

# **The Minnesota Pesticide Management Plan**

## ***Managing Pests and Protecting Water Resources***



### **WHAT ARE WE TRYING TO DO?**

#### ***Finding the Balance***

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#### ***Protecting Water Resources...***

Minnesota is a state rich in water resources, including lakes, rivers, wetlands and extensive underground aquifers. Minnesota is also the site of the headwaters of three major river systems: Hudson Bay, Lake Superior and the Mississippi River.

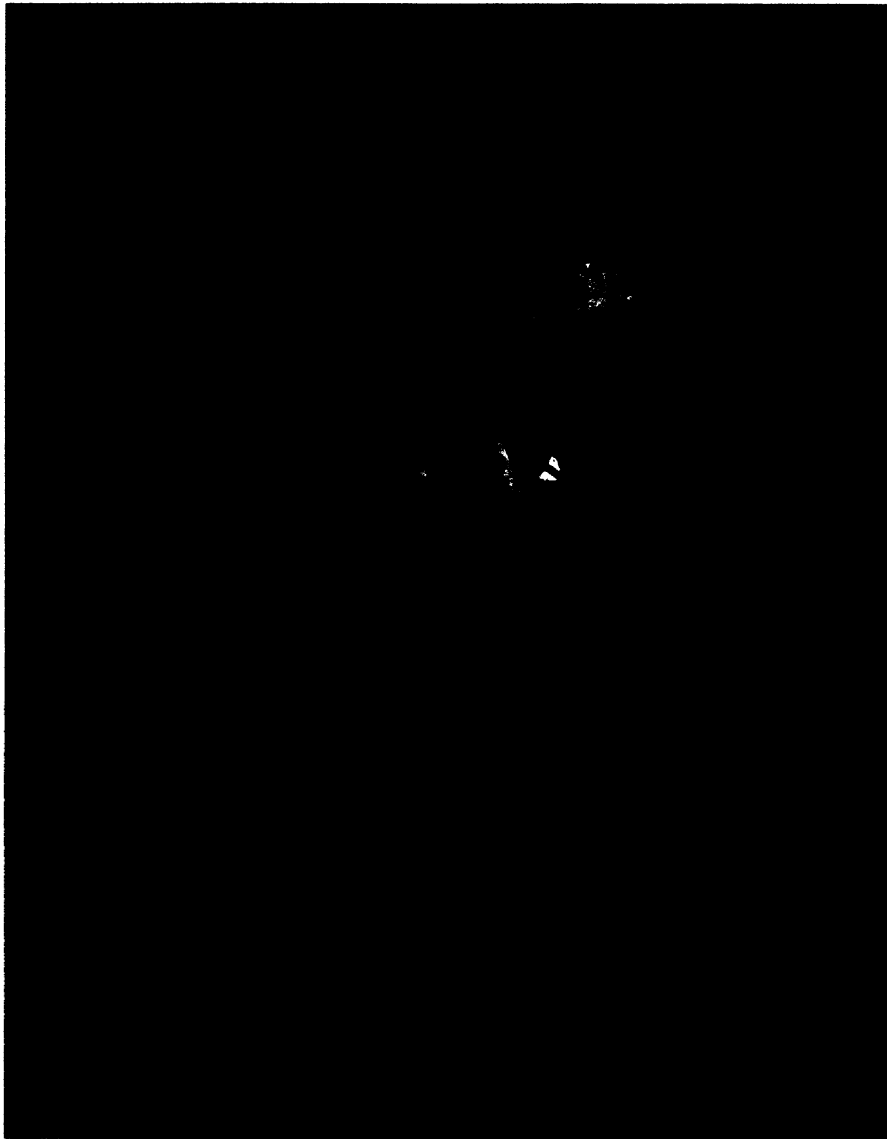
As a headwater site three times over, our state is unique. Almost all surface water runs **out** of our state. Because we don't receive "other people's water," virtually any contamination we find in our water supplies (except for that brought by precipitation) is our own.

We're in the enviable position of not being responsible for trying to prevent—or minimize—contamination caused by others.

#### ***...While Ensuring Responsible Use of Pest Control Tools***

For both urban and rural landowners, the term "pest" describes many different threats to our crops and lawns, including insects, rodents, weeds and a variety of plant diseases.

To manage this vast array of pests effectively, urban and rural landowners use a variety of pest control tools and management strategies.



One strategy, known as integrated pest management (IPM), includes precise timing and application of pesticides, as well as crop rotations, adjustment of planting dates, weather monitoring, introducing natural enemies of particular pests, and the use of resistant varieties of plants and crops.

