



Pesticide Management Plan Status Report

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Executive Summary

The Minnesota Department of Agriculture submits a biennial Pesticide Management Plan Status Report to the Environmental Quality Board and to the House of Representatives and Senate committees with jurisdiction over the environment, natural resources, and agriculture.

The Pesticide Management Plan (PMP) is a guidance document for the prevention, evaluation, and mitigation of occurrences of pesticides or their breakdown products in Minnesota groundwater and surface water due to non-point source pollution from the legal use of pesticide products.

In the 2017-2018 biennium, prevention activities, including education and outreach activities coordinated through the PMP's Education and Promotion Team, continued efforts to inform pesticide applicators and others about the importance of minimizing pesticide impacts to water quality to the extent practicable.

The MDA's water quality Monitoring and Assessment Program continued to be the foundation of 2017-2018 evaluation activities. It is further supported by the pesticide applicator use survey data, the Pesticide Management Plan Committee's review of data, and consultation with risk assessors and water quality program staff at the Minnesota Department of Health and the Minnesota Pollution Control Agency.

Mitigation activities in 2017-2018 included ongoing education and outreach specific to groundwater and surface water pesticides of concern, analysis of BMP adoption and effectiveness data and the promotion and distribution of BMPs. This also involved the development of new BMPs addressing turfgrass pesticides. In addition, two updated BMPs addressing agricultural insecticides and chlorpyrifos specifically were published.

There continues to be a great deal of activity at the MDA in support of the PMP, with coordinated implementation of prevention, evaluation, and mitigation efforts within the MDA and in cooperation with other state agencies, the University of Minnesota (UMN), industry groups, and other stakeholders.

I. Introduction

The following biennial status report provides background and outlines major activities conducted during 2017 and 2018 in support of the “Pesticide Management Plan: A Plan for the Protection of Groundwater and Surface Water” (the PMP).

The PMP is a guidance document for the prevention, evaluation, and mitigation of occurrences of pesticides or pesticide breakdown products in Minnesota groundwaters and surface waters due to non-point source pollution from the legal use of pesticide products.

Three sections on Prevention, Evaluation, and Mitigation coincide with the three statutorily required components of the PMP. It also includes information on other pesticide-related environmental activities.

The PMP and additional data on many of the activities discussed in this report are available through the Minnesota Department of Agriculture (MDA) general website at www.mda.state.mn.us and at the pesticide management web page <http://www.mda.state.mn.us/chemicals/pesticides/pestmgmt.aspx>.

While the PMP is required by statute, it is a guidance document and has no inherent enforceable or regulatory requirements.

II. Background

The Pesticide Control Law (Minn. Stat. §18B.045) directs the MDA to submit a biennial PMP status report to the Environmental Quality Board (EQB) and to the House of Representatives and Senate committees with jurisdiction over the environment, natural resources, and agriculture.¹

The statutory requirements and purpose for the PMP are outlined in the enabling legislation (18B.045):

“The commissioner shall develop a pesticide management plan for the prevention, evaluation, and mitigation of occurrences of pesticides or pesticide breakdown products in groundwaters and surface waters of the state. The pesticide management plan must include components promoting prevention, developing appropriate responses to the detection of pesticides or pesticide breakdown products in groundwater and surface waters, and providing responses to reduce or eliminate continued pesticide movement to groundwater and surface water.”

The PMP includes components promoting prevention, developing appropriate responses to the detection of pesticides or pesticide breakdown products in groundwater and surface waters, and

¹ The statutory requirement for this report is found in the Pesticide Control Law, Minn. Stat. § 18B.045 subd. 1: “Beginning September 1, 1994, and biennially thereafter, the commissioner must submit a status report on the plan to the environmental quality board for review and then to the legislative water commission.” An electronic version of this report is available at: <http://www.mda.state.mn.us/chemicals/pesticides/pestmgmt.aspx>

providing responses to reduce or eliminate pesticide movement to groundwater and surface water. The PMP is to be coordinated with other state agency plans and with other state agencies through the EQB. PMP development included the UMN Extension, farm organizations, farmers, environmental organizations, and industry.

