Pesticide Management Plan Status Report

2010

Legislative Charge

The MDA has developed 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 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."

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This report is available in alternative formats upon request, and online at www.mda.state.mn.us

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I. Introduction

The Pesticide Control Law (Minn. Stat. §18B.045) requires the development and implementation of a state Pesticide Management Plan (PMP) to prevent, evaluate and mitigate occurrences of pesticides or pesticide breakdown products in groundwaters and surface waters. The law also directs the Minnesota Department of Agriculture (MDA) to submit a biennial status report on the plan to the environmental quality board and to the House of Representatives and Senate committees with jurisdiction over the environment, natural resources, and agriculture.

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 following biennial status report outlines accomplishments and major activities conducted during 2009 and 2010 in support of the PMP, and is divided into three major sections on Prevention, Evaluation and Mitigation, to coincide with the three required components of the plan. 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 PMP web page http://www.mda.state.mn.us/chemicals/pesticides/maace.aspx

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 published in November 2007 Recommendations from the 2006 Office of the Legislative Auditor's review of MDA's pesticide programs were incorporated into the November 2007 revised PMP and continue to be implemented.

Additional information, including a copy of the most recent PMP, is available from the MDA website at http://www.mda.state.mn.us/protecting/waterprotection/pmp.aspx

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

II. Prevention Activities

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 cooperators, through MDA's pesticide applicator training programs, seasonal updates, and other distribution and outreach mechanisms, such as the MDA Update newsletter, which is sent to commercial/non-commercial pesticide applicators and private/restricted use pesticide applicators. Web pages for these BMPs were updated in during 2009-2010 in an effort to improve promotion of the BMPs. See http://www.mda.state.mn.us/protecting/bmps/voluntarybmps.aspx

The MDA has also developed voluntary BMPs that focus specifically on the use of agricultural herbicides, along with BMPs for five herbicides 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. 103H). 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. Together, the herbicide BMPs and the BMPs for general pesticide distribution, storage, handling, use and disposal, form the foundation of MDA's prevention efforts, along with use inspections, MDA's applicator training, incident response program, waste pesticide product disposal, and certification and licensure efforts.

In 2009-2010, examples of efforts to promote BMPs and the responsible, safe use of pesticides are summarized as follows:

BMPs Revised and Reissued

During 2008 and 2009, the acetochlor-specific BMPs were revised through a public process outlined in the PMP. Pesticide dealers, the acetochlor registrants, independent crop consultants, Extension and other interested parties participated in the process. The revised acetochlor BMPs are available at http://www.mda.state.mn.us/protecting/bmps/herbicidebmps/~/media/Files/protecting/bmps/bmpsforacetochlor.ashx BMP promotion for acetochlor and other pesticides has been integrated, through the BMP Education and Promotion Team (see Mitigation section below) and other mechanisms, into USDA Natural Resource Conservation Service's Conservation Practice Standard "Pest Management," Soil & Water Conservation District regional update meetings, Certified Crop Advisor (CCA) continuing education programs, NRCS Technical Service Provider (TSP) certification training, annual dealer meetings, UME field day presentations, and industry pesticide updates, including the Acetochlor Registration Partnership (ARP) website.

Education and Outreach

In conjunction with the 2009 and 2010 planting seasons, the MDA, with assistance from the UME, commodity groups, registrants and others, developed two key informational documents for distribution to pesticide applicators and retailers. In consideration of a key finding from a special registration review of atrazine (see Mitigation section below), the MDA developed guidance for chemical dealerships, applicators and farmers to help

them know when weed control products they purchase contain atrazine and acetochlor (often packaged as mixes) See http://www.mda.state.mn.us/protecting/bmps/herbicidebmps/~/media/Files/protecting/bmps/herbicideswithacetatra.ashx Also, atrazine-specific outreach documents distributed to various user-groups included guidance on label language associated with application setback requirements from "standpipes" (see http://www.mda.state.mn.us/protecting/bmps/herbicidebmps/~/media/Files/chemicals/terracedlanguage.ashx) and an annual mailing addressing atrazine use inspections and the special registration review, along with pyrethroid application setback reminders and other environmental protection information (see http://www.mda.state.mn.us/protecting/bmps/herbicidebmps/~/media/Files/chemicals/pesticides/pmu2010mailing.ashx). Revisions were made in April 2010 to posters that provide visual and text reminders of surface water concerns for atrazine products, emphasizing requirements for application setbacks from water features, and the importance of vegetative buffers around lakes, rivers, intermittent streams, and around tile inlets.