To protect farm fields and home lawns, landowners consider many different pest control options, and one of these options is the responsible use of pesticides. In rural areas, pesticides help protect crops and increase yields. In urban areas, pesticides help protect shrubs, trees, lawns and gardens.

Finding the balance between the responsible use of pesticides and the protection of our water resources is an ongoing challenge. While certain areas of the state—including the central sand plains and the karst regions of southeast Minnesota—are particularly vulnerable to ground water contamination, all of our surface water resources (lakes, rivers and streams) and ground water resources (water stored beneath the earth's surface in aquifers) need to be protected from the potential risk of contamination by pesticides.

By finding that balance, we will be able to continue using pesticides as a tool for protecting our crops,

shrubs, trees, lawns and gardens from pests. At the same time, we will be doing all we can to protect our water resources.

### ***Degradation Prevention: A Commitment Formalized in 1989***

As a result of concerns over detection of pesticides and other agrichemicals in surface water and ground water, numerous state programs have been designed to ensure the protection of our state's water resources. Central to this commitment was passage of the 1989 Minnesota Ground Water Protection Act.

The focus of the Act is ***degradation prevention***: "It is the goal of the state that ground water be maintained in its natural condition, free from any degradation caused by human activities."

While we recognize that this degradation prevention goal is not always entirely achievable, the Act intends that ***it should be achieved whenever possible***. Furthermore, the Act encourages the ongoing development of new methods and technology to continually expand the limits of what ***is*** possible.

### ***Working To Achieve the Balance***

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Recognizing the need to balance responsible pesticide use and the protection of ground water and surface water resources, the Minnesota Department of Agriculture, in cooperation with more than 20 other partners, developed the Minnesota Pesticide Management Plan (PMP) as a tool for effective management of pesticides to help protect water resources.

The Pesticide Management Plan is a **generic** plan that provides guidelines for developing **pesticide-specific** management plans for particular pesticides designated by the Commissioner of Agriculture as being a threat to our state water resources. Throughout the various steps in the process, the Pesticide Management Plan focuses on preventing **nonpoint source** pollution, which includes potential contamination from the normal use of pesticides on many fields or lawns over a large area. **Point source** pollution, which includes pesticide spills and other contamination whose specific source is identifiable, is the focus of other agency programs.

### **Discussion, Consensus and Public Involvement**

In Minnesota, water resource protection is the shared responsibility of many different state agencies. The PMP Advisory Committee, which developed the plan, includes representatives of the Minnesota Department of Agriculture, the Minnesota Pollution Control Agency, the Minnesota Department of Natural Resources, the Minnesota Department of Health, the University of Minnesota, and representatives of federal and local agencies, environmental groups, pesticide registrants and dealers, crop consultants, and other interested participants.

The committee met many times for several years to reach consensus on the PMP goals and the approaches for achieving those goals. Public comment was sought throughout its development, and the public will be encouraged to continue to participate through implementation of the various steps in the Pesticide Management Plan.

## **A Preventive and Voluntary Approach**

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Because contamination of water resources is exceedingly difficult and expensive to correct—and sometimes impossible to accomplish—Minnesota recognizes that pollution prevention is the best strategy for protecting water quality.

The 1989 Minnesota Ground Water Protection Act established the framework for protecting Minnesota's ground water, a framework that **stresses prevention by encouraging adoption of voluntary best management practices.**

Voluntary best management practices (BMPs) are just what they say they are: voluntary practices identified as being **the most effective and practical** means of preventing or reducing contamination of surface water and ground water.

Through ongoing education and training initiatives, both rural and urban pesticide users are encouraged to **voluntarily** adopt these BMPs. Only if this voluntary approach proves unsuccessful will mandatory requirements be established to prevent or minimize the presence of particular pesticides in Minnesota's water resources.

### **Prevention, Evaluation and Mitigation**

The Pesticide Management Plan embraces three basic concepts: prevention, evaluation and mitigation:

**The prevention goal** seeks to manage pests effectively, while also protecting water quality from degradation, protecting economic profitability, and protecting urban and rural beneficial uses of pesticides.

**The evaluation goal** seeks to determine how valid and how effective our pesticide management strategies really are.

**The mitigation goal** seeks to minimize or eliminate the adverse impacts of pesticides on the environment.

Together, these three goals represent the foundation for the sequence of steps in the pollution-prevention process outlined by the Pesticide Management Plan.

## **HOW DOES THE PROCESS WORK?**

### **Prevention: The Primary Goal**

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The backbone of prevention is the use of BMPs, which are developed and measured against a number of reality checks, including economic factors, availability, technical feasibility, implementability, effectiveness and environmental effects.