Development of the PMP began in 1990, with a final draft published in 1996. Minor revisions were made in 1998. The United States Environmental Protection Agency (EPA) provided a formal concurrence with the original 1996 version and with the revised 1998 version. The MDA again revised the PMP in June 2005 after conducting an issues forum and several public meetings. Additional revisions were incorporated in November 2007 based on recommendations made the previous year by the Office of the Legislative Auditor's review of MDA's pesticide programs.

III. Prevention Activities

Water quality problems due to pesticide pollution are best addressed by first focusing on prevention. The MDA has developed Best Management Practices (BMPs) for Pesticide Management and Handling. These include BMPs for general pesticide distribution, storage, handling, use, and disposal. These BMPs continue to be promoted by MDA and cooperators, through pesticide applicator training programs, seasonal updates, and other distribution and outreach mechanisms, such as the MDA Update newsletter, which is sent to private and commercial pesticide applicators. The BMPs for Pesticide Management and Handling are available at <http://www.mda.state.mn.us/protecting/bmps/voluntarybmps.aspx>

The MDA has developed voluntary BMPs that focus on the general use of agricultural herbicides, fungicides, and insecticides, as well as including BMPs for specific pesticides of concern for water resources. These BMPs were developed, in part, in direct response to MDA's mandates under the state Groundwater Protection Act (Minn. Stat. chapter 103H) and are designed to minimize pesticide detections in groundwater and prevent concentrations from exceeding drinking water standards. The BMPs also address surface water concerns in an effort to minimize losses of herbicides to lakes, rivers, and streams, and to avoid possible impairment declarations for specific water bodies under the Clean Water Act.

The pesticide specific BMPs along with the BMPs for general pesticide management and handling, form the foundation of MDA's prevention efforts. This also involves MDA's product registration reviews, use inspections and enforcement, applicator training, incident response program, waste pesticide product disposal, and certification and licensure efforts. The MDA released two new Pesticide BMPs in 2018 and updated two others:

[Best Management Practices for Turfgrass Pesticides](#)

[BMPs for Pesticides Use for Homeowners and Commercial Lawn Care](#)

[Water Quality Best Management Practices for All Agricultural Insecticides](#)

[Water Quality Best Management Practices for Chlorpyrifos](#)

In 2017-2018, examples of efforts to promote BMPs and the responsible, safe use of pesticides are summarized as follows:

Education and Outreach

During the 2017 and 2018 growing seasons, the MDA, along with the UMN Extension, commodity groups, registrants, and others, provided informational documents, presentations, and video for use by pesticide applicators, retailers, educators and other interested parties.

Information about statewide and regional impacts of pesticides on water quality, along with information about preventing such impacts, was prepared for and coordinated with MDA and UMN Extension staff engaged in multi-regional pesticide applicator training and is available at: <http://www.extension.umn.edu/agriculture/pesticide-safety/> .

Announcements about BMPs and other concerns are communicated to pesticide dealers and commercial applicators by mail and on MDA and UMN websites. Related articles and information are distributed through the MDA Update, Agri News, Minnesota Irrigator, newsletters, and other conventional and social media outlets.

Education and outreach activities also included presentations to a diverse set of stakeholders through multiple venues. Posters on PMP implementation and the BMPs were included as part of several of these presentations:

- Minnesota Crop Protection Retailers Short Course.
- Turf and landscape industry at the Minnesota Nursery and Landscape Association meetings and the Minnesota Green Expo.
- MDA private and commercial pesticide applicator training and recertification workshops held annually across the state for those working with agriculture, turf, and landscape pest control.
- MN PIE (Minnesota Pesticide Information and Education) workshops held annually across the state for roadside, utility and forestry pesticide applicators.
- Training sessions given by pesticide dealers for their technical and sales staff.
- Metropolitan Mosquito Control District applicator training.
- Meetings held to educate pesticide dealers on atrazine label setback requirements and restrictions on standpipes.
- Two cue cards on atrazine and chlorpyrifos setbacks were developed.

The MDA worked with the Department of Natural Resources (DNR) to implement Source Water Protection Programs and the accompanying education and outreach needed to protect public drinking water supplies from the impacts of agricultural crop production in Wellhead Protection areas. The MDA also worked in cooperation with the DNR, regarding their aquatic pesticide program, to ensure the proper use of pesticide products.

