticide Act (415 ILCS 60/3) and Section 2 of the Structural Pest Control Act (225 ILCS 235/2). In accordance with these sections, the IDPH administers Category 7, Industrial, Institutional, Structural, and Health Related Pest Control, and Category 8, Public Health Pest Control (except for mosquito control), as addressed in Section 250.120(g) and (h), respectively, of the regulations pertaining to the Illinois Pesticide Act (8 IAC 250). Groundwater protection regulations for commercial structural pest control businesses which have storage sites located within well setback zones and which have certified their intent to be regulated under the IDPH in accordance with Section 14.6 of the Environmental Protection Act are addressed in Subpart I of the Structural Pest Control Code (77 IAC 830.Subpart I). The IDPH also subcontracts annually with the IDA in the pesticide cooperative agreement with the U.S. EPA.

The basis for IDPH's authority to license individuals for the construction of water wells and the installation of water well pumps is the Illinois Water Well and Pump Installation Contractor's License Act (225 ILCS 345/1 et seq.) Under the authority of the Illinois Water Well Construction Code (415 ILCS 30/1 et seq.) and the Illinois Water Well Pump Installation Code (415 ILCS 35/1 et seq.), the IDPH sets standards for the location and construction of water wells and the installation of water well pumps for all types of water wells with the exception of wells which serve a community public water-supply system. (Community public water-supply systems are those which serve a resident population of more than 25 people at least 60 days each year.) The Groundwater Protection Act (415 ILCS 55/9) authorizes the IDPH to regulate the approximately 4,000 non-community public water systems in the State. (Non-community public water-supply systems serve a non-residential population of more than 25 people at least 60 days each year. Examples are schools, work places, highway rest stops and public buildings.)

A detailed discussion of the various legal authorities related to pesticide management plans and groundwater protection is provided in *Appendix A*.

RESOURCES

The levels of resources needed for the development, implementation and enforcement of compound-specific pesticide management plans will depend on the plan's complexity. Current levels of state and federal resources, in terms of both funding and personnel, should be adequate for development of compound-specific plans. However, without redirection or enhancement, requirements for implementation and enforcement will exceed currently available resources. Resource needs for monitoring may be met somewhat by shifting part of the responsibility to the product registrant and by using sampling programs mandated by other State and federal statutes. These alone, however, will not be adequate to meet the total need for increased monitoring.

The ISGS maintains a geographic information system (GIS) which was used to prepare the aquifer sensitivity map discussed in the *Basis for Assessment and Planning* section of this document. State GIS systems are crucial resources that must be continually maintained and updated to allow the state to develop and equitably enforce compound-specific pesticide management plans on the basis of groundwater susceptibility.

Educational and technical activities such as those currently carried out by the SWCDs, NRCS and UIE will become more important when compound-specific management plans are needed. Outreach activities by registrants, commodity groups, and industry and user associations, such as the Illinois Fertilizer & Chemical Association, the Illinois Farm Bureau, Illinois Corn Growers Association, Illinois Turfgrass Foundation and many others will also be necessary to the success of the plan.

Another technical and educational resource is the Illinois Council on Best Management Practices (C-BMP). The C-BMP is a coalition of agribusinesses, agricultural organizations, and the University of Illinois Extension. The council promotes adoption of best management practices (BMPs) to protect and improve water quality in Illinois and serves as a clearinghouse on current research. The council provides information and support to local watershed groups and cooperates with other water-quality initiatives.

The IDA currently uses about 40 person-year-equivalents annually in meeting its responsibilities under the Illinois Pesticide Act, the FIFRA and other plant protection and quarantine programs. This staff performs office, field, laboratory, certification, licensing, permitting, investigation and enforcement functions. Additional staff and reassignments of current staff may be necessary to carry out the various functions which would be added if a compound-specific plan were required. The scope of these changes will depend on the amount of sampling, laboratory analysis and field work which would be associated with IDA's role in implementation and enforcement. Somewhat smaller, but nonetheless important, staff adjustments may be necessary in other agencies to ensure that education, public outreach and monitoring programs are effective.

The agrichemical industry in Illinois currently supports most of the pesticide regulatory and educational programs in the state through various registration, license and permit fees. The federal government, through various grant programs, also provides support. Thus, only a small portion of the existing regulatory program is supported directly by state general revenue funds. Enhancement of state general revenue funding, as well as increases in federal support and pesticide-related fee revenues, may be necessary to support future compound-specific pesticide management plans.

BASIS FOR ASSESSMENT AND PLANNING

The concept endorsed by the U.S. EPA in its requirement for compound-specific pesticide management plans suggests that the determination of a product's availability based on political boundaries, at least at the state level, is not appropriate. In an ideal world, these determinations would be made at the field or even subfield level. This level of differentiation would ensure that no one would be either over- or under-regulated and that the State's groundwater would be protected. Resource limitations, however, make this ideal world unachievable and, thus, compromise is required. The geographic unit used as the basis for assessment and planning must be large enough to be adequately described on a product's label or in a regulation, yet small enough to ensure accurate reflection of vulnerability. Regardless of the unit selected, some areas of the State may be either under- or over-protected. The key is to minimize this occurrence while maximizing the impact of the various resources brought to bear.

The overall basis for assessment and planning of the pesticide management plan is one of prevention through the use of voluntary best management practices. The primary objective is to minimize pesticide migration beyond the zone or area of intended use.

Illinois is fortunate that the ISGS has already conducted mapping of the state including predictions of aquifer sensitivity to contamination from pesticides (**Figure 1**). This mapping was produced specifically for use as a regional screening tool and should not be used for evaluations of specific fields. The state proposes, however, that this map can be effectively utilized as a tool to help identify areas within the state that are highly vulnerable to pesticide contamination.

Compound-specific management plans will require assessment monitoring to determine if the target pesticide is impacting groundwater resources. The IDA will maintain a central repository for the collection and evaluation of that monitoring data and a concerted effort will also be made to collect and use applicable monitoring data from other agencies. The scientific validity of all pesticide data will be evaluated to determine compliance with the IDA's quality assurance plan for quality assurance/ quality control procedures, confirmation mechanisms and laboratory methods. The IDA has created a computerized database for these pesticide data.

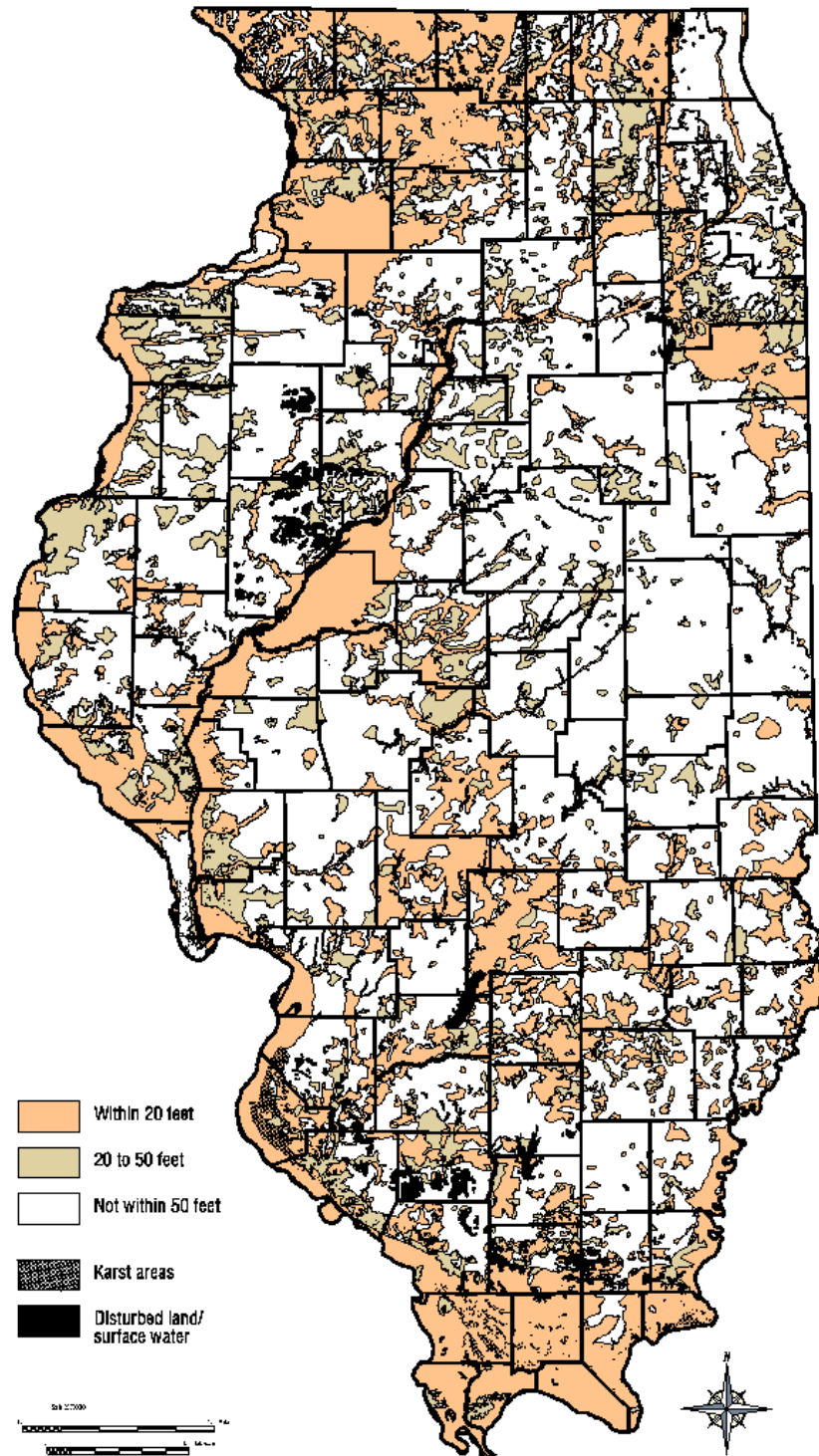


Figure 1. Depth to uppermost aquifer within 50 feet of land surface (Keefer, 1995).

The management plan targets assessment monitoring to areas mapped as having aquifer materials within 50 feet of land surface as shown in **Figure 1**. This focused effort on highly vulnerable areas is an important step in the efficient allocation of limited federal and state resources. In addition to these areas, parts of the state where large-diameter, dug or bored wells are common (**Figure 2**) may be of concern because these wells are very vulnerable to nearby sources of contamination. It is anticipated that use-restrictions related to specific, local, land-use or geologic features such as wellheads, sink holes, and other direct connections to groundwater will be applied in all areas of the State regardless of the aquifer sensitivity map. For example, in areas where shallow, large-diameter dug or bored wells are present, compound use might not be allowed within wellhead setback zones. Pesticide use might also be suspended or other restrictions imposed in regulated recharge areas, wellhead protection areas or setback zones in areas designated with high vulnerability.

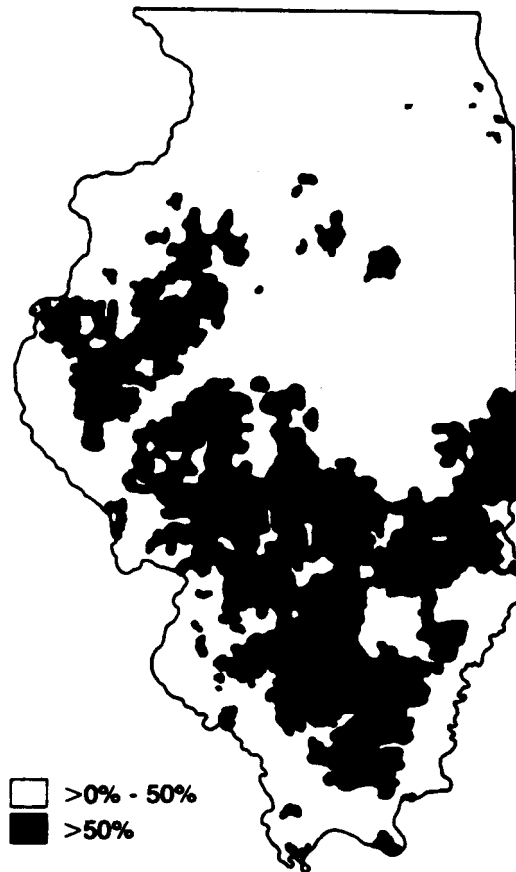


Figure 2. Areas of Illinois where more than 50 percent of the private wells are large-diameter dug or bored wells.

MONITORING

The Illinois Groundwater Protection Act (IGPA) mandates that various state agencies engage in long-term, statewide, groundwater quality monitoring. The monitoring network required by the IGPA consists of public water-supply wells sampled by IEPA, non-community wells sampled by IDPH, and a representative sampling of private wells and dedicated monitoring wells. A great deal of monitoring has been done in Illinois and monitoring efforts by state and federal agencies are ongoing.

Community Well Monitoring Network

In 1992, the Illinois EPA established the Ambient Network of Community Water Supply Wells (CWS Network) to represent the entire population of community wells and associated principal aquifers (Figure 3). The CWS Network consists of 356 fixed locations that were selected using a stratified random probability-based approach (95% confidence level, \pm 5% precision). Sampling of the network is conducted within 17, three-week sample periods in order to avoid temporal and spatial bias.

The CWS Network is designed to:

- provide an overview of the groundwater conditions in community water supply wells,
- provide an overview of groundwater conditions in the major aquifers in Illinois,
- establish a baselines of water quality within the major aquifers,
- identify trends in groundwater quality in the major aquifers, and
- evaluate the long-term effectiveness of the Groundwater Protection Act, the Environmental Protection Act and Illinois Pollution Control Board regulation program activities in protecting groundwater in Illinois.

An average of 350 wells has been maintained since the inception of this monitoring program. When a well in the CWS Network is taken out of service, or otherwise not readily able to be sampled, the Illinois EPA designates an alternative well with generally the same location, depth and aquifer properties. By doing this, the Illinois EPA has historical datasets for over 455 CWS wells that are currently, or have previously, been sampled in the CWS Network.

Since 1993, the Illinois EPA has operated a Pesticide Monitoring Sub-Network of the CWS Network. Initially, the Illinois EPA tested all wells in the network for triazines and alachlor using the immunoassay-screening method. Positive results were re-sampled and analyzed using gas chromatography and mass spectrometry. However, in the 1998 monitoring cycle the Illinois EPA discontinued the use of immunoassay and randomly selected 50 percent of the network wells to be analyzed for pesticides using standard laboratory methods. During the 2000 monitoring cycle, the remaining wells in the network were analyzed for pesticides. The rotation has been carried forth to the current network, and will be maintained in the future, pending available resources.

Typically pesticide concentrations are below quantifiable levels within CWS wells in the state. However, herbicide transformation products (TP) are being detected in groundwater. During October 2001-September 2002, the U.S. Geological Survey (USGS), in cooperation with the IEPA, collected groundwater samples from 117 wells randomly selected from the CWS Network to determine the spatial extent of herbicides and their transformation products in groundwater supplied to the public through municipal systems. Table 1 provides a summary of the findings. A complete description of the program and results of this program can be found in PDF format at: http://il.water.usgs.gov/pubs/wrir03_4226.pdf

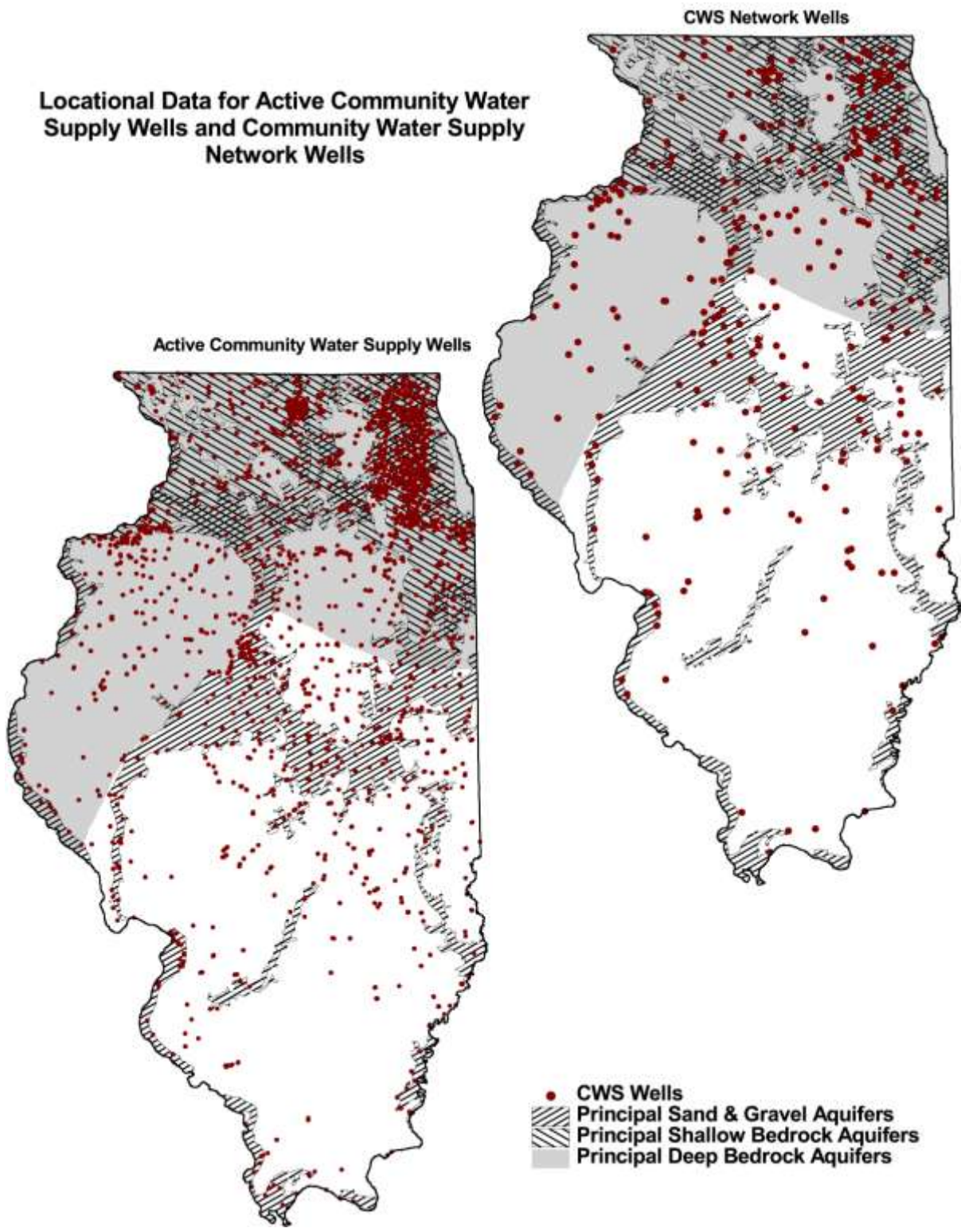


Figure 3. Locational data for active community water-supply wells and community water supply network wells.

Data specific to groundwater monitoring are verified and stored via a multi-step process that includes a transition from the Illinois EPA Laboratory Information Management System (LIMS) database to reside within the Safe Drinking Water Information System (SDWIS) database. The Illinois EPA also implemented a Rotating Monitoring Network within the CWS Network.

Table 1. Occurrence of herbicides and herbicide transformation products (TP) in CWS wells (Modified After USGS, Water Resources Investigations Report 03-4226)

Herbicide Compound	Detection Frequency percent	Median Detected concentration, (ug/L)	Maximum Detected concentration, (ug/L)	Herbicide application rate in Illinois (x 1,000 pounds)	
				1991	2001
	2001-02	2001-02	2001-02	1991	2001
Any parent herbicide	4.3	0.07	0.22	NA	NA
Any herbicide or TP	34.2	0.16	7.24	NA	NA
Acetochlor	0	NA	NA	0	8,059
Acetochlor ESA	9.4	0.16	4.18	NA	NA
Acetochlor OA	5.5	0.16	0.25	NA	NA
Alachlor	0	NA	NA	9,400	0
Alachlor ESA	28.2	0.12	2.15	NA	NA
Alachlor OA	6.0	0.09	0.41	NA	NA
Atrazine	3.4	0.06	0.22	10,615	14,143
Deethylatrazine	4.3	0.08	0.21	NA	NA
Deisopropylatrazine	0	NA	NA	NA	NA
Cyanazine	0	NA	NA	4,267	0
Cyanazine amide	0	NA	NA	NA	NA
Dimethenamid	0	NA	NA	0	2,270
Dimethenamid ESA	0	0.05	0.16	NA	NA
Dimethenamid OA	0	NA	NA	NA	NA
Glyphosate	0	NA	NA	381	7,157
Metolachlor	0.9	0.16	0.16	9,277	993
Metolachlor ESA	26.5	0.34	7.24	NA	NA
Metolachlor OA	14.5	0.18	2.95	NA	NA
Metribuzin	0	NA	NA	395	0
Propachlor	0	NA	NA	0	0
Propachlor ESA	1.0	0.10	0.10	NA	NA
Propachlor OA	0	NA	NA	NA	NA
Simazine	0	NA	NA	0	265

- NA not applicable
- Analyzed for but not detected: acetochlor sulfynil acetic acid (SAA), alachlor SAA; ametryn, flufenacet, flufenacet ethanesulfonic acid (ESA), flufenacet oxanilic acid (OA), glufosinate, amino methyl phosphonic acid (AMPA), pedimethalin, prometon, prometryn, propazine, and terbutryn; SAA, ESA, and OA are transformation products of the associated herbicides; AMPA is the transformation product of glyphosate. The reporting limit for most herbicide compounds was 0.05 ug/L; reporting limit for glyphosate, AMPA and glufosinate was 0.01 ug/L.
- Class I: Potable Resource Groundwater Standards for atrazine, alachlor, and simazine are 3, 2 and 4 ug/L, respectively.

Dedicated Statewide Monitoring Well Network

In 1995, the IDA contracted with the ISGS and the ISWS to design and construct a statewide monitoring well network for use with future pesticide management plans. The monitoring network is designed to provide statistically reliable estimates on the occurrence of selected pesticides in groundwater within shallow aquifers (depth to the top of aquifer material less than 50 feet below land surface) in areas of corn and soybean production. Occurrence is defined as the presence of a specific pesticide at a concentration above the minimum reporting level.

The network was designed to determine the regional impacts of pesticide leaching from non-point sources, not the impacts of site-specific, point sources. The network is not a research program, but a tool for the management of pesticides in Illinois. Consequently, the pesticides selected as analytes are those with high use in Illinois and/or previously detected in groundwater in Illinois or other Midwestern states. Also, reflecting the management tool approach is the decision to set minimum reporting levels at a maximum of 5 percent of the groundwater reference value, but not to expend limited laboratory resources on detecting pesticides at very low concentrations (Table 2). Both the monitoring network and the IDA Pesticide Laboratory operate in compliance with U.S. EPA-approved quality assurance project plans.

The network currently consists of 144 shallow groundwater-monitoring wells located throughout the State (Figure 4). Each monitoring well is located in public rights-of-way adjacent to pesticide use areas such as agricultural fields. Each well was installed in an area mapped as having aquifer materials within 50 feet of land surface. Well depths vary from 10 to 83 feet. Wells are constructed of 2-inch I.D. PVC well casing and a five foot interval of 2-inch I.D. PVC well screen.

Under the sampling plan, each well in the network is sampled once during a two-year period to provide data on the occurrence of the selected pesticides in shallow groundwater. The ISGS and ISWS conducted a one-time sampling of the network beginning in the fall 1998 and sampled the network from September 2000 through June 2001. The IDA assumed responsibility for all sampling in July 2001. The IDA will continue to sample the entire network of wells in two-year cycles.

Monitoring well network sampling results. Three rounds of sampling of the monitoring wells have been completed. Results are available at

<http://www.agr.state.il.us/Environment/Pesticide/pesticidemonitoring.html>

During these periods, analytical detection levels and minimum reporting levels have varied. In order to allow comparison between the sampling periods, the following data on the frequency of occurrence reflect the presence of a pesticide at or above the minimum reporting levels used in the most recent sampling round (2002-2004; see Table 2). The overall frequency of occurrence refers to the presence of any pesticide, or multiple pesticides, from a single groundwater sample. For example, the occurrence of two pesticides present in a single well sample at concentrations above the minimum reporting level is considered a single detection above the minimum reporting level.

From September 1998 through August 1999, samples were collected from 112 network wells and analyzed for the presence of 14 pesticides (Mehnert and others 2001). Results indicate an overall frequency of occurrence of 6.3 percent. Results of the second-round sampling of the network wells (148 samples collected between September 2000 and August 2002) indicate an overall frequency of occurrence of 3.4 percent. Atrazine was detected in three samples and two of those samples had concentrations (0.58 and 0.85 ug/L) above the action level of 0.3 ug/L. Cyanazine, metribuzin and metolachlor were each detected in one sample, but none of those samples had concentrations above levels of concern.

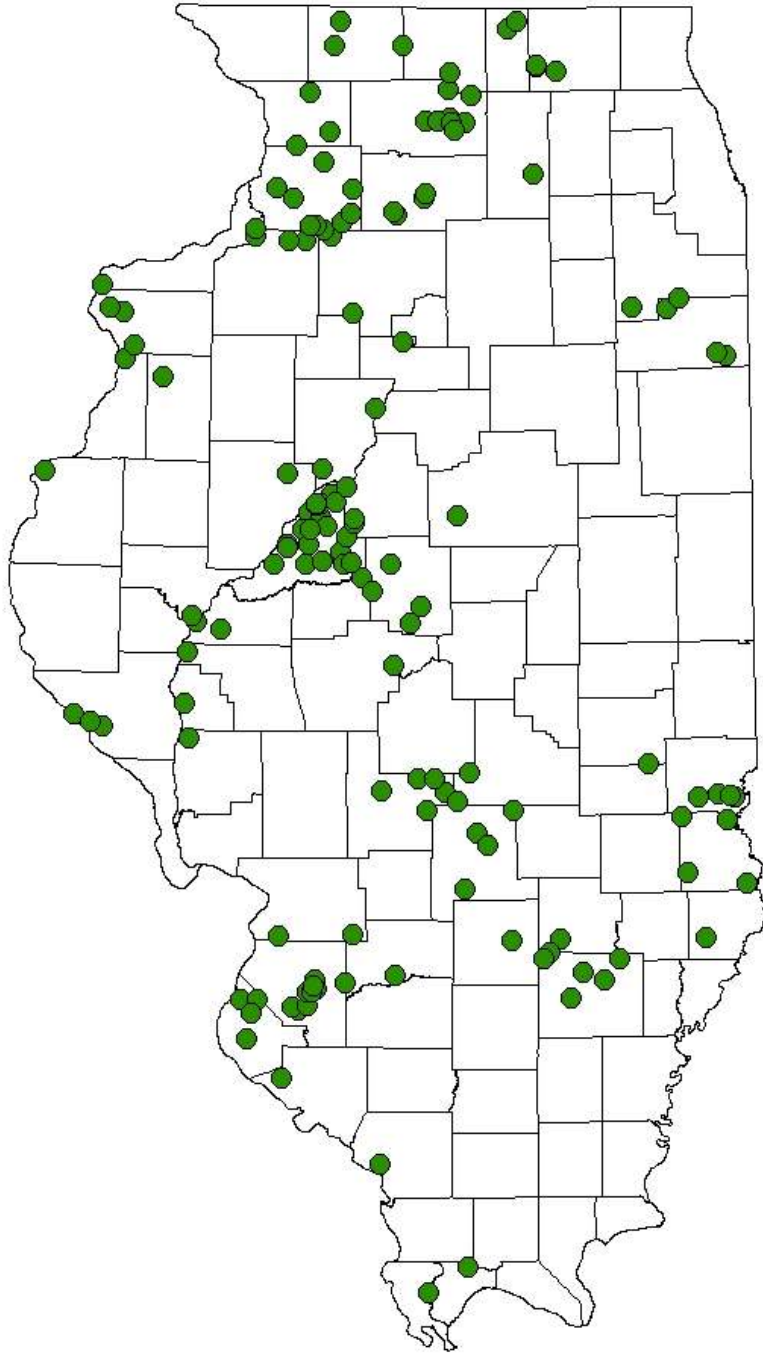


Figure 4. Monitoring well locations

Results of the most recent sampling period for which data have been analyzed (142 samples collected from 2002 through 2004) indicate that parent pesticides were detected in 3 of the 142 samples (2.1 percent). Atrazine was detected in two samples and metolachlor was detected in one sample. None of those samples had concentrations above levels of concern. This sampling period was the first to include the atrazine degradates as analytes. One or more of the atrazine degradation products, (desethylatrazine (DEA), desisopropylatrazine (DIA) and desethyldeisopropyl atrazine (DEDIA), were present above the minimum reporting levels in 18.3 percent of the samples. In the current round of sampling (2004 through 2006), the Department has added metabolites of the chloroacetanilide herbicides to the list of analytes.

This plan requires the IDA to conduct an investigation of the cause if pesticides are detected at concentrations greater than 10 percent of the groundwater reference value. If selected pesticides for which preventive notification is required under the Illinois Groundwater Protection Act are detected in groundwater, e.g. atrazine, the IDA is required to resample the well within 30 days of receipt of laboratory results. Since U.S. EPA concurrence with the Pesticide Management Plan in February 2001, only one monitoring well sample contained pesticides at concentrations greater than 10 percent of the groundwater reference value (atrazine parent compound). The IDA immediately re-sampled the well and found the atrazine concentration had returned to a level less than 10 percent of the groundwater reference value. The IDA also notified the registrant and conferred with the Illinois Department of Public Health, which agreed that no further action was necessary.

Table 2. Minimum reporting levels, action levels and groundwater reference values for analytes.

Analyte	Minimum Reporting Level (ug/L)	Action Level (ug/L)	Reference Value (ug/L) ¹
acetochlor	0.15	0.2	2
acetochlor ESA	0.30	--	--
acetochlor OXA	0.30	--	--
alachlor	0.15	0.2	2
alachlor ESA	0.30	--	--
alachlor OXA	0.30	--	--
atrazine	0.15	0.3	3
desethylatrazine (DEA)	0.15	--	--
desisopropylatrazine (DIA)	0.15	--	--
deethyldeisopropylatrazine (DEDIA)	0.15	--	--
metolachlor	1.0	70	700
metolachlor ESA	0.30	--	--
metolachlor OXA	0.30	--	--
metribuzin	1.0	20	200
prometon	1.0	10	100
simazine	0.4	0.4	4
total chlorotriazines	--	3.75	37.5

Other Monitoring Activities

Monitoring by Pesticide Registrants If the U.S. EPA, as part of its ongoing product-registration activities, requires a registrant to conduct certain types of groundwater and/or surface water monitoring studies, the IDA will review results and confer with the U.S. EPA about any detections and possible response actions. The IDA will implement appropriate responses pursuant to the applicable management plan.

Private wells Although private water-supply wells are not identified as the focal point of monitoring in this management plan, both individual well owners and state and federal agencies should continue to sample these wells for pesticides. Shallow, large-diameter, dug or bored wells, which serve many rural residents, draw water from strata not considered aquifers in the available aquifer sensitivity maps. These wells should be inspected and their construction upgraded as needed to ensure that the well construction is appropriate to guard against contamination. In addition, well users should consider regular testing to ensure that the water remains safe for use.

Future Monitoring

If a compound-specific pesticide management plan is required, the monitoring program will primarily consist of the IDA statewide monitoring well network and the pesticide subnetwork of the IEPA community well (CWS) network. These two networks should provide the state with an initial, appropriate and accurate view of the pesticide occurrence in groundwater. If pesticides are present at concentrations greater than 10 percent of the groundwater reference value (or the detection limit if 10 percent of the reference value is less than the detection limit), additional well installations or other sampling programs may be necessary to determine the extent and severity of contamination.

The various agencies in the ICCG will also continue to pursue the resources needed to allow completion of the original IGPA mandates. Without substantial, additional funding, the establishment of a permanent, rural, private water-supply well network is in doubt.

PREVENTIVE MEASURES

The overall strategy of both generic and compound-specific pesticide management plans is one of prevention. Plans should promote and highlight ways to prevent groundwater contamination from the use of registered pesticides in accordance with U.S. EPA-approved labeling. This section is organized into two major parts: (1) non-regulatory preventive measures and (2) regulatory preventive measures. This plan provides wide latitude for and real expectations from efforts that emphasize self regulation and good stewardship practice by producers, retailers, and other users of pesticides. However, it will also include regulatory measures that will be implemented should non-regulatory measures prove inadequate.

NON-REGULATORY PREVENTIVE MEASURES

Non-regulatory preventive measures will be emphasized, including voluntary participation in practices and programs aimed at the prevention of groundwater contamination. Participation is very dependent on the delivery systems available through traditional information sources such as state pesticide applicator/operator certification and licensing programs, local offices of the University of Illinois Extension, USDA-NRCS, SWCDs, Farm Bureau, local retail chemical dealers and crop consultants. For example, Illinois has more than 1,500 Certified Crop Advisers who receive ongoing training in pesticide management and protection of soil and water resources. Efforts in these areas continue to expand.

Examples of non-regulatory preventive measures include:

Adoption of various forms of integrated pest management (IPM) and best management practices (BMPs) for the protection of groundwater Definitions of IPM and BMPs can vary widely. The following list of practices is taken from *50 Ways Farmers Can Protect Their Groundwater*, University of Illinois College of Agriculture, Cooperative Extension Service, C1324, 1993 and lists items growers should consider when making decisions regarding pest control and potential pesticide use. This publication, which is available at <http://www.thisland.uiuc.edu/index.html>, offers a thorough, yet practical checklist of voluntary practices designed to reduce the risk of groundwater contamination without cutting into yields or profitability, including ways to

- reduce contamination risks from fertilizers, herbicides, and insecticides
- manage pests with an integrated pest management program
- improve chemical application
- evaluate a site with groundwater protection in mind
- test and treat water

The list of recommended practices includes many of the practices supported and promoted by various groups throughout the state. Their use should not be restricted to agricultural pest control. Many of these practices also should be considered when making decisions about pesticide uses for lawn care, structural, and rights-of-way purposes.

- scout fields
- know the economic thresholds for insects and weeds
- consider insect-resistant crop varieties
- spot treat insect and weed infestations when possible
- know how tillage affects insects
- know how crop rotation affects insects
- adjust planting and harvesting dates to control insects
- conserve beneficial insects
- consider using biological insecticides
- use herbicides that require lower rates
- manage crops to compete aggressively with weeds
- do not increase herbicide rates with conservation tillage
- band herbicides and cultivate
- control weeds with cover crops
- pesticide selection considerations
 - soil organic matter content
 - soil leaching potential
 - pesticide leaching potential
 - soil-pesticide interaction rating
- pesticide application considerations
 - select proper nozzle tips
 - calibrate sprayer
 - consider direct injection
- rinse chemical containers thoroughly and properly dispose
- dispose of excess chemicals properly
- irrigation water management

The University of Illinois Extension (UIE) has developed several websites that address pesticides and protection of water quality.

EZregs (<http://web.extension.uiuc.edu/ezregs/>) identifies environmental regulations that pertain to specific agricultural and horticultural operations and practices in Illinois. EZregs will provide more detailed information on applications of those regulations for livestock and crop farms, turfgrass and lawn care operations. It contains a variety of regulations related to environmental protection, including safe use of agricultural chemicals. EZregs is for livestock and crop producers, green industry professionals, rural neighbors to farm operations, policy makers, land use planners, lenders, builders, consultants, homeowners and University Extension educators. Pesticide-related regulations in EZregs include: federal recordkeeping requirements (7CFR110), Federal Worker Protection Standard (40CFR170), the Illinois Pesticide Act Rules (Part 250) and the Illinois Pesticide Act (415 ILCS 60).

Pesticide safety education program (<http://www.pesticidesafety.uiuc.edu/>) provides all users of pesticides in Illinois with educational information on the effective, economic, and environmentally sound use of pesticides. Its mission is twofold: to provide training through Pesticide Safety Education Program (PSEP) for private and commercial applicators in Illinois and to provide pesticide education to a diverse audience in "other related" program areas such as worker protection, pesticide recordkeeping, water quality, endangered species, IPM, food safety, etc.

Each year the University of Illinois, in cooperation with state agencies and the agricultural chemical industry, sponsors a Crop Protection Technology Conference to provide current information on pesticide management and water quality issues. Proceedings of the annual Crop Protection Technology Conference are available at <http://www.ipm.uiuc.edu/conferences/ptc/proceedings.pdf>.

The **Pest Management Bulletin** <http://www.ipm.uiuc.edu/bulletin/index.php> provides timely information about pests and crops throughout Illinois. The objective is to keep users informed about pest problems and crop development issues and to provide information regarding the most effective, economic, and environmentally sound pest management strategies. The Bulletin is issued weekly throughout the crop-growing season (20 issues from early April to mid-August) and five additional times in the off-season.

Participation in the state pesticide-container recycling program Pesticide applicators are urged to participate in ongoing pesticide-container recycling programs which collect, granulate and recycle rinsed, pesticide containers. Since 1990, over 2 million containers have been collected and recycled.

Participation in state-sponsored pesticide clean-sweep programs In cooperation with the U.S. EPA, the IDA along with the IDPH conducted 15 pesticide collection programs since 1999. Collections have focused on agricultural and structural pesticides which are no longer registered for use in the state or which had been canceled, suspended or banned for use by the U.S. EPA. A total of 222,200 pounds of pesticides were collected. By the summer of 2008, each county in the state will have had the opportunity to participate in a pesticide collection. The IDA plans to continue collections as long as funding is available. Materials being held for future disposal should be retained in secure containers and protected from precipitation.

Participation in the State-sponsored household hazardous waste collections The IEPA sponsors household hazardous waste collections in various communities across the state each year. Homeowners with unused pesticide products are urged to bring these products to the collection sites for proper disposal. If a collection is not scheduled in an area, products should be checked for potential leakage and secured in appropriate containers until proper disposal or until a collection is scheduled in the area.

Education of proper well construction and abandonment The Illinois Water Well Sealing Coalition, which includes various industry- and health-related associations as well as government agencies,

promotes local demonstrations and campaigns for proper well sealing. Educational activities like these will assist in the promotion of proper well abandonment throughout the state. The IDA also provides cost-share assistance for proper well de-commissioning through local SWCDs.

REGULATORY PREVENTIVE MEASURES

Currently, regulatory preventive measures target potential point sources or direct routes of contamination. This plan and the ensuing compound-specific pesticide management plans will further ensure that point-source contamination is minimized or prevented. It is also the means by which nonpoint-source contamination will be prevented or minimized.

While the IDA believes that the non-regulatory measures are most effective and will be successful in most cases, it is necessary for a regulatory framework to be in place that includes a clear sequence of specific events and actions that will be implemented in those situations where non-regulatory practices are inadequate. The following are specific regulatory prevention measures currently in existence:

Focused applicator training On the state level, the Illinois Pesticide Act requires the training and licensing of persons, including farmers, who wish to apply restricted-use pesticides. Also, persons applying pesticides on a commercial basis must be certified and licensed by the IDA whether the pesticide is classified as general or restricted use. A significant focus of the training programs offered to potential pesticide users will be groundwater protection.

Compliance with specific water-quality protection provisions of existing product labels (nonpoint source reduction) Label changes to commonly used products such as atrazine restrict both the target area of application and the application rates. Additional restrictions and prohibition of product use in certain highly sensitive areas may be adopted as compound-specific plans are developed.

Compliance with the Agrichemical Facility Containment Program (8 IAC 255) (point source reduction) The IDA administers this program to ensure the proper storage and handling of pesticides and fertilizers at the approximately 1,300 retail and large-private, storage-and-handling facilities throughout the state. The regulation requires the secondary containment of pesticide and fertilizer bulk-storage containers as well as operational area containment structures, such as loading/unloading pads, for the transfer of product from storage to transport/application equipment.

Compliance with the Lawncare Wash Water Containment Program (8 IAC 256) (point source reduction) The IDA administers this program to ensure the proper washing of lawncare application equipment. No washing or rinsing of pesticide residues from such equipment can occur at a facility unless it is conducted within a wash-water containment area.

Compliance with the Cooperative Groundwater Protection Program (8 IAC 257) (point source reduction) Agrichemical facilities, lawncare facilities, central distribution facilities and other affected facilities which are located within IGPA-established wellhead setback zone or regulated recharge areas must adhere to certain structural enhancements and additional operational requirements beyond those required within 8 IAC 255 and 8 IAC 256. These facilities must also conduct groundwater monitoring.

Compliance with the Structural Pest Control Facility Groundwater Protection Requirements (77 IAC 830) (point source reduction) Structural pest control businesses which store pesticides for

commercial application purposes within an IGPA-established wellhead setback zone or regulated recharge areas must, after filing a certification of intent with the IDPH, adhere to the provisions of Section 830.1100 of the Structural Pest Control Code. Regulations limit storage to no more than 300 gallons of liquids and further require: secondary containment of liquids, secondary containment materials and construction, management of pesticide containers, monthly inspections of containment and containers, and site closure conditions.

Compliance with the Groundwater Technology Control Regulations (35 IAC 615/616) (point source reduction) Certain existing and new activities, including pesticide storage and handling units, are regulated entities within setback zones and regulated recharge areas and must meet certain requirements for monitoring, reporting, technology controls and closure in this program administered by the IEPA.

Compliance with the Groundwater Quality Standards (35 IAC 620) (point and nonpoint source reduction) All individuals and entities must comply with the groundwater standards which apply to groundwater as it comes from the ground. These regulations establish numeric standards for 26 inorganic constituents including nitrate, and 47 organic constituents including 19 pesticides and pesticide metabolites. In addition to the numeric standards, narrative standards define four classifications of groundwater, establish groundwater nondegradation procedures, and create a mechanism for the adoption of additional standards from health advisories.

Adoption of principles developed or demonstrated under the Illinois Nonpoint Source Management Program (Section 319 of the federal Clean Water Act) The goals of this program are to develop and demonstrate innovative measures to control nonpoint source pollution, improve Illinois water resources, and promote the public's knowledge and awareness of nonpoint source pollution. The State receives funding from the U.S. EPA which is made available to groups at the State and local level to conduct projects which demonstrate cost-effective solutions to nonpoint source problems.

Proper well construction and abandonment (point source reduction) The IDPH administers the Illinois Water Well Construction Code which includes standards for the construction of new water wells in the state. Existing wells should be upgraded to these same standards, when possible, to minimize the potential for groundwater contamination. Abandoned wells must be sealed in accordance with Section 920.120 of the Illinois Water Well Construction Code.

RESPONSE ACTIONS

Reports of pesticides in groundwater may originate from many sources including government agencies, water suppliers, registrants, researchers and others (See *Monitoring*). When a detection is reported for a pesticide for which preventive notification is required pursuant to 35 IAC 620.305, the IDA will resample the well as required. When these pesticides or other non-listed pesticides are reported at concentrations greater than 10 percent of the groundwater reference value (or the detection limit if 10 percent of the reference value is less than the detection limit), the IDA will conduct an evaluation to determine the appropriate course of action. At the very least, the presence of a pesticide in groundwater in concentrations greater than 10 percent of the reference value would initiate an investigation of the cause as outlined in the *Initial Investigation/Initial Response* section.

The following factors will be considered in selecting an appropriate response to the presence of a pesticide in groundwater:

- pesticide concentration and trends in concentrations or extent of contamination
- causes (labeled versus non-labeled use)

- characteristics of the impacted area
- U.S. EPA product registration status, and
- ~ existing regulatory controls.

The IDA will use its established monitoring well network and the IEPA Pesticide Monitoring Subnetwork to determine whether there are significant, spatial or temporal trends in pesticide concentrations. The evaluation of trends and changes in management practices will help guide the decision-making process. It is important to note that not all detections will warrant a response.

INITIAL INVESTIGATION/INITIAL RESPONSE

The response by IDA to reports of pesticides in groundwater at concentrations greater than 20 percent of the groundwater reference value will generally include a progressive series of steps as shown in Figure 5. The components of the response plan are:

Evaluate sample results Due to the difficulties in sampling and analysis for pesticides in groundwater, reported detections from a sampling program which does not have a quality assurance plan consistent with the IDA's plan will require validation before further action is initiated. (As noted above, for those pesticides for which preventive notification is required pursuant to 35 IAC 620.305, the IDA will resample the well to confirm the presence of the pesticide.) At a minimum, sample collection and preservation methods, analytical methods and quality assurance/quality control procedures must be documented. If pesticides are reported in groundwater as a result of a groundwater sampling program which can not document compliance with minimum QA/QC standards, the IDA will evaluate the need to resample wells to confirm the presence of pesticides. If the water source in which a pesticide is reported is a potable water supply well, other than a community public water supply well, IDA will notify IDPH within seven days. The IDPH will then assist the well owner/user in resampling of the well.

Well-User Notification In all cases where pesticides are detected in private water-supply wells, the well owner or user will be notified. If sampling of monitoring wells indicates the presence of a pesticide at concentrations greater than 10 percent of the groundwater reference value, but below the applicable reference value, the IDA will consult with the IDPH to determine if well-user notification is warranted. If pesticide concentrations in samples from monitoring wells exceed the groundwater reference value, the IDA will consult with the ICP to determine whether residents of the affected area should be notified. In determining the need for notifying area residents as a result of sampling of monitoring wells, the Department will consider pesticide concentrations and any trends in concentrations or the number of wells with the pesticide present.

The notification of well owners regarding detections in various types of water supply wells will be the responsibility of the appropriate agency or regulated entity (if a public water supply). Other agencies which conduct groundwater monitoring programs will work with the IDPH and the IEPA to ensure that well owners and users are promptly informed of health concerns regarding the continued use of impacted groundwater.

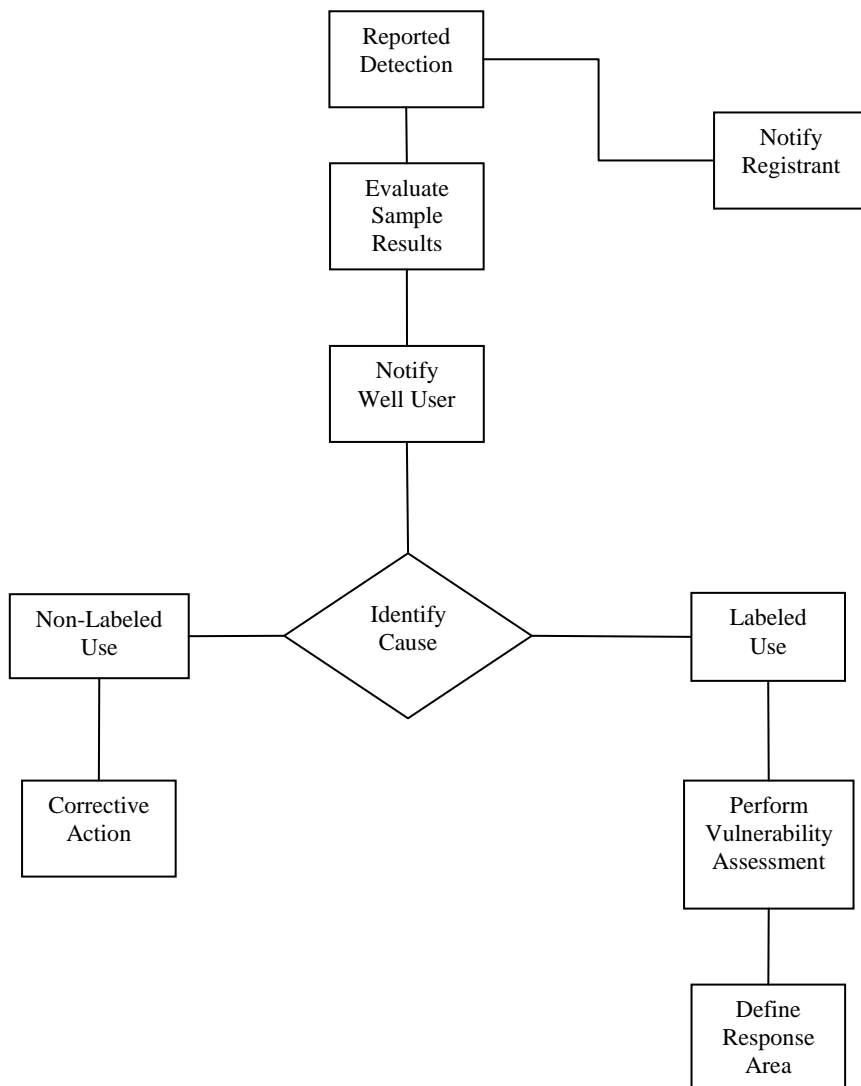


Figure 5. Flow chart of potential steps in IDA response to reports of pesticides in groundwater at concentrations above the response level.

Notify pesticide registrant Notification of the pesticide registrant of a detection in groundwater is important because the registrant may have obligations to the U.S. EPA to report such detections. In addition, registrants may offer both technical and financial assistance to address well contamination, investigate causes, develop BMPs or additional use restrictions, and work with producers to reduce chemical transport.

Identify cause The IDA will, to the extent practical, evaluate the cause of contamination in an effort to determine whether the presence of a pesticide in groundwater is the result of labeled uses or a non-labeled use (a spill or accident, a point source or other use in violation of the product label). Identification of faulty well construction or state of repair and previous uses of the well as possible contributing factors to pesticide contamination also will influence the selection of appropriate response steps. The investigation

into the factors related to the presence of a pesticide in groundwater may include additional sampling of any affected wells and other water-supply or monitoring wells in the immediate area.

Take corrective action If the pesticide in groundwater is due to a spill or other non-labeled use, the IDA will take corrective action to ensure cessation of the non-labeled use and any necessary remediation.

Perform vulnerability assessment and define response areas In cases of contamination as a result of a labeled use, this step will include a variety of activities specifically targeted at evaluation of the site conditions which may contribute to pesticide movement to groundwater and wells. The vulnerability assessment will focus on soil and hydrogeologic conditions, well depth and construction, cropping patterns, and compound use. The results of the evaluation will be used to identify the response area which will become the focus for actions to prevent further degradation of groundwater quality. For example, if a pesticide were detected in concentrations above 50 percent of the groundwater reference value in monitoring wells in areas of the state where irrigated corn was grown on sandy soils with low organic carbon content and a sand and gravel aquifer at a depth of 8 feet, a user education program and expanded groundwater monitoring would be implemented in all areas of the state where irrigated corn was grown on sandy soils with low organic carbon content and a sand and gravel aquifer at shallow depths and in other areas with greater vulnerability. These management measures would not be taken in other areas of the state.

TRIGGER-LEVEL RESPONSE ACTIONS

Additional response actions will be initiated if (1) the concentration of the pesticide is greater than the response trigger level (50% of the groundwater reference value) or if a statistical analysis indicates that the trend in concentrations would reasonably be expected to exceed the reference value and (2) the presence of the pesticide in groundwater is determined to have resulted from a labeled use of the pesticide.

Throughout the trigger-level response process, the IDA will consult with the pesticide registrant and the ICP. Input from these groups will be particularly important at the key decision points shown in Figure 6.

An expanded sampling program will continue throughout the trigger-level-response activities. If the expanded sampling program demonstrates that pesticide concentrations have decreased to below the response trigger level, groundwater sampling will be reduced to the long-term monitoring network.

Educate users The initial step and a major component of this generic pesticide management plan and any subsequent compound-specific management plan will be the continued education of all potential pesticide users. The Illinois Pesticide Act requires that all persons applying restricted use products be licensed by the IDA. Thus, the opportunity exists during the testing and licensing program to ensure that persons using the subject compound will receive appropriate training regarding proper uses, generic BMPs, voluntary management practices, and possible use restrictions. Applicator education and voluntary BMPs also may be developed and implemented as an added prevention measure when concentrations are below the response trigger level.

To ensure that appropriate information reaches the product user and that response actions are timely and appropriate, the IDA will rely on the existing information-dissemination entities at the local level: agrichemical dealers, farm organizations, Soil and Water Conservation Districts, USDA-NRCS, USDA-FSA, Extension and others.

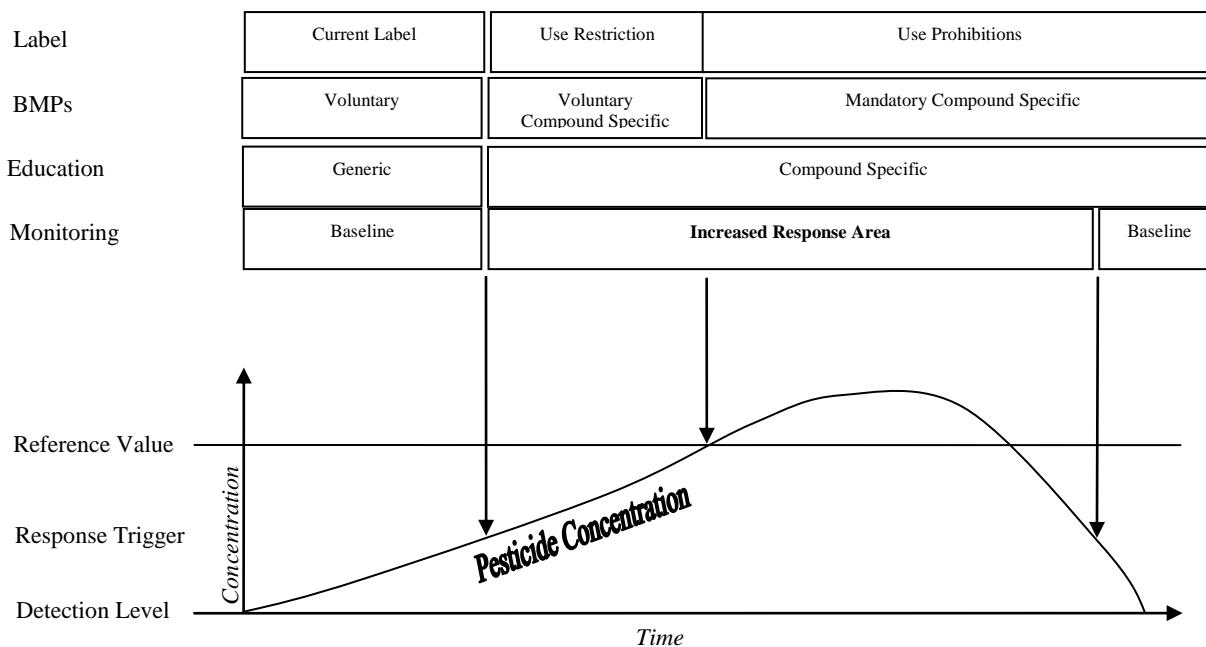


Figure 6. Timeline of key decision points in trigger-level response actions by IDA

Expand Monitoring The decision to expand monitoring will depend on the results of the investigation to determine the cause of the presence of a pesticide in groundwater. Point-source contamination of a poorly constructed well may not require expanded monitoring in adjacent areas. On the other hand, contamination of properly constructed monitoring wells as a result of a labeled use would likely result in increased sampling of the impacted wells. In addition, other wells in the immediate area may be sampled to evaluate the extent of contamination.

Encourage adoption of voluntary best management practices If a voluntary best management plan is selected, the results of user surveys to measure adoption of best management practices and groundwater monitoring will be used to measure the success of the response. If trend analysis indicates increasing pesticide concentrations or areal extent of contamination within the response area, the IDA, in consultation with the registrant and the ICP, will determine whether to revise the list of voluntary management practices or to require use of management practices to reduce pesticide contamination in the response area..

Impose use restrictions If the extent or magnitude of the contamination continues to increase in the response area, the IDA would identify additional use restrictions as part of a mandatory management plan. Such restrictions might include setback distances from wells, reduced application rates or prohibiting use on certain soils within the response area.

Prohibit use If pesticide concentrations continue to exceed the groundwater reference value in spite of previously imposed use restrictions under a mandatory management plan, the IDA, in consultation with the registrant and the ICP, would evaluate the need to prohibit use within the response area. It is important to note that voluntary and mandatory management practices, implemented as a response to pesticides in groundwater, will be made to a point considered technically and economically feasible. The IDA will also weigh the risks versus the benefits of any proposed management practices to ensure that the alternatives do not pose an undue risk or unnecessary burden on the public, the environment or the regulated community.

Exceedence of a groundwater reference value The inclusion of educational programs and both preventive measures and response actions in this pesticide management plan is intended to preclude the exceedence of a groundwater reference value by initiating control measures regarding pesticide use as soon as significant adverse impacts are detected. If these actions are not successful and a groundwater reference value is exceeded, mandatory changes in management practice may be required. The extent of these changes will depend on the extent of contamination, any trends in concentration, and an evaluation of the effectiveness of any existing best management practices. These changes in management practices would also be recommended for use within low sensitivity areas but compliance may continue to be voluntary in those areas. Prohibitions of product use in specific geographic areas or cancellation of product use in the state will be considered only after full implementation of all the steps described above.

ENFORCEMENT MECHANISMS

The coordination of enforcement activities among the responsible agencies will be crucial to the success of any pesticide management plan. The existing committee structures of the Interagency Committee on Pesticides (ICP) and the Interagency Coordinating Committee on Groundwater (ICCG) should provide an avenue to assist IDA in ensuring this essential cooperation and coordination. At the field level, communication between staffs will be encouraged to ensure the proper levels of cooperation and coordination are maintained. The various authorities for each involved agency are discussed in the *Legal Authority* section and in *Appendix A*.

Illinois Department of Agriculture

The IDA, under the Illinois Pesticide Act and a cooperative agreement with the U.S. EPA regarding the FIFRA, is the state lead agency for the regulation of pesticide use. The Department currently has a staff engaged in the investigation of misuse complaints and other pesticide-use related activities. IDA personnel also conduct planned use-inspections which could be utilized to ensure compliance with possible use-restrictions associated with a compound-specific management plan. Compliance with pesticide-use record-keeping requirements, when the compound's federal label requires a state compound-specific management plan, could provide a very effective enforcement mechanism. The Illinois Pesticide Act's current point system, penalty schedule, and the state's administrative hearing procedure provide an adequate mechanism and deterrent to non-compliance with any use-restrictions associated with a pesticide management plan. Under section 24.1 of the Illinois Pesticide Act, penalties for the application of a product in a prohibited area would be assessed based on the total violation points as determined by the use and violation criteria defined therein. Criteria specifically associated with the enforcement of a pesticide management plan are:

	<u>Point value</u>	
Signal Word on the Label -----	1	Caution
	2	Warning
	4	Danger/poison
Degree of Responsibility -----	2	Accidental
	4	Negligence
	10	Knowingly

Violator's History ----- (previous 3 years)	2	Advisory letter
	3	Warning letter
	5	Previous criminal conviction of the Pesticide Act or administrative penalty resulting in a monetary penalty
	7	Certification, license or registration currently suspended or revoked
Violation Type (application oriented) -----	3	Use contrary to label directions, precautionary statement, sites, rates, restricted use requirements
	3	Use contrary to label directions resulting in exposure to other persons or the environment
	3	Water contamination
	6	Falsification of records
	6	Failure to secure a permit or violation of permit or special order

Violation points from each of the use and violation criteria are assigned and totaled. Administrative penalties are, by statute, based on the following table:

<u>Total violation points</u>	<u>Penalty</u>
6 or less	advisory letter
7 -- 13	warning letter
14 -- 16	\$ 750
17-- 19	\$ 1,000
20 -- 21	\$ 2,500
22 -- 25	\$ 5,000
26 -- 29	\$ 7,500
30 and above	\$10,000

An initial violation associated with the application of a compound in a prohibited area as set forth in a compound-specific pesticide management plan could result in the Department assessing violation points which, if totaling less than 14, would result in the issuance of a written warning or advisory letter. Point totals of 14 or greater would result in the scheduling of an administrative hearing and the possible assessment of a monetary penalty. The IDA Director is also empowered to "suspend, revoke, or modify any license, permit, special order, registration, or certification issued under this Act. This action may be taken in addition to or in lieu of monetary penalties assessed . . .". Thus, there is a wide range of enforcement powers available to the Department which should provide the appropriate authority for the encouragement of compliance with a compound-specific management plan.

Illinois Environmental Protection Agency

The IEPA, under the Illinois Environmental Protection Act, is the state lead agency for the SDWA, the RCRA and the CERCLA. The Agency's current staff and enforcement mechanism should also provide an adequate deterrent to non-compliance as these laws apply. The IEPA handles SWDA, IGPA and State Superfund enforcement similarly as follows:

Violation Classification Each alleged violation is classified based on seriousness, nature and harm to

determine whether to proceed under the process described in Section 31 of the Environmental Protection Act (EPA), issue a less formal "non-compliance advisory letter", or refer to the matter to the Illinois Attorney General or State's Attorney immediately through Section 43 of the EPA.

Section 31(a)(1) Violation Notice The IEPA has 180 days to issue a violation notice after it discovers a violation. Discovery of violation means observation of a violation or evidence of a violation from reviewing documents, not receipt of a complaint. A violation notice must contain: (1) a detailed explanation of the alleged violations, (2) an explanation of actions needed to resolve violations and time frames for implementation of actions, (3) and explanation of violations the IEPA believes cannot be resolved without enforcement and why, and (4) the option for a meeting.

Section 31(a)(2) Violation Notice Response A response is required within 45 days of receipt of a violation notice. The response must contain: (1) information in rebuttal, explanation or justification of the alleged violation, (2) a proposed compliance commitment agreement (CCA), and (3) a request for a meeting, if desired. The meeting must be held within 60 days of violation notice receipt unless extended by IEPA. If a meeting is requested, another response is required within 21 days of the meeting containing the above referenced elements.

If there is no response to a violation notice, Section 31 authorizes the IEPA to proceed to Section 31(b) and issue a notice of intent to pursue legal action (NITP). IEPA has 30 days from the violation-notice response or from the post-meeting response (whichever is later and unless extended) to accept, reject or propose modifications to the violation notice response. IEPA may reject the response/compliance commitment agreement (CCA) if it desires to proceed with enforcement regardless of the merits of the response/CCA. IEPA's failure to act within 30 days (or extended time frame) shall be deemed an acceptance of the response/CCA. If the IEPA accepts the entire CCA and the respondent complies with the CCA, the IEPA shall not refer the matter for enforcement. If a respondent fails to comply with a CCA, the IEPA may issue a NITP.

Section 31(b) Notice of Intent to Pursue Legal Action Anytime after failure to respond to a violation notice or failure to comply with an IEPA-approved CCA, the IEPA may issue a NITP which must contain an explanation of outstanding violations and the option for a meeting. Any meeting must be held within 30 days of receipt of the notice of intent to pursue legal action unless an extension is agreed to by the IEPA.

Section 31(a)(11) Waiver Any respondent may waive the requirements of Section 31 in writing, at any time.

Applicability The Section 31 Pre-Enforcement Process is not applicable to the following: the administrative notices under 415 ILCS 4(q) and 415 ILCS 58.9 or 55.3(d); enforcement matters initiated by the Attorney General or State's Attorney; releases to the environment that present an immediate threat to human health or the environment; administrative citation actions; and criminal enforcement.

PUBLIC AWARENESS

Public participation in the entire management plan process will be of paramount importance if the plan is to be effective. There are two levels of participation which will ensure all interested parties are informed and involved in the process.

GENERIC PLAN DEVELOPMENT

Public involvement in the development of the generic pesticide management plan began with a series of four regional meetings held throughout the state during the spring of 1994. The 1994 Illinois Groundwater Protection Act Workshops provided a forum to present the draft generic plan provisions and to solicit public comments. The initial draft of the generic plan was released for public comment during the early summer of 1994. In 2000, the final generic management plan for pesticides in groundwater was released to the general public for comment. Because these 2006 updates to the plan consist only of technical corrections, it was determined that additional public comment period is not necessary.

COMPOUND-SPECIFIC PLAN DEVELOPMENT

Once the state receives notification from U.S. EPA regarding the legal requirements for a compound-specific pesticide management plan for continuing use of a compound, a determination must be made whether the state should develop a pesticide-specific management plan or simply allow the product's use to discontinue. The Director of the IDA, under the Illinois Pesticide Act, may hold an administrative hearing to solicit comments regarding development of a plan or the possible cancellation of a product's registration. Public comments would assist the Director in determining whether the development of a compound-specific management plan was warranted. If necessary, a compound-specific management plan would then be developed by the IDA in consultation with the ICP, ICCG, the pesticide advisory council and others.

The Illinois Administrative Procedure Act (5 ILCS 100/1 et seq.) provides the mechanism through which the rules enforced by the IDA are proposed and adopted. The Illinois Administrative Procedure Act allows for formal notice of comment period(s) and public hearing(s) and would, therefore, be used to adopt any formal rule necessary for the implementation and enforcement of a compound-specific management plan enforced by IDA. Rules promulgated under the Illinois Environmental Protection Act, such as groundwater quality standards, are subject to additional hearing and notice procedures involving the Illinois Pollution Control Board.

Persons wishing to appeal a decision of the IDA in its interpretation of a rule or a policy of IDA in its enforcement of a rule can file a petition with the Department's Office of General Counsel (8 IAC, Part I, Administrative Rules). The code provides a mechanism for review of the various issues and final issuance of a Department order.

The notification of the public regarding detections of pesticides in groundwater is also an important awareness issue. When pesticide concentrations greater than a standard are confirmed in a community water supply as prescribed by the SDWA, affected individuals will be notified through the pre-existing process. Also, notification will be given to the agricultural industry, registrants, farmers, elected officials, and others in the area. At this time, there would also be an outreach program to explain the MCL and health standard so that everyone has a good understanding of the issues. If pesticides are detected in private water-supply wells, results will be provided to the well owner/user as soon as possible.

Further details regarding public awareness are found in the *Response Actions* section.

INFORMATION DISSEMINATION

Direct users of agrichemicals will be informed through various means, including regular training sessions as part of the state's pesticide applicator/operator licensing program, various educational programs, and general public information releases.

PESTICIDE APPLICATOR TRAINING PROGRAMS

The UIE conducts both private and commercial applicator/operator training sessions under a contractual arrangement with IDA. Information regarding the requirements of compound-specific state management plans will be incorporated into both the training and testing materials utilized in these programs to ensure license holders are informed of plan requirements.

OTHER EDUCATIONAL PROGRAMS

The UIE also sponsors various educational events throughout the state. These include field days, agronomy programs, the Illinois Crop Protection Technology Conference, and several others. Efforts will be made to ensure that changes in product usage or availability based on plan requirements are provided to the UIE for inclusion in these meetings. The SWCDs and the NRCS also have personnel in county offices who will have valuable impacts on public awareness. Industry-sponsored conventions and producer-appreciation meetings also provide a forum for discussion of the provisions of pesticide management plans. Each of these activities will provide opportunities to inform affected producers regarding the requirements of a pesticide management plan. To ensure consistency in the information presented by various groups, the state plans to prepare handouts and other informational materials which will be made available to product users. Some materials may be available through the dealer network as a point-of-sale brochure.

RECORDS AND REPORTING

Various records and reports regarding the implementation and progress of pesticide management plans will be needed, including information regarding pesticide use, groundwater detections, and enforcement activities.

PESTICIDES DETECTED IN GROUNDWATER

Section 7 of the Illinois Groundwater Protection Act provides for the creation and maintenance of a data collection and automation program:

"(a) The Department [of Natural Resources], with the advice of the Committee [ICCG] and the Council [GAC], shall develop a coordinated groundwater data collection and automation program. The collected and automated data shall include, but need not be limited to, groundwater monitoring results, well logs, pollution source permits and water quality assessments. The Department shall act as the repository for such data and shall automate this data in a manner that is accessible and usable by all State agencies.

(b) The Department, in consultation with the Agency [IEPA], the Committee and the Council, shall develop and administer an ongoing program of basic and applied research relating to groundwater. Information generated from this program will be made available to local governments seeking technical assistance from the Department. The research program shall include, but need not be limited to:

- (1) Long-term statewide groundwater quality monitoring. A statewide monitoring well network shall be composed of public water supply wells sampled by the Agency, non-community wells

sampled by the Department of Public Health, and a representative sampling of other existing private wells and newly constructed, dedicated monitoring wells. The monitoring program shall be operated for the following purposes: to evaluate, over time, the appropriateness and effectiveness of groundwater quality protection measures; to determine regional trends in groundwater quality which may affect public health and welfare; and to help identify the need for corrective action. The Department shall periodically publish the results of groundwater quality monitoring activities.

(2) Statewide groundwater assessment. The Department shall conduct assessments to enhance the State's data base concerning groundwater resources. The assessments shall include location of groundwater resources, mapping of aquifers, identification of appropriate recharge areas, and evaluation of baseline groundwater quality. The Department shall complete the statewide mapping of appropriate recharge areas within 18 months after the enactment of this Act at a level of detail suitable for guiding the Agency in establishing priority groundwater protection planning regions.

(3) Evaluation of pesticide impacts upon groundwater. Such evaluation shall include the general location and extent of any contamination of groundwaters resulting from pesticide use, determination of any practices which may contribute to contamination of groundwaters, and recommendations regarding measures which may help prevent degradation of groundwater quality by pesticides. Priority shall be given to those areas of the State where pesticides are utilized most intensively. The Department shall prepare an initial report by January 1, 1990."

Thus, by statute, groundwater quality data will be maintained in a data collection and automation program. In addition, data specific to the operation and maintenance of a pesticide management plan will be maintained by the IDA in a computerized database. A quality assurance project plan will be developed for the development and maintenance of the database.

PESTICIDE APPLICATOR LICENSING INFORMATION

The IDA, Bureau of Environmental Programs, currently has a three-year records-retention policy for record files for inactive, commercial and public applicators and operators. Files for private applicators are retained for five years after inactive status; the date for disposal determined by adding five years to the license expiration date. Other records associated with the development and implementation of a pesticide management plan are not currently under a retention schedule and are, therefore, subject to indefinite retention. As the requirements for compound-specific management plans are promulgated by the U.S. EPA, the various state agencies involved will pursue, through the Illinois Secretary of State, Archives Division, appropriate retention schedules equal to or greater than three years. The state also anticipates that these records will be available upon request to U.S. EPA unless site-specific confidentiality required by state law dictates otherwise.

PESTICIDE USAGE DATA

The USDA-National Agricultural Statistics Service (USDA-NASS), through a long standing cooperative agreement with the IDA, collects various agricultural data including statewide pesticide usage information. These efforts will continue to be an important information source as compound-specific management plans are required and developed.

These and other data sources will be very important to the management and evaluation of plan implementation and effectiveness. The IDA commits to report to U.S. EPA any significant findings associated with the implementation of pesticide management plans, either in the form of special reports,

cooperative agreement annual reports, compound-specific pesticide management plan biennial report, or other appropriate mechanisms which may include coordination with various reporting activities associated with "Comprehensive State Groundwater Protection Plans".

References.

- Illinois Department of Agriculture. 2000. Illinois Generic Management Plan for Pesticides in Groundwater. Springfield, IL. 39 p.
- Keefer, D.A. 1995. Potential for agricultural chemical contamination of aquifers in Illinois: 1995 Revision. Illinois State Geological Survey Environmental Geology 148: 28 p.
- U.S. EPA. December 1987. Agricultural Chemicals in Ground Water: Proposed Pesticide Strategy. Washington, D.C. 150 p.
- U.S. EPA. July 1991. Protecting The Nation's Ground Water: EPA's Strategy for the 1990s. 21Z-1020. Washington, D.C. 84 p.

Appendix A:

Legal Authorities

The authority of the Illinois Department of Agriculture regarding the regulation of pesticides is derived from the FIFRA and the Illinois Pesticide Act (415 ILCS 60/1 et seq.). Under the FIFRA, the IDA is the state lead agency for the regulation of pesticides and their use. The IDA enters into annual cooperative agreements with the U.S. EPA to conduct programs associated with certification and training, enforcement, worker protection, endangered species protection, and groundwater protection as they each relate to pesticides and their use.

The purpose of the Illinois Pesticide Act is:

". . . to regulate in the public interest the labeling, distribution, use and application of pesticides as herein defined. It is recognized that pesticides are valuable and necessary to Illinois' agricultural production and to the protection of man and his environment from pests, but it is essential to our general health and welfare that they be regulated to prevent adverse effects on man and his environment. New pesticides and application methods are continually being synthesized or discovered which may be injurious to animals or man if not properly used. It is, therefore, deemed necessary to provide for the regulation of pesticides."

The legal provisions for prohibiting the use or otherwise restricting the use of a pesticide, due to groundwater concerns, are specified under Section 3 of the Illinois Pesticide Act which states:

"It shall be the duty of the Department of Agriculture to enforce this Act and such provisions of other Acts intended to control the registration, purchase, use, storage and disposal of pesticides, unless otherwise specified in this Section. Also, the Department of Agriculture shall control the purchase and use of pesticides pertaining to the production, protection, care, storage, or transportation of agricultural commodities and to control the use of pesticides applied by agricultural equipment."

Section 4 of the act contains the following definitions:

(12) "Environment" includes water, air, land, and all plants and animals including man, living therein and the interrelationships which exist among these.

(17) "Imminent Hazard" means a situation which exists when continued use of a pesticide would likely result in unreasonable adverse effect on the environment or will involve unreasonable hazard to the survival of a species declared endangered by the Secretary of Interior or the species declared to be protected by the Illinois Department of Conservation [now the Illinois Department of Natural Resources].

(36) "State Restricted Pesticide Use" means any pesticide use which the Director determines, subsequent to public hearing, that an additional restriction for that use is needed to prevent unreasonable adverse Effects.

(38) "Unreasonable Adverse Effects on the Environment" means the unreasonable risk to the environment, including man, from the use of any pesticide, when taking into account accrued benefits of as well as the economic, social, and environmental costs of its use.

(48) "Use" means any activity covered by the pesticide label including but not limited to application of pesticide, mixing and loading, storage of pesticides or pesticide containers, disposal of pesticides and pesticide containers and reentry into treated sites or areas.

The Department's authority to refuse to register, cancel or suspend a pesticide is in Section 7:

"1. The Director may refuse to register a pesticide or cancel or suspend a pesticide registration if: C. It is determined that there is an imminent hazard. The director may, of his own accord, suspend the registration of a pesticide and with utmost expedition conduct a hearing in accordance with Administrative Procedures Act for the purposes of determining whether to cancel the registration or reclassify the pesticide's use."

Section 8 provides the authority for IDA to cooperate with other state and federal agencies and is the driving mechanism to provide authority to delineate areas for differential practices:

"2. The Director is authorized, after due notice and public hearing as provided in the Administrative Procedures Act, to make appropriate regulations for enforcement and administration of the Act including, but not limited to, regulations providing for:

- A. The collection, examination, and analysis of samples of pesticides or devices.
- B. The storage, display, distribution and disposal of pesticides or devices and their containers.
- C. The methods of pesticide application which may relate to time, place, manner, methods, material amounts, or combinations and concentrations, in connection with the application of the pesticide.
- D. Packaging, and material coloration necessary to protect public health and the environment from pesticides with experimental use or special local need registration. Such regulations must be consistent with the FIFRA rules and regulations promulgated thereunder.

3. For purposes of uniformity and in order to enter into cooperative agreements, the Director may adopt use classifications and other pertinent pesticide registration provisions which are established by the Administrator, EPA.

4. Regulations adopted under this Act shall not permit any pesticide use prohibited by the FIFRA or any regulations or orders issued thereunder.

5. The Director is authorized to cooperate with such State or federal agencies as may be reasonable and

proper to carry out the provisions of this Act."

Section 14 addresses specific unlawful acts. The authority to issue stop-sale, use or removal orders is granted in Section 16:

"Under any circumstance where the Director has reason to believe a pesticide or device is being sold, distributed, stored or used in violation of any provision of this Act, or regulations adopted thereunder, he may issue and serve a written order to stop sale, stop use or regulate removal upon the owner, operator, manager or agent in charge of any such pesticide or device. Any pesticide or device so offered shall not be sold or used until brought into compliance with the provisions of this Act and regulation adopted thereunder."

"When the Director has reason to believe a pesticide or device is being used in violation of any provision of this Act or regulations adopted thereunder he may issue and serve a written order to stop the identified use."

Provisions for the right to enter, inspect records and to sample are contained in Section 15:

"2. For the purpose of carrying out the provisions of this Act the Director, upon presentation of identification, is authorized to enter upon public or private premises at reasonable times during normal working hours in order to: A. Investigate or inspect to determine the facts in complaints of pesticide injury, misuse, mishandling, or reported excessive pesticide exposure. B. Determine the facts in any pesticide incident reported to him, including collection of samples for analysis. C. Observe pesticide use and sample the pesticides being applied, as well as the site to which the pesticide is being applied. D. To inspect and collect samples in any place where pesticides are produced, manufactured, sold or distributed."

Section 17 grants the Department the authority to regulate removal by judicial action.

Section 18 contains the requirement for "any person issued a license, certificate or permit" to keep records that shall be available for inspection by the Director.

Various rules and regulations promulgated under the Illinois Pesticide Act and the Illinois Lawncare Products Application and Notice Act further define provisions of these acts. 8 IAC 255 contains the provisions of the Agrichemical Facility Containment Program. This rule requires various types of operational area and secondary containment structures and practices at commercial and non-commercial facilities. 8 IAC 256 provides for the construction and operation of lawncare wash water containment areas at facilities engaged in the commercial application of lawncare pesticides. The combination of 8 IAC 255 and 8 IAC 256 provides for a containment structure at most of the commercial pesticide loading and mixing sites in Illinois.

The above citations, while not an exhaustive listing of the provisions of the Illinois Pesticide Act, provide specific authority to the IDA for the regulation of pesticides impacting groundwater.

The following describes the relevant legal authorities of the Illinois Environmental Protection Agency (Agency) related to a pesticide management plan. The Agency derives these authorities from the Illinois Environmental Protection Act (Act), and the Illinois Groundwater Protection Act (IGPA). Pursuant to the Act, the Agency is responsible for and has authority to:

Collect and disseminate such information, acquire such technical data, and conduct such experiments as may be required to carry out the purposes of the Act, including ascertainment of the quality and nature of

discharges from any contaminant source and data on those sources, and to operate and arrange for the operation of devices for the monitoring of environmental quality (Section 4(b)).

Conduct a program of continuing surveillance and of regular or periodic inspection of actual or potential contaminant or noise sources, of public water supplies, and of refuse disposal sites. (Section 4(c)).

In accordance with constitutional limitations, shall have authority to enter at all reasonable times upon any private or public property for the purpose of:

Inspection and investigating to ascertain possible violations of the Act or of regulations thereunder, or of permits or terms or conditions, thereof; or

In accordance with the provisions of this Act, taking whatever preventive or corrective action, including but not limited to removal or remedial action, that is necessary or appropriate whenever there is a release or a substantial threat of a release of (A) a hazardous substance or pesticide or (B) petroleum from an underground storage tank (Section 4(d)).

To provide notice to any person who may be liable pursuant to Section 22.2(f) of this Act for a release or a substantial threat of a release of a hazardous substance or pesticide. Such notice shall include the identified response action and an opportunity for such person to perform the response action (Section 4(q)).

Authority to investigate and file a complaint against a person violating the Act or regulations promulgated thereunder (Title 8).

Additionally, the IGPA provided assurance of potable water supply to the owner of every potable water supply well which has been contaminated due to the action of the owner or operator of a potential primary or potential secondary source or potential route. The owner of a potable water supply well contaminated by such actions shall be provided with an alternative source of potable water. This alternative source is required unless a waiver is provided by the owner of the well. (Section 6(b))

In addition, the Act contains the following authority:

Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (j) of Section 22.2, the following persons shall be liable for all costs of removal or remedial action incurred by the State of Illinois as a result of a release or substantial threat of a release of a hazardous substance or pesticide:

The owner and operator of a facility or vessel from which there is a release or substantial threat of release of a hazardous substance or pesticide;

Any person who at the time of disposal, transport, storage or treatment of a hazardous substance or pesticide owned or operated the facility or vessel used for such disposal, transport, treatment or storage from which there was a release or substantial threat of a release of any such hazardous substance or pesticide;

Any person who by contract, agreement, or otherwise has arranged with another party or entity for transport, storage, disposal or treatment of hazardous substances or pesticides owned, controlled or possessed by such person at a facility owned or operated by another party or entity from which

facility there is a release or substantial threat of a release of such hazardous substances or pesticides; and

Any person who accepts or accepted any hazardous substances or pesticides for transport to disposal, storage or treatment facilities or sites from which there is a release or a substantial threat of a release of a hazardous substance or pesticide.

Any monies received by the State of Illinois pursuant to this subsection (f) shall be deposited in the State Treasury to the credit of the "Hazardous Waste Fund" (Section 22.2(f)).

The IGPA also provides legal authority to the Agency to enforce a PMP. The IGPA contains the following provisions:

- 1) The General Assembly finds that:
 - (i) a large portion of Illinois's citizens rely on groundwater for personal consumption, and industries use a significant amount of groundwater;
 - (ii) contamination of Illinois groundwater will adversely impact the health and welfare of its citizens and adversely impact the economic viability of the State;
 - (iii) contamination of Illinois's groundwater is occurring;
 - (iv) protection of groundwater is a necessity for future economic development in this State. Therefore, it is the policy of the State of Illinois to restore, protect, and enhance the groundwater of the State, as a natural and public resource. The State recognizes the essential and pervasive role of groundwater in the social and economic well-being of the people of Illinois, and its vital importance to the general health, safety, and welfare. It is further recognized as consistent with this policy that the groundwater resources of the State be utilized for beneficial and legitimate purposes; that waste and degradation of the resources be prevented; and that the underground water resource be managed to allow for maximum benefit of the people of the State of Illinois (Section 2).
- 2) The Agency, after consultation with the committee and the Council, shall propose regulations establishing comprehensive water quality standards which are specifically for the protection of groundwater. In preparing such regulations, the agency shall address, to the extent feasible, those contaminants which have been found in the groundwater of the State and which are known to cause, or suspected of causing, cancer, birth defects, or any other adverse effect on human health according to nationally accepted guidelines. Such regulations shall be submitted to the Board by July 1, 1989.

This comprehensive groundwater quality regulation was adopted by the Illinois Pollution Control Board as 35 IAC 620 and became effective on November 25, 1991. The regulation is described in the ***Illinois Groundwater Protection Policy*** section of this document.

- 3) No later than January 1, 1989, the Agency, in consultation with the Interagency Coordinating Committee on Groundwater and the Groundwater Advisory Council, shall propose regulations to the Board prescribing standards and requirements for the following activities:

land filling, land treating, surface impounding or piling of special waste and other wastes which could cause contamination of groundwater and which are generated on the site, other than

hazardous, livestock and landscape waste, and construction and demolition debris;

storage of special waste in an underground storage tank for which federal regulatory requirements for the protection of groundwater are not applicable;

storage and related handling of pesticides and fertilizers at a facility for the purpose of commercial application;

storage and related handling of road oils and de-icing agents at a central location; and storage and related handling of pesticides and fertilizers at a central location for the purpose of distribution to retail sales outlets.

In promulgating these regulations, the Board shall, in addition to the factors set forth in Title VII of the Act, consider the following:

appropriate programs for water quality monitoring; reporting, record keeping and remedial response measures; appropriate technology-based measures for pollution control; and requirements for closure or discontinuance of operations.

These regulations were adopted as 35 IAC 615 and 616 and became effective January 10, 1992. During the 1992 State Legislative Session, the Illinois Pesticide Act and Illinois Environmental Protection Act were amended by the passage of Public Act 87-1108. This act provided that agrichemical facilities subject to the provisions of Section 14.4 of the Environmental Protection Act may choose to be subject to an alternative program to be developed jointly by the IDA and IEPA. The alternative program, administered by the IDA, was adopted as 8 IAC 257 (8 IAC 257) on January 1, 1994. It contains structural and operational requirements beyond those contained in 35 IAC 615 / 616, 8 IAC 255 and 8 IAC 256 while also providing for groundwater monitoring requirements which are less comprehensive than those of 35 IAC 615 / 616.

- 4) The IGPA also establishes setback zones for all potable water supply wells. These setbacks prohibit the siting of new potential sources and routes of contamination. Potential secondary sources of contamination include storage or accumulation of pesticide or fertilizers for purpose of commercial application or for distribution to retail sales outlets (Section 14.2).
- 5) The IGPA also provides for the establishment of regulated recharge areas (Section 17.4).

The IGPA also mandates the following responsibility to the Department of Natural Resources.

- 1) With the advice of the Committee and the Council, the IDNR shall develop a coordinated groundwater data collection and automation program. The collected and automated data shall include but need not be limited to groundwater monitoring results, well logs, pollution source permits and water quality assessments. The Department shall act as the repository for such data and shall automate this data in a manner that is accessible and usable by all State agencies (Section 7(a)).
- 2) In consultation with the Agency, the Committee, and the Council, the IDNR shall develop and administer an ongoing program of basic and applied research relating to groundwater. Information generated from this program will be made available to local governments seeking technical assistance from the Department. The research program shall include but need not be limited to:

Long-term statewide groundwater quality monitoring. A statewide monitoring well network shall be composed of public water supply wells sampled by the Agency, non-community wells sampled by the Department of Public Health, and a representative sampling of other existing private wells and newly constructed, dedicated monitoring wells. The monitoring program shall be operated for the following purposes: to evaluate, over time, the appropriateness and effectiveness of groundwater quality protection measures; to determine regional trends in groundwater quality which may affect public health and welfare; and to help identify the need for corrective action. The IDNR shall periodically publish the results of groundwater quality monitoring activities.

The IDNR shall conduct assessments to enhance the State's data base concerning groundwater resources. The assessments shall include location of groundwater resources, mapping of aquifers, identification of appropriate recharge areas, and evaluation of baseline groundwater quality. The Department shall complete the statewide mapping of appropriate recharge area within 18 months after the enactment of this Act at a level of detail suitable for guiding the Agency in establishing priority groundwater protection planning regions. [Activity completed]

Evaluation of pesticide impacts upon groundwater. Such evaluation shall include the general location and extent of any contamination of groundwater resulting from pesticide use, determination of any practices which may contribute to contamination of groundwater, and recommendations regarding measures which may help prevent degradation of groundwater quality by pesticides. Priority shall be given to those areas of the State where pesticides are utilized most intensively. The Department shall prepare an initial report by January 1, 1990. (Section 7(b)) [Activity completed]

In addition to the citations noted above, the IDPH regulates private, semi-private, and non-community water supplies. Statutory authority for the Illinois Water Well Construction Code (77 IAC 920) is contained in 415 ILCS 30/1 and specifies the requirements for the location and construction of water wells in the State. Statutory authority for the Illinois Water Well Pump Installation Code (77 IAC 925) is contained in 415 ILCS 35/1. These rules ensure the proper location and construction of water wells; the sealing of abandoned water wells, borings and monitoring wells; and the installation of water well pumps. These rules also include provisions for backflow prevention associated with chemical injection systems connected directly to a water well (chemigation). Requirements for water well location (wellhead setbacks), sealing and construction permits are also found in the Illinois Water Well Construction Code as amended by the Illinois Groundwater Protection Act.