### **Many Different Tools for Effective Pest Control**

Pesticides are just one of many tools available for the effective management of pests. Generic pesticide BMPs (applicable to many pesticides) and IPM strategies offer farmers and homeowners a diversity of approaches to effective pest control. Together, the coordinated use of many different tools can do much to control pests and protect our water resources from contamination.

## Water Quality Monitoring

The Minnesota Department of Agriculture (MDA) conducts statewide monitoring of water quality, pesticide use practices and quantities of pesticides used.

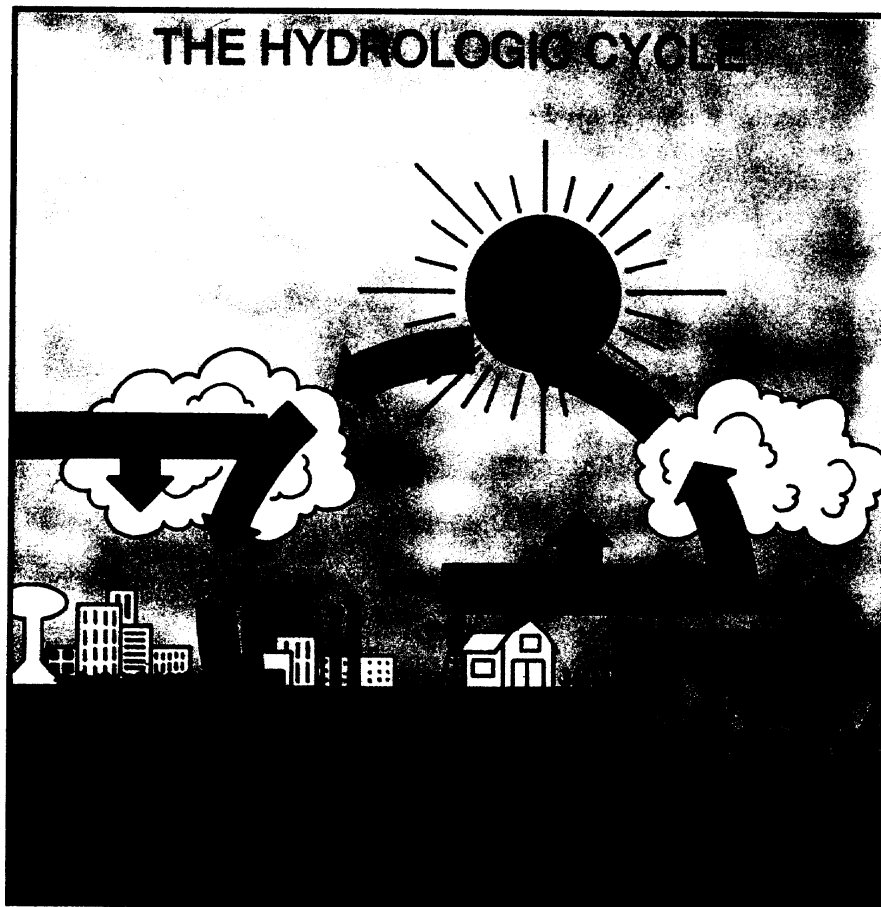
Water quality monitoring is a key component of the Pesticide Management Plan. While the monitoring program was developed by MDA prior to and separate from the PMP, it will be coordinated with PMP implementation, redesigned to meet the additional needs of the Pesticide Management Plan.

The primary purpose of the MDA water quality monitoring program is to **define the long-term impacts of normal pesticide use** (according to label directions) on water quality. Understanding how the **routine** use of pesticides impacts water quality is the first step in determining how to manage pesticides to prevent degradation of state water resources.

The periodic collection and analysis of water samples from selected locations throughout the state help determine the identity, concentration and frequency of detection of specific pesticides in state water supplies. This information helps us decide whether or not our first-line defense—the use of voluntary, generic BMPs—is effectively protecting our water resources.

### **Common Detection: A “First Alert”**

Scientifically valid data is collected and analyzed by the Water Quality Monitoring Program. This information is provided to an advisory committee established by the MDA to conduct a thorough review of the data and make recommendations about the **common detection status** of particular pesticides.



Freshwater Education

Common detection means that detection of a pesticide is **not** due to misuse or unusual or unique circumstances. Instead, it is likely to be the result of **normal, routine use** of a particular product or practice.