BMP Education & Promotion Team

The BMP Education and Promotion Team (EPT) is a component of the PMP. Membership and purpose is designed to:

1. Provide assistance with the review and design of educational and promotional activities.
2. Promote BMPs and provide education about how the use of BMPs will prevent, minimize, reduce, and eliminate sources of water resource degradation, including through demonstration projects.
3. Identify opportunities for cooperation among state agencies, representative EPT organizations, pesticide registrants and other interested parties, including opportunities for joint grant-writing.

The EPT is comprised of a core team drawn from those agencies and organizations directed in Minn. Stat. chapter 103H to participate in BMP promotion and demonstration. The core team establishes the agenda for subsequent meetings of the full team, which is designed to engage participation of additional members from a variety of stakeholder groups. The core team then evaluates the activities of the full team to establish goals and agendas for subsequent meetings of the full team. The core and full membership of the EPT met four times (twice each year) in 2017 and 2018 to coordinate BMP messaging and awareness of emerging pesticide water quality issues. EPT recommendations for MDA to exploit social media as a means of outreach resulted in various projects and increased efforts to use such tools. The EPT also focused on education of its members. At the 2017 EPT, presentations included:

- Laws and regulations regarding setbacks/buffers and chlorpyrifos by Clarissa Levi (MDA).
- Drift reduction education modules: spray nozzle technology & know your pesticide label by Dean Hertzfeld and Tana Hagan-Brown (University of Minnesota Extension)
- Private pesticide applicator survey update by Lizbeth Stahl (University of Minnesota).
- Private pesticide applicator recertification workshops 2019-2021. Discussion on curriculum planning for the next round of recertification workshops by Tana Hagan-Brown (University of Minnesota).
- Water quality report update by Bill VanRyswyk (MDA).

MDA also conducted standard reviews of new active ingredients and new uses of currently registered pesticides to gain a better understanding of label, compliance, enforcement and non-target exposure issues associated with a product's registration or anticipated with its potential use.

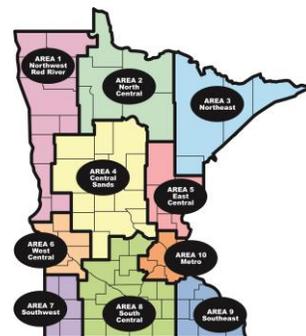
Integrated Pest Management (IPM) and National Pollutant Discharge and Elimination System (NPDES) Permits

The MDA continues to provide leadership in developing and promoting the use IPM for the control of insect, disease, and weed pests through implementation of several programs. IPM is a decision-making process that utilizes all available pest management strategies, including cultural, physical, biological and chemical control to prevent economically damaging pest outbreaks. These programs are coordinated and prioritized based on the current state of science and an understanding of where integrated management is currently feasible.

Several water quality concerns related to pesticide use can be mitigated through implementation of IPM principles, which are incorporated into pesticide-specific and general BMPs, and are a component of NPDES permits for several pesticide use patterns involving direct or indirect applications to water. Permit coverage from the Minnesota Pollution Control Agency (MPCA) for such use patterns became a requirement in April 2012. Implementation of the PMP is easily adaptable to and will account for the new NPDES pesticide permit requirements.

Pesticide Management Areas and Pesticide Monitoring Regions

Pesticide Management Areas (PMAs) are areas of similar characteristics in which BMPs may be promoted and evaluated. Boundaries of the PMAs also define the MDA’s Pesticide Monitoring Regions (PMRs). The PMAs and PMRs continued to be used in 2017-2018 planning to establish goals, objectives, and priorities for BMP promotion and evaluation, water resource monitoring (as described in the *Evaluation Activities* section of this report), pesticide usage and use practices surveys, and in computer modeling exercises to predict potential leaching and runoff potential.



Additional Staff

In 2017-2018 the MDA hired additional staff to assist with the promotion of water quality pesticide BMPs, the special registration review of pesticides, and monitoring of water resources for pesticide impacts. These staff play a direct role in implementing PMP prevention activities (as well as evaluation and mitigation activities discussed below).

IV. Evaluation Activities

The foundation of the MDA’s evaluation efforts for pesticides and water quality is an annual Water Quality Monitoring report. The MDA has a statutory requirement to “determine the impact of pesticides on the environment, including the impacts on surface

and groundwater” (MN Chap 18B.04). Additionally, the review of non-MDA monitoring data, and BMP evaluation efforts contribute to the MDA’s understanding of how best to prevent water quality impacts from pesticides. The Pesticide Management Plan Committee (PMPC) provides diverse input on the implementation of the PMP and in assessing the appropriateness of evaluation activities. Other efforts – like identification of health and environmental toxicity reference values, development of laboratory methods, and pesticide use surveys – contribute to MDA’s PMP evaluation activities.

MDA Monitoring Program and Annual Water Quality Monitoring Report

As in previous years, in 2017-2018 the MDA monitoring program collected groundwater and surface water samples from sites throughout the state. The complete data report and related information, including annual groundwater and surface water monitoring design and work plan documents, are available online at <http://www.mda.state.mn.us/monitoring>

Groundwater sampling is generally conducted where vulnerable soils serve as an indicator for potential losses of pesticides through leaching to groundwater. In southeast Minnesota, groundwater springs are sampled in lieu of direct groundwater sampling given the difficulty of installing and effectively sampling groundwater monitoring wells in karst geology. In addition, private wells are sampled in southeast Minnesota to assess groundwater and drinking water impacts. Surface water sampling continues to benefit from the tiered monitoring approach begun in 2007, combining a mixture of periodic grab sampling throughout the state and automated sampling in specific, representative watersheds. The overall approach for groundwater and surface water monitoring in the 2017-2018 biennium is described in program work plans, including special projects that focus on issues such as the quality of lake water, analytical methods, private drinking water wells and precipitation.

The MDA continues to report monitoring results on an annual basis to facilitate review by all stakeholders, and to inform refinement and implementation of MDA programs. In addition, results are submitted to the Minnesota Department of Health (MDH) and MPCA for comparisons to drinking water and surface water health and environmental standards and guidance. Results are also shared with the EPA. The report is also the focus of data review by the Pesticide Management Plan Committee, which helps the MDA make informed decisions regarding commonly detected pesticides in groundwater and pesticides of concern in surface water.

Additionally, the Groundwater Protection Act directs the MDA to review relevant pesticide-related water quality monitoring data in Minnesota. The MDA routinely obtains water quality pesticide data from the National Water Quality Monitoring Council (NWQMC) [Water Quality Portal](#). The Water Quality Portal is a cooperative service sponsored by U.S. Geological Survey (USGS), EPA and the NWQMC. It serves data collected by over 400 state, federal, tribal and local agencies. MDA’s ambient pesticide monitoring data is also publically available through the Water Quality Portal.

Interagency Collaboration in Water Quality Data Collection and Analysis

Memoranda of agreement between state agencies continue to be implemented for both groundwater and surface water monitoring. These agreements establish the cooperative basis for sharing monitoring location infrastructure, access, and sample collection and processing. Monitoring Cooperative projects in 2017-2018 included lake sampling, groundwater monitoring, and additional surface water sampling in cooperation with MPCA assessments. All water quality data is shared with the MDH and the MPCA, and is evaluated in the context of drinking water and surface water body assessment activities.

Additionally, the Groundwater Protection Act directs the MDA to review relevant pesticide-related water quality monitoring data in Minnesota. The MDA reviews water quality pesticide data from the U.S. Geological Survey (USGS), MPCA, tribal, local units of government, and others. Any such information is routinely reviewed in the evaluation of pesticide impacts to state water resources.

BMP Evaluation

There are a range of options available to evaluate the adoption and effectiveness of pesticide BMPs. Rates of BMP adoption can be measured through surveys and other means such as field audits, mail surveys, applicator and dealer surveys, direct interviews (including FANMAP), and focus groups. BMP effectiveness can be measured through plot and small watershed scale projects where specific pesticide use practices can be correlated with water monitoring and pest control data. Many of these options carry a relatively high cost if they are to be conducted in a meaningful manner. The actual implementation of options were tied directly to the availability of funding and other resources. At a minimum, a sufficient level of groundwater and surface water monitoring will be conducted at key locations in Minnesota to determine concentration trends over time sufficiently to evaluate, at a broad level, the need for additional protective actions.

In 2017-2018, the BMP Evaluation Plan continued to be implemented (available at <http://www.mda.state.mn.us/news/publications/protecting/waterprotection/pmhc/draftbmevaluation.pdf>). Results of biennial surveys (see the *Pesticide Use Information* section of this report) of pesticide usage (odd years) and use practices (even years) were reviewed in conjunction with the 2018 PMHC meeting. The results, together with monitoring data, suggest that for critical groundwater and surface water pesticide concerns (e.g., acetochlor and atrazine), the decline in pesticide concentrations in vulnerable regions of the state track the increasing adoption of some BMPs and reductions in use or use rates of certain pesticide products. Other factors, including weather and cropping patterns, also play a likely role in overall water quality improvements for these pesticides.

BMP evaluation is also an outcome of the MDA surveys conducted in cooperation with the National Agricultural Statistics Service (NASS) and its Minnesota office (MASS). Every two years, a statewide survey is conducted to capture information about corn

herbicide use practices. The survey is further described in the “*Pesticide Use Information*” section of this report.

Pesticide Management Plan Committee

The Pesticide Management Plan Committee (PMPC) provides informed diverse comment to the Commissioner of Agriculture on significant water quality evaluation activities and decisions, such as whether to determine that a pesticide meets the statutory definition of “common detection” for groundwater, or the PMP’s definition of a “surface water pesticide of concern.” The committee’s structure and process preserves the commissioner’s statutory authority to make such determinations while engaging important stakeholders in the process of reviewing and commenting on water quality, pesticide use, climatic and other data. The PMPC membership includes the MPCA, the DNR, the MDH along with a representative from industry, farmers and farm organizations, environmental groups, UMN Extension personnel and other technical experts. The PMPC meets at least one time per calendar year.

The PMPC met in August 2017 and June 2018 to discuss recent and historical MDA pesticide water quality monitoring data, as well as other elements of MDA’s pesticide management activities related to water quality (see <https://www.mda.state.mn.us/en/protecting/waterprotection/pmp/pmpe/pmpemeetings.aspx>). Topics discussed in 2017 included private well pesticide sampling, insecticide summary (neonicotinoids and chlorpyrifos), legislative update on neonicotinoids, Root River pesticides study, wetland survey. The 2018 meeting included discussion about monitoring data, chlorpyrifos outreach and compliance, MDH review of and processes for updating HRL’s.

According to the statutory authority under which the PMPC was created and is convened (Minn. Stat. § 15.0597), the PMPC expires every two years and must be re-established. Therefore, in 2018, the MDA will seek applications for the PMPC for the 2019-2020 biennium.

Standards Development

The MDH is responsible for developing or reviewing health risk standards or guidance for pesticides (and other contaminants) in groundwater and the MPCA is responsible for developing or reviewing regulatory standards or other risk guidance (e.g., benchmarks) for pesticides and other contaminants in surface waters. Both agencies are active participants in PMP implementation and are members of the PMPC. Both are fully informed regarding MDA monitoring efforts and results.

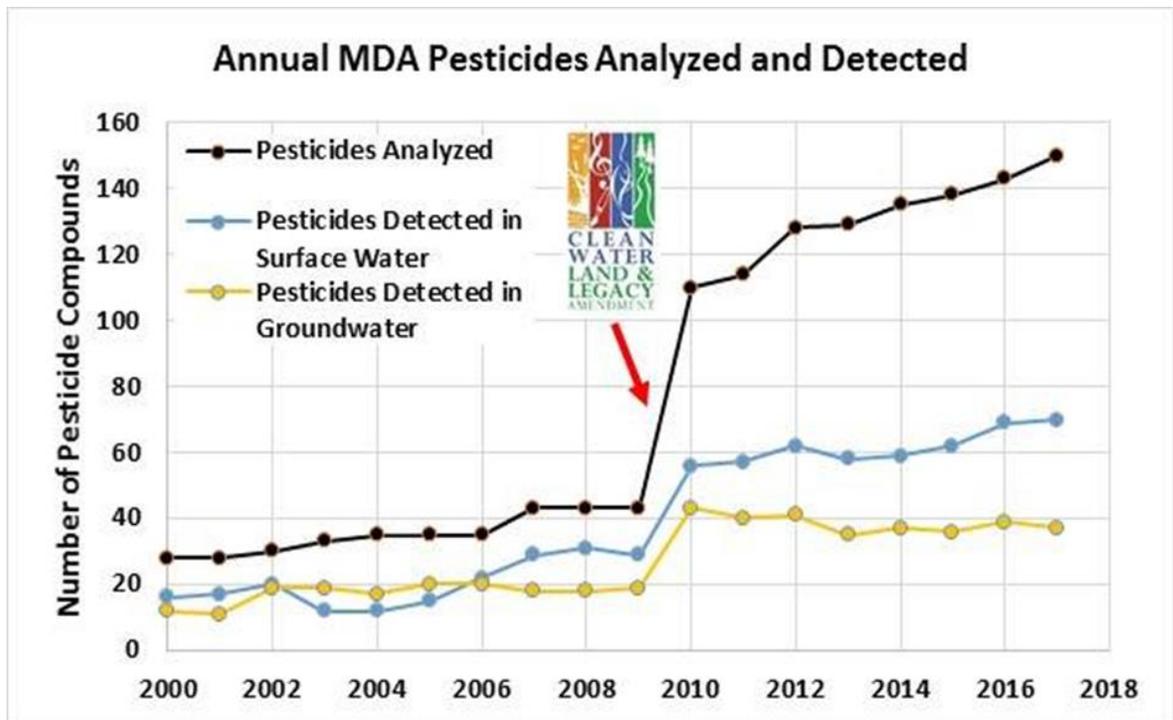
Human Health – In 2017-2018, the MDA consulted with MDH on the review and prioritization of drinking water guidance for a limited number of pesticides to be addressed under MDH’s Health Risk Limits program for fiscal years 2017 and 2018. Additionally, the MDA has been consulting with MDH regarding pesticide drinking water risk assessments under the MDH’s Contaminants of Emerging Concern program.

Aquatic Life – In 2017-2018, the MDA and MPCA shared information regarding the occurrence and concentration of surface water pesticide contaminants, and using PMP criteria, did not advance the development of additional, promulgated pesticide standards, despite the lack of state-level benchmarks for many pesticides. Similar to HHBPs, the EPA publishes Aquatic Life Benchmarks (ALB) for pesticides that are used to screen for aquatic life exposure concerns when MDA detects pesticides in surface water when there are no MPCA surface water standards. Additionally, the MDA sent requests to EPA in both 2017 and 2018 seeking additional ALB for new laboratory analytes and newly detected pesticides.

MDA Laboratory Analyses for Pesticides and Pesticide Breakdown Products

The Groundwater Protection Act and the Pesticide Control Law contain references to the need for evaluation of groundwater or surface water for pesticide breakdown products, and the PMP acknowledges this need. During 2017-2018, MDA equipment and analytical methods have continued to improve providing the MDA with the ability to analyze water samples for approximately 150 pesticides and degradates. Several new analytes were added to the LC-MS/MS water analyses including halauxifen-methyl, halauxifen acid, imidacloprid-urea, imidacloprid-olefin, mandestrobin, momflourothrin, and oxathiapiprolin. The initial method upgrades were made possible by a grant from the Legislative Citizens Commission on Minnesota Resources (LCCMR) together with Clean Water Land and Legacy funding (Figure IV-1).

Figure IV-1. Pesticides analyzed and detected by MDA in groundwater and surface water.



Pesticide Use Information

In order for the MDA and its stakeholders to evaluate the source of pesticide detections and concentrations in water resources, information on pesticide use is frequently needed or requested.