During 2009-2010, direct mailings about BMPs and other concerns were made to pesticide dealers and commercial applicators, and related articles and information were distributed through the MDA Update, Agri News, Minnesota Irrigator newsletter.

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 and Trade Show and the Minnesota Corn Growers Minnesota Ag EXPO.
- Turf and landscape industry at the Minnesota Nursery and Landscape Association meetings and the Minnesota Green Expo.
- Midwest Food Processors Association.
- UM Extension sponsored events; the Crop Management Tour in Rochester, Field Crop Pest Management Workshops, Winter Crops Workshops (2010), and the joint UM/NDSU Crop Protection Workshop.
- MDA commercial pesticide applicator training sessions held annually across the state.
- 60 private pesticide applicator training sessions held annually across the state by UM Extension.
- Annual PIE (Pesticide Information and Education) workshops held across the state for roadside, utility and forestry pesticide applicators.
- Training workshops given by pesticide dealers for their technical and sales staff.
- Crop management class at MN West Community and Technical College.
- Training workshops for NRCS Technical Service Providers.
- MPCA Basin Coordinators.
- Minnesota Water Resources Conference.

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 Best Management Practices (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. §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 2009 and 2010

Integrated Pest Management (IPM)

The MDA continues to provide leadership in developing non-chemical pest management methods through implementation of several programs in integrated pest management and integrated weed management. In addition, the MDA provides leadership and applied research assistance for the biological control of insect pests and weeds. 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 draft requirements of pending rules requiring National Pollutant Discharge and Elimination System (NPDES) permits for several pesticide use patterns with direct or indirect impacts to water. The NPDES permit effort is being monitored by the MDA and PMPC. Implementation of the PMP is easily adaptable to and will account for any new NPDES pesticide permit requirements.

Urban Activities

In 209-2010, the arrival of Emerald Ash Borer (EAB) signaled a new pest threat to urban forest and ornamental ash trees, and a potential threat to water resources from insecticides used to control EAB. The MDA worked with the Minnesota Department of Natural Resources and UME to inform homeowners about proper evaluation of trees for EAB, pest control options, and threats to water quality from various pesticide products and application methods.

In April 2010, the MDA published its first report on the sales of non-agricultural pesticide active ingredients ("Non-Agricultural Pesticides Sales 2006-2007: Examining Urban and Non-Agricultural Pesticide Trends in Minnesota," see http://www.mda.state.mn.us/chemicals/pesticides/~/media/Files/chemicals/pesticides/2006-2007nonagpesticidesales.ashx), a tool that will be used by the MDA and is available to stakeholders to evaluate water quality related program and outreach efforts.

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 2009-2010 planning to establish goals, objectives and priorities for BMP promotion and evaluation, water resource monitoring, pesticide usage and use practices surveys, and in computer modeling exercises to predict potential leaching and runoff potential.

Additional Staff

In 2009 and 2010 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).

III. Evaluation Activities

Pesticide Monitoring and BMP Evaluation

The foundation of the MDA's evaluation efforts for pesticides and water quality is an annual monitoring data 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 Data Report

As in previous years, in 2009-2010 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/chemicals/pesticides/maace.aspx 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 in karst geology. In addition, private wells are sampled in southeast Minnesota to assess groundwater and drinking water impacts. Special projects are also conducted as part of annual pesticide monitoring activity, focusing on issues such as the quality of lake water, private drinking water wells and precipitation.

The MDA continues to report monitoring results to facilitate review by all stakeholders, and to inform refinement and implementation of MDA programs. In addition, results are submitted to MDH and MPCA for comparisons to drinking water and surface water health and environmental standards and guidance. The report is also the focus of data review by the Pesticide Management Plan Committee, which helps the MDA make informed decisions regarding frequently detected pesticides in groundwater and concentrations of concern in surface water.

Integration of MDA Data and PMP Implementation in Multi-Agency Reports to EQB and the Legislature

MDA water quality monitoring data and program policies, goals and activities are also included in the "Biennial Assessment of Water Quality Degradation Trends and Prevention Efforts," and the "Groundwater Monitoring Status Report." These reports are cooperatively-developed with the MPCA and are submitted biennially to the Minnesota Environmental Quality Board (EQB) as requirements of Minn. Stat. 103A.43 and Minn. Stat. 103H, respectively. Additionally, pesticide program policies and goals are incorporated into a multi-agency effort to assist the EQB with water planning and priorities that must be provided to the legislature as directed in Minn. Stat. 103B.151.

Interagency Collaboration in Water Quality Data Collection and Analysis

Memoranda of agreement between state agencies continue to be implemented for both groundwater (http://www.mda.state.mn.us/sitecore/content/Global/MDADocs/chemfert/reports/integwqualstrat.aspx) and surface water (http://www.mda.state.mn.us/sitecore/content/Global/MDADocs/chemfert/reports/swagreement.aspx) monitoring. These agreements establish the cooperative basis for sharing monitoring location infrastructure, access, and sample collection and processing. Cooperative projects in 2009-2010 included lake sampling, groundwater monitoring, and analysis of samples from public water supplies for pesticides and degradates not required by implementation of the federal Safe Drinking Water Act. 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), 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 (i.e., use) 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 will be 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 209-2010, the BMP Evaluation Plan continued to be implemented (available at http://www.mda.state.mn.us/news/publications/protecting/waterprotection/pmpc/07-17-07_effectiveness.pdf).

In 2009-2010, evaluations of computer modeling and remote land survey tools (e.g., LiDAR technology) to predict pesticide impacts to water resources continued to be conducted for the MDA by the University of Minnesota department of Soil, Water and Climate and other cooperators. The models and tools explore the identification of vulnerable areas of watershed landscapes through analysis of soils, landscape, and climate data.

Effectiveness of the acetochlor BMP to use reduced rates is being evaluated through ongoing tile water contamination studies.

For an overview of all related research and demonstration projects, see http://www.mda.state.mn.us/en/protecting/cleanwater/research.aspx

Also, in 2009-2010, the MDA began working with the Acetochlor Registration Partnership to evaluate the effectiveness of the vegetative filter strip BMP. This activity is further described in the Acetochlor Impairment Response Plan (see http://www.mda.state.mn.us/chemicals/pesticides/acetochlor1/~/media/Files/chemicals/pesticides/acetochlorworkplan.ashx)

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 determines 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 Minnesota Department of Health (MDH) along with a representative from industry, farmers and farm organizations, environmental groups, UME personnel and other technical experts. The PMPC meets at least one time per calendar year. The PMPC met in September 2009 and in July 2010 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 http://www.mda.state.mn.us/protecting/waterprotection/pmpcommittee.aspx). 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 2010, the MDA sought applications for the PMPC for the 2011-2012 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.

In 2009-2010, the Minnesota Legislature passed legislation authorizing MDH to implement a sustained program for development of initially non-regulatory health-based guidance for drinking water contaminants of emerging concern, several of which are pesticides. Also, during the biennium the MDH redesigned its implementation of Health Risk Limit promulgation by seeking multi-agency input on common contaminants and priorities for future rule-making efforts, which include pesticide priorities. The MDA has been an active participant in all of these efforts.