The advisory committee conducts annual reviews of the monitoring results of numerous pesticides. Based on this scientific data, the committee recommends to the Commissioner of Agriculture whether current practices are adequate to protect our water resources, or whether certain pesticides need a higher level of management to ensure that continued use can occur without compromising the quality of our water resources.

### **Common Detection Status: A Tool To Communicate Concern**

**Common detection status**, a formal designation by the Commissioner of Agriculture, triggers a **more focused** voluntary approach to addressing pesticides of concern.

Inclusion in common detection status communicates that a scientific basis for concern exists about the use of a specific pesticide and its impact on water quality. This designation acts as a “first alert” for pesticide users.

The designation of common detection status will trigger a proactive approach to any pesticide shown to be adversely impacting Minnesota’s

water resources. For a pesticide in common detection status, the goal of water quality protection efforts will shift from **prevention** (keeping contamination from occurring in the first place) to **mitigation** (minimizing or eliminating the adverse impacts of pesticides that are reaching our water resources).

### **Mitigation: Minimizing or Eliminating Pesticide Movement into Water**

Mitigation takes over where prevention leaves off. Mitigation involves **alleviating or lessening** the adverse effects of pesticide use on water quality.

**While prevention remains the primary goal** of the Pesticide Management Plan, situations exist where outright prevention is no longer an option, since ground water contamination (or the risk of it) may have already occurred.

### **A Non-Regulatory “Trigger”**

Common detection status **does not regulate** the use of pesticides in Minnesota. It is **not** a “hit list” for pesticides being recommended for cancellation.

The purpose of assigning common detection status to a pesticide is to trigger the development of **pesticide-specific** voluntary BMPs for a particular pesticide that exhibits a basis for concern. A more focused approach than generic BMPs, inclusion of a pesticide in common detection status allows all pesticide users to take steps to reduce the impact of a **particular** pesticide **while still maintaining the use of that pesticide** as a tool for pest control.

Evaluation for common detection is a required step in the process of

developing specific management plans and BMPs for a particular pesticide. If these more focused pesticide-specific management plans and BMPs prove sufficient to manage the pesticide effectively, water quality will be protected—as will continued use of that particular pesticide.

## **Evaluation: Determining Effectiveness**

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Evaluation is an ongoing component of the entire PMP process. Its most important role, however, is to determine the effectiveness of pesticide-specific mitigation activities. Are our BMPs (both generic and pesticide-specific) truly effective in addressing contamination concerns? Are pesticide users actually **adopting** these BMPs? If evaluation shows that our pesticide-specific BMPs are working, then mitigation efforts have been successful.

If, on the other hand, pesticide-specific management plans and a more focused voluntary approach do **not** appear to be protecting water quality, then we move to the next step: developing more stringent, mandatory water resource protection requirements.

## **Safeguarding Health and the Environment**

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### **When the Voluntary Approach Isn't Enough**

**Health risk limits** identify the maximum level of a particular chemical present in water that has been determined to be safe for people to drink over a lifetime without likely harmful effects.

A health risk limit (HRL) of 3 parts per billion (ppb), for example, means that the presence of a chemical in water at a level of 3 ppb or lower does not present a likely health risk to people drinking that water over a lifetime.

One of the primary purposes of the PMP is to **not allow levels of pesticides in drinking water to reach the health risk limit** (HRL). Reaching the HRL is a signal that the PMP has failed.

To protect water from containing pesticide levels that approach the HRLs, procedures are built into the Pesticide Management Plan that **allow a shift from a voluntary to a mandatory approach**. These procedures include adoption of mandatory water resource protection requirements (WRPRs). Similar to voluntary BMPs, the purpose of mandatory WRPRs is to ensure that the HRL is not reached.

### **WRPRs: Another Tool Available To Protect Water Quality**

Like voluntary BMPs, mandatory WRPRs are another tool to mitigate (alleviate or lessen) the adverse effects of pesticide use on water quality. Like voluntary BMPs, they represent a diversity of approaches and activities that protect water from pesticide contamination.

If WRPRs appear to be effective in protecting water quality, the use of the pesticide in question will be allowed to continue.

If, however, water quality continues to be at risk even with implementation of mandatory WRPRs, the likely result will be cancellation of the use of the pesticide in question. That pesticide will no longer be available for use by urban and rural pesticide users—but public health and the environment will be protected.

## ***A Shared Commitment To Finding the Balance***

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Finding the balance between the responsible use of pesticides and the protection of our water resources is an ongoing challenge—and one that must be addressed.

The primary goal of the Pesticide Management Plan is to manage pests effectively, **while also** protecting water quality from degradation, protecting economic profitability, and protecting urban and rural beneficial uses of pesticides.