To better document relationships between water quality and overall pesticide use and use rates and BMP adoption, the MDA continues to work with the USDA, NASS and its Minnesota field office to collect basic pesticide use and use rate information via phone surveys. Pesticide rate and use information is gathered on the four major crops in Minnesota of corn, soybeans, wheat and hay. Thousands of farmers are surveyed each year to obtain information on active ingredients used, acres treated, and application rates. NASS also currently surveys these crops through the Agricultural Resource Management Survey and those can be found at:

https://www.nass.usda.gov/Statistics_by_State/Minnesota/Publications/Other_Press_releases/index.php. In years that NASS surveys one of the four crops, the MDA forgoes its survey of that crop. Pesticide use surveys have been conducted since 2003. See <http://www.mda.state.mn.us/chemicals/pesticides/pesticideuse.aspx>

A variety of sources publish information related to pesticide use in Minnesota. Each source has a particular reason for collecting information and a set of assumptions underlying its collection and reporting methods. In 2017-2018, data from some of these sources were available through the MDA's website. Examples of sources and related information include:

1. 2013 MDA pesticide sales data was added for pesticide active ingredients based on pesticide registrant reporting requirements.
2. MDA's occasional surveys of farms in localized areas (several hundred acres) where community water supplies exhibit vulnerability to land use impacts or where other water quality concerns exist. Survey results are published by the MDA or other cooperators.
3. The MDA cooperates with the DNR on aquatic pesticide permitting and practices; the DNR publishes an annual report on the use of aquatic pesticides permitted under its authority. See <http://www.dnr.state.mn.us/eco/apm/index.html>

V. Mitigation Activities

Education and Awareness

Educating and raising a pesticide user's awareness of environmental concerns is one of the most important activities necessary to protect the state's water resources from the potential for leaching and runoff of pesticides, and to mitigating observed impacts (regardless of the known or suspected impacts resulting from those impacts). For this reason there is considerable overlap between prevention and mitigation activities. Those activities listed under prevention, although not repeated in this section, may be considered important components of mitigation activities under the PMP. For additional

information, see the MDA website:

<http://www.mda.state.mn.us/chemicals/pesticides/outreach.aspx>

Pesticide Best Management Practices Development, Education/Outreach, and Evaluation

The development and promotion of pesticide Best Management Practices (BMPs) is both a prevention activity (see above) and a mitigation activity. See the *Prevention Activities* section of this status report for background information on MDA BMPs. BMP evaluation activities also contribute to mitigating the impact of pesticides to water resources, and are described in the *Evaluation Activities* section of this report.

Registration Authority to Prevent Unreasonable Adverse Effects

As an outcome of an evaluation report on pesticide regulation conducted by the Office of the Legislative Auditor (March 2006), the MDA has increased its review of pesticide registrations. These reviews are an assessment of the status or potential impacts of a pesticide active ingredient or product, but could lead to mitigation activities (see the “*Special Registration Review*” section of this report).

Response to Water Quality Pesticide Impairments

There are ten waterbodies in Minnesota that are either designated, or proposed to be designated, by the MPCA as impaired on the USEPA 303(d) Impaired Waters List for currently registered pesticides (Table V-1). These listings are a result of the MPCA assessment of MDA collected surface water pesticide data. The 2017 and 2018 MDA pesticide water quality data will be reviewed by MPCA as part of the 2020 USEPA 303(d) Impaired Waters List assessment process.

Table V-1. Minnesota pesticide Impairments for currently registered pesticides.

Pesticide	Impaired Waters List Year	Stream	County	Violation that Resulted in Impairment
Acetochlor	2016	Silver Creek	Carver	chronic (3,600 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Beauford Ditch	Blue Earth	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Beaver Creek	Murray	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Chetomba Creek	Renville	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2016	Dry Weather Creek	Chippewa	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2014/2016	Grand Marais Creek	Polk	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Jack Creek	Jackson	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Lac qui Parle River	Lac qui Parle	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2018	Sleepy Eye Creek	Redwood	maximum (83 ng/L) Minnesota water quality standard
Chlorpyrifos	2014	Tamarac River	Marshall	maximum (83 ng/L) Minnesota water quality standard

Three waterbodies have been removed from the USEPA 303(d) Impaired Waters List for currently registered pesticides. The Le Sueur River and Beauford Ditch were designated as impaired for acetochlor in 2008 and were removed from the USEPA 303(d) Impaired Waters List in 2014. Seven Mile Creek was designated as impaired on the 2012 Impaired Waters List for chlorpyrifos and has been proposed for removal from the proposed 2018

Impaired Waters List. Removal from the USEPA 303(d) Impaired Waters List followed several years of water quality monitoring without elevated pesticide detections.

VI. Other Pesticide-Related Environmental Activities

EPA Office of Pesticide Programs

In 2017-2018, MDA staff attended separate EPA Pesticide Regulatory Education Program training courses Water Quality. Additionally, MDA staff held membership on the State-FIFRA Issues Research and Evaluation Group, and on the Pesticide Operations and Management Working Committee. This committee addresses pesticides and pesticide label language.

Other MDA Pesticide Programs

The MDA has a number of pesticide-related programs designed to ensure the safe and proper use of pesticides and to reduce the risk from pesticides to human health and the environment. These programs address virtually every aspect of pesticide use and management in Minnesota. These include the following:

- Waste pesticide collection and empty pesticide container collection
- Pesticide applicator licensing & certification
- Permitting and inspection of pesticide storage and chemigation activities
- 24-hour emergency response to pesticide spills
- Environmental cleanup of contaminated pesticide sites and facilities
- Rapid cleanups to facilitate property transfers and development of rural brownfields through the Agricultural Voluntary Investigation and Cleanup (AgVIC) program
- Partial reimbursement of costs for environmental cleanup of pesticide releases through the Agricultural Chemical Response and Reimbursement Account (ACRRA)
- Pesticide use inspection to ensure compliance with pesticide labeling
- Pesticide misuse investigations
- Pesticide use data collection
- Enforcement of violations of pesticide law
- Pesticide related bee kill investigations

Activities Coordinated with Other State Agencies

Other state agencies have statutory responsibilities related to the protection of the Minnesota's water resources. These inter-agency activities provide a forum for the discussion and coordination of many PMP-related issues. Some of these activities are mentioned elsewhere in this report, and are included in the summary below. During 2017-2018:

- The MDA worked closely with other state commissioners and their staff through the Clean Water Council and other interagency workgroups on the quality and monitoring of groundwater and surface water.
- The MDA, MPCA, and MDH continued to cooperate on the implementation of agreements on groundwater and surface water monitoring. These agreements have been published as the *Integrated Ground Water Quality Monitoring Strategy* and the *Cooperative Surface Water Quality Monitoring System* signed by the commissioners of applicable agencies. The agreements represent the Agencies' joint plan for conducting water quality monitoring on a statewide basis in Minnesota.
- The MDA continued to facilitate communications between the EPA's Office of Pesticide Programs and MDH toxicologists in order to obtain necessary data for establishment of drinking water and ecological guidance for assessment of pesticide impacts.
- The MDA continued to work with MPCA on issues related to the development of surface water standards, and on improving coordination between surface water monitoring methods and MPCA's data needs for making surface water impairment decisions and implementation of its Total Maximum Daily Load initiatives.
- The MDA participated in technical workgroups and science advisory panels convened by MDH to address Environmental Public Health Tracking (EPHT) Program and related biomonitoring concerns. The biomonitoring component of the EPHT seeks to evaluate the feasibility of measuring contaminants, including pesticides, in human body fluids and tissues as an indicator of potential health impacts. The health tracking component explores the feasibility of establishing indicators of health outcomes by linking the presence of environmental chemicals, including pesticides, with chronic or acute health issues.

VII. Conclusion

There continues to be a great deal of activity at the MDA in support of the PMP.

- Prevention of water resource contamination with pesticide continues to be the focus of PMP implementation.
- The MDA continues to expand groundwater and surface water monitoring and surveying continues and has been expanded in critical areas;
- Groundwater samples continue to be analyzed for additional pesticides and degradation products;
- MDA monitoring data is being managed, reported and shared efficiently and effectively;
- The MDA actively promotes and evaluates BMPs for all herbicide use in the state, and for six herbicides that have been determined to be a concern for groundwater or surface water;
- The MDA has developed BMPs for additional water quality pesticide issues of concern;

- Where specific water quality pesticide concerns require enhanced attention (e.g., in watersheds with impairments due to pesticides), the MDA has cooperated with other state agencies to mitigate impacts while enhancing prevention and evaluation efforts.

This report fulfills MDA's statutory requirement to provide a PMP biennial status report for 2017 and 2018.