During the same period, the MDA and MPCA shared information regarding 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. The need for such activity was mitigated, in part, by joint MDA-MPCA efforts on behalf of other U.S. EPA Region 5 states and the American Association of Pesticide Control Officials to conduct a pilot project exploring methods for the establishment of surface water non-regulatory pesticide benchmarks when regulatory values are unavailable or are not a priority for state rule-making. The project was completed in 2009, and EPA's Office of Water and Office of

Pesticide Programs is using the results as part of its exploration of ways to better utilize pesticide registration data to support publication of aquatic life benchmarks. The EPA effort will lead to new guidance to states on pesticide standards development. Additionally, in 2010, additional values were added to the EPA's list of aquatic life benchmarks for pesticide active ingredients, a result of state petitioning (including that of MDA) for such values to be made available for water quality evaluation.

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 2009-2010, MDA equipment and analytical methods have continued to improve in order to provide the MDA with the ability to analyze for several new pesticides and pesticide classes, along with many of their breakdown products. Funding from the Legislative-Citizen Commission on Minnesota Resources (LCCMR) together with Clean Water Legacy funding allowed for expanded pesticide analyses, including additional degradate analysis in both groundwater and surface water samples.

Immunoassay Screening

Atrazine Screening of Private Drinking Water Wells

As part of special monitoring projects in 2009, the MDA conducted screening of 92 drinking water wells in the southeast karst region of the state using a triazine immunoassay analysis. The wells were selected from a pre-existing network of volunteered, private drinking water wells with high nitrate levels. Forty-four samples had detectable levels of triazine compounds. Detections had a median value of <0.05 ppb, a 90th percentile value of 0.22 ppb, and a single maximum value of 1.26 ppb. Thus, all sample results were below the currently applicable drinking water standard of 3.0 ppb (see http://www.mda.state.mn.us/sitecore/content/Global/MDADocs/chemfert/atrazine/screeningreport.aspx).

As an outcome of the special registration review for atrazine, in 2010 the MDA developed an instructional video and supporting web content about screening private drinking water wells for atrazine and other pesticides (see http://www.mda.state.mn.us/privatewelltesting).

Acetochlor Screening of Surface Water Samples

The MDA evaluated the use of an immunoassay method to enhance understanding of the spatial and temporal distribution of acetochlor detections in the Le Sueur River Watershed during the 2009 monitoring season (see http://www.mda.state.mn.us/chemicals/pesticides/~/media/Files/chemicals/reports/acetochlorelisarpt.ashx)

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 National Agricultural Statistics Service (NASS) and its Minnesota office (MASS) to collect basic pesticide use and use rate information via phone surveys. Separate surveys are conducted in a two-year cycle. In the first year, a survey is conducted in the majority of crop-producing counties, yielding thousands of responses about pesticide usage (e.g., active ingredients used, acres treated, and application rates) on corn, wheat, soybean and hay crops. In the second year, a statewide survey is conducted to capture information about corn herbicide use practices (e.g., use of Best Management Practices, timing of application, utilization of application setbacks). Accordingly, surveys were conducted for 209 and 2010 growing years. 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 2009-2010, data from some of these sources were available through the MDA's website. Examples of sources and related information include:

1. 2009-2010 MDA pesticide sales data for pesticide active ingredients based on pesticide registrant reporting requirements. During the biennium, sales data for non-agricultural pesticide active ingredients were added to the database, beginning with 2006 data. See http://www.mda.state.mn.us/chemicals/pesticides/pesticideuse.aspx

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.

   In 2009, a MDA Farm Nutrient Management Assessment Process (FaNMAP) publications included the collection of pesticide use information from farmers located in the south branch of the Root River and in the Seven Mile Creek Watershed. See http://www.mda.state.mn.us/chemicals/pesticides/pesticideuse.aspx

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

IV. 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. 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 mitigation steps.

All of the applicable BMPs can reduce point and nonpoint sources of pesticide contamination. Production of agricultural crops in wellhead protection (WHP) areas may pose contamination risks to public drinking water sources. The MDA continues to work with the Minnesota Department of Health in its implementation of the Source Water Protection Program. Several resources and tools are available to help communities protect drinking water sources from impacts of ag chemicals, including pesticides.

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 the *Evaluation Activities* section of this report.

Special Registration Reviews of Pesticides

In 2009-2010, the MDA initiated a special registration review of the corn herbicide atrazine. A summary of the review has been prepared along with five agency-specific technical assessments. Assessments from the MDH and MPCA describe atrazine impacts and exposures relative to potential human health and environmental risks. Impacts and exposures are based on established toxicity endpoints and compared to federal or state standards. Assessments from the MDA describe estimated economic costs and benefits from the use of atrazine, review portions of the federal atrazine label, and summarize MDA and other atrazine monitoring data. The five technical assessments were the foundation of the review, and became the source of 10 recommendations and opportunities for prevention, evaluation and mitigation of atrazine impacts. For additional information, see http://www.mda.state.mn.us/chemicals/pesticides/atrazine/atrazinereview.aspx

MDA also began a special registration review of insecticides used to treat ash trees for the invasive pest Emerald Ash Borer. The review will consist of assessing product labels from distributors for compliance with federal labeling requirements, development of a professional users guide and possible revisions to the homeowner guide (see Prevention

activities), and guidance on label interpretation, especially as such interpretation relates to the protection of water resources.

These efforts are responsive to Legislative Audit recommendations for additional, programmatic registration reviews to protect human health and the environment in Minnesota.

Regulatory Activity

Two Minnesota streams, the Le Sueur River and the Little Beauford Ditch, violated the MPCA Chronic Water Quality Standard for Acetochlor and are included on the Minnesota 2008 Total Maximum Daily Load (TMDL) List of impaired waters (also known as the 303(d) list). Information on Minnesota's impaired waters and the TMDL Program. Guided by the PMP, in 2009-2010 the MPCA and MDA worked together to develop a proposed "Acetochlor Impairment Response Plan" (see http://www.mda.state.mn.us/chemicals/pesticides/acetochlor1/~/media/Files/chemicals/pesticides/acetochlorworkplan.ashx) for the two impaired streams, included establishment of a Acetochlor Impairment Response Plan Advisory Committee (AIRPAC). See http://www.mda.state.mn.us/chemicals/pesticides/acetochlor1/acetochlor6.aspx

In 2009-2010, atrazine application setback inspections and enforcement activities continued, aided by a mapping tool developed to assist MDA agricultural chemical inspectors locate compliance features prior to inspection.

V. Other Pesticide-Related Environmental Activities

Pesticide Registration and Labels

In 2009-2010, MDA staff attended EPA Pesticide Regulatory Education Program training courses that focused on product registration issues, including several related to water quality. Additionally, MDA staff held membership on the State-FIFRA Issues Research and Evaluation Group Environmental Quality Issues Working Committee, and on the Pesticide Operations and Management Working Committee. Both of these committees address issues related to water quality impacts from pesticides and pesticide label language and related outreach/training relative to water quality concerns.

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
- 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

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. During 2009-2010:

- The MDA worked closely with other state commissioners and their staff through the Water Resources Committee and interagency workgroups on groundwater and surface water monitoring.
- The MDA continued to work with the Governor's Clean Water Cabinet, which includes the Commissioners of MPCA, DNR, MDA, MDH and the Board of Soil and Water Resources.
- 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 agreements can be reviewed at http://www.mda.state.mn.us/chemicals/pesticides/maace.aspx
- 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.

VI. Conclusion

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

- 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 Best Management Practices for all herbicide use in the state, and for five herbicides that have been determined to be a concern for groundwater or surface water; and
- The MDA continues to integrate the recommendations of a 2006 legislative audit into its pesticide programs.

In addition, there have been many other MDA pesticide related projects and activities that are further described in this report. These many activities indicate that the MDA has continued to effectively implement the PMP during the 2009-2010 biennium.