***The primary goal of the  
Pesticide Management Plan  
is to manage pests effectively,  
while also protecting water  
quality from degradation.***

***Minnesota is strongly committed to using a voluntary approach*** as our state's first-line defense against contamination of water resources by the normal, responsible use of pesticides.

If and when voluntary BMPs prove ineffective in managing a particular pesticide, additional management tools—including WRPRs—will be put into place to assure effective protection of our water resources.

***The Pesticide Management Plan is a win-win situation:*** It protects our water resources, and it also provides guidelines for responsible pesticide use that will help to assure that both urban and rural pesticide users continue to have pesticides



available as one of the tools they may choose for effective pest control.

Through a shared commitment to the goals of the Pesticide Management Plan, we can protect our crops, our trees and shrubs, our lawns and gardens—**and** the quality of our water resources.

### ***For more information...***

*To receive a copy of the April 1996 Minnesota Pesticide Management Plan, or for more information, contact the Minnesota Department of Agriculture at (612) 296-6121.*

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Photos by Dave Hansen  
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**Nitrogen Fertilizer Management Plan Three-Phase Structure:** The 1989 Comprehensive Groundwater Protection Act (the Act) directed the MDA to develop a Nitrogen Fertilizer Management Plan (NFMP) for the prevention, evaluation and mitigation of nonpoint source occurrences of nitrogen fertilizer in the waters of the state. The Act mandates that the NFMP contain both a voluntary BMP component and a component that allows for regulatory action in the form of Water Resource Protection Requirements (WRPRs). The legislature did not provide dedicated funding for implementation of the NFMP, so NFMP goals (such as evaluation of BMPs) has only been partially achieved and only in limited geographic areas.

The *voluntary* BMPs, developed as an outgrowth of the Act, have been reviewed earlier in this document, and information on how to obtain BMPs for specific regions of the state can be found in *Appendix B*.

The NFMP has a three-phase structure for responding to nitrogen fertilizer nonpoint contamination. Regulation of nitrogen fertilizer use can only occur in the third, or "Response" phase and only after joint designation of a Special BMP Promotion area by the MDA, SWCD and the county water planning authority. To date, no Special BMP Promotion Areas have been designated in the state.

The NFMP three-phase structure is further described as follows:

- 1) **BMP Promotion Phase:** Promotion of voluntary adoption and implementation of BMPs (*NOTE: BMP development and promotion is an ongoing process*);
- 2) **BMP Evaluation Phase:** Evaluation of the adoption and effectiveness of voluntary BMPs; (*NOTE: the state is currently developing and implementing BMP evaluation efforts in a limited number of Wellhead Protection Areas – see Appendix C for examples*); and
- 3) **Response Phase:** Response to instances wherein voluntary BMPs have not been adopted or are ineffective in mitigating the occurrence of nitrate in local ground or surface water. The Response Phase will be implemented when initial attempts to resolve nitrogen contamination problems through voluntary action fail. Regulation governing nitrogen fertilizer use in vulnerable areas is possible after a series of intense BMP and groundwater monitoring efforts justifies rule writing. The Response Phase (which incorporates additional BMP promotion and evaluation efforts) is comprised of the following steps:
  - a. **Special BMP Promotion Areas –** Before regulatory action can be taken, the MDA, SWCD and the county water planning authority must designate a localized Special BMP Promotion Area in which various evaluation efforts must occur. Time allotted for the BMPs to be further implemented and evaluated must be in proportion to the degree of the problem identified.

- b. Nitrogen Management District – If, after the creation of the localized Special BMP Promotion Area, agricultural sources of nitrate in drinking water remain problematic for at least a four year period, the area should be reclassified as a Nitrogen Management District. The establishment of the district initiates a process of change from a voluntary to a regulatory situation.
- c. Water Resource Protection Requirements – If BMP adoption and water quality remain unacceptable in the Nitrogen Management District after annual reviews, the MDA shall commence the promulgation of localized Water Resource Protection Requirements through rule-making.

Only after all required steps are taken does the NFMP process recommend that state rules be promulgated to establish Water Resource Protection Requirements for the localized area in question. Details of the NFMP and the Three-Phase Structure are provided in the Recommendations of the Nitrogen Fertilizer Task Force on the Nitrogen Fertilizer Management Plan to the Minnesota Commissioner of Agriculture, August 1990, available from the MDA. The chart below illustrates the overall approach to responding to nitrogen contamination as established by the Nitrogen Fertilizer Task Force under statutory mandate in the 1989 Comprehensive Groundwater Protection Act:

