Pesticide Management Plan Committee

Member Comments 2020

DEPARTMENT OF HEALTH

Protecting, Maintaining and Improving the Health of All Minnesotans

August 28, 2020

Trisha Leaf
Minnesota Department of Agriculture
625 N. Robert Street
St. Paul, Minnesota 55155

RE: Meeting of the Pesticide Management Plan Committee, June 2020

Dear Ms. Leaf:

Thank you for the opportunity to review and comment on the information provided to the Pesticide Management Plan Committee (PMPC) on June 25, 2020. I prepared the following comments on behalf of the Minnesota Department of Health (MDH).

I. Groundwater

A. Pesticide Concentrations ≥10% of Human Health-based Drinking Water Guidance Values

Five analytes were found in at least one groundwater sample at concentrations equal to or greater than 10% of the associated health-based guidance value (HBGV): Atrazine plus its chlorotriazine degradates (31% HBGV), cyanazine plus its chlorotriazine degradates (above HBGV), fomesafen (15% HBGV), tembotrione (15% HBGV), and metribuzin plus its degradates (12% HBGV). Of these, cyanazine, fomesafen, and tembotrione are not in common detection status.

Metribuzin detections are not widespread and no statistically significant increasing trends in detection frequency or concentration are seen. Atrazine and its chlorotriazine degradates continue to have the highest groundwater concentrations in PMR 9. Didealkylatrazine contributes the most to total concentration, and both detection frequency and median concentration of this degradate are increasing in PMR 9. Several private wells in PMR 9 that were sampled through the Private Well Pesticide Sampling Project have been over 50% of the HRL for atrazine+chlorotriazine degradates. *I recommend an increase in atrazine BMP promotion efforts in PMR 9. The MDA should also consider converting the Southeast Minnesota-specific BMP regarding the recommended annual cap on lbs. of atrazine per acre into a label requirement.*

Cyanazine and its chlorotriazine degradates were included in the MDA's ambient water monitoring program for the first time in 2019. While use was cancelled in 2002, cyanazine degradates continue to be detected in groundwater samples, in addition to private drinking water wells sampled through the Private Well Pesticide Sampling Project and other monitoring programs. The MDA has been a leader in efforts to assess cyanazine and its degradates in Minnesota's waters, such as working to make analytical methods available; funding the monitoring of public drinking water wells, private wells, and ambient

water; and assessing the efficacy of home water treatment options for removal. While there are no regulatory options that can be pursued for cyanazine, *I encourage MDA to continue its monitoring work and associated efforts to identify where cyanazine may be present in well water at levels of health concern, so appropriate outreach to well owners, local governments, and communities can take place.*

Fomesafen was recently reviewed by MDH which resulted in the issuance of a new health-based value (HBV) of 20,000 ng/L in 2020 (compared to the previous rapid assessment value of 3,000 ng/L). Use has increased dramatically in recent years and fomesafen ranks in the top 10 crop pesticides sold in Minnesota (821,688 lbs. active ingredient sold in 2017). MDA did not begin monitoring for fomesafen until 2018 so trend analysis is not possible. However, last year, the maximum fomesafen concentration in groundwater was 25% of the current HBV. Fomesafen detections are most frequent and highest in PMR 4 and recommendations specific to PMR 4 are provided in the following section.

Tembotrione belongs to a class of herbicides (including mesotrione, pyrasulfotole, isoxaflutole and topramezone) that inhibit the liver enzyme 4-hydroxyphenylpyruvate dioxygenase (HPPD)[1]. Detections of tembotrione and the other herbicides in this class that are measured by MDA (i.e., mesotrione and isoxaflutole) are infrequent. Tembotrione was not detected in any 2018 groundwater sample and only in one sample from 2019.

B. Pesticides with detection frequencies greater than 15% in PMR 4

PMR 4 is an area of increased concern due to the vulnerability of shallow groundwater from agricultural production on sandy soils, and the common use of private drinking water wells in this region. The following pesticides are not in common detection status but are found in more than 15% of groundwater samples in PMR 4: Bentazon (32% of PMR 4 samples), clothianidin (41%), dimethanamid+degradates (35%), fomesafen (28%), imazamox (23%), imidacloprid (26%), saflufenacil (18%), and thiamethoxam (28%). A statistically significant increasing trend in detection frequency in PMR 4 is noted for bentazon, clothianidin, dimethenamid ESA, imazamox, saflufenacil, and thiamethoxam. An increasing trend in 90th percentile concentration is seen for bentazon, clothianidin, dimethenamid ESA, saflufenacil and thiamethoxam. Due to the disproportionate impacts on groundwater in PMR 4, I recommend the following:

- *Coordinate an inter-agency team to develop a holistic plan for groundwater protection in this region to prevent further degradation of groundwater resources.*
- *Initiate a special registration review of active ingredients with groundwater leaching capabilities. As part of this review, develop criteria to evaluate whether product use modifications or restrictions are needed in areas of the state vulnerable to groundwater contamination. This comprehensive approach is necessary because several pesticides are commonly detected in PMR 4 under normal conditions of use, which limits the utility and effectiveness of individual common detection determinations and pesticide-specific BMPs.*
- *Seek authority to regulate neonicotinoid-treated seed and ensure growers have access to cost-effective, untreated seed options.*
- *Consider requesting a health-based guidance value from MDH for saflufenacil (currently a rapid assessment value).*

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[1] USEPA 2007. Pesticide Fact Sheet: Tembotrione. Available: https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-012801_01-Sep-07.pdf

C. Sulfentazone

Sulfentrazone was added to MDA's analyte list in 2018 and has been found in nearly all PMRs. While the overall detection frequency is not as high as other pesticides (9%), it had the highest maximum concentration in groundwater after acetochlor and metolachlor degradates in 2019 (4,810 ng/L) and sales of sulfentrazone are rapidly increasing. In the most recent year of available sales data, over a half-million lbs. active ingredient were sold in Minnesota. Sulfentrazone is very mobile in a variety of soils and EPA determined that sulfentrazone "leaches substantially to groundwater in areas with sandy soils".[2] Sulfentrazone use is currently subject to restrictions in areas of California designated as vulnerable to groundwater contamination. I recommend the following:

- *To reduce the risk of widespread contamination, include suflentrazone in a special registration review of pesticides with groundwater leaching capabilities, as described above.*
- *Assess laboratory capability to include its major degradate (3-carboxylic acid sulfentrazone) in future monitoring.*
- *Anticipating an increase in detection and concentration, weigh the need for a health-based guidance value from MDH for sulfentrazone within the context of other MDA priority chemicals.*

II. Surface Water

A. Detections greater than 50% of an applicable reference value

Three pesticides currently classified as "surface water pesticides of concern" (acetochlor, atrazine, and chlorpyrifos) had detections above the lowest applicable surface water reference value in 2019. Acetochlor contributed the most exceedances with 21 detections ≥50% of the MPCA aquatic life chronic standard and 11 detections above the standard. The southern third of the state shows statistically significant increasing trends in both acetochlor detection frequency and concentration. Sales data suggest increasing use in Minnesota, with 6.3 million lbs. sold in 2017; the highest amount of a pesticide sold in the state after glyphosate. For acetochlor, voluntary BMPs may not be an adequate tool to reduce surface water impacts in view of its high and increasing use in Minnesota. While it is still not known whether the 2019 exceedances will lead to additional impairments, *MDA should consider whether it is in the best interest of the state to pursue additional regulatory or non-regulatory options to reduce acetochlor surface water impacts.*

Five pesticides not classified as "surface water pesticides of concern" (clothianidin, dichlorvos, imidacloprid, metolachlor and pyroxasulfone) had detections equal to or greater than 50% of an applicable reference value in 2019; and all but pyroxasulfone had at least one detection that exceeded a reference value. Clothianadin and imidacloprid were responsible for 62 and 58 exceedances respectively across 20+ different locations. *I recommend that imidacloprid and clothianidin (and thiamethoxam as a contributor of clothianidin) be designated as Surface Water Pesticides of Concern.*

B. Pyrethroids

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[2] USEPA. 1997. Pesticide Fact Sheet: Sulfentrazone. Available: https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-129081_27-Feb-97.pdf

As I recommended last year, *the MDA should consider lowering the pyrethroid MRLs (i.e., bifenthrin, cyfluthrin, esfenvalerate, lamda-cyhalothrin, and cypermethrin) to at least the chronic value benchmarks if feasible, to allow for a complete assessment of surface water impacts for this class of chemicals.*

III. Additional Pesticides for Analysis

I concur with the recent recommendation of the Office of the Legislative Auditor[3] to conduct targeted sampling of glufosinate-ammonium and ethylenethiourea (ETU, parent compound=mancozeb). Glufosinate has high use in Minnesota based on sales (812,320 lbs. active ingredient sold in 2017) and may leach to groundwater under certain conditions. Mancozeb ranks number seven in crop chemical sales in Minnesota, with over one million pounds sold. ETU has a relatively low human health reference value (MDH rapid assessment value=0.1 µg/L). Due to existing MDA laboratory capability limitations, MDA could contract with an outside laboratory for analysis, and results can be used to inform decisions about the need to include these analytes in future monitoring. If feasible, *sulfoxaflor and its more highly persistent/mobile degradates should also be considered for inclusion/method development if MDA anticipates use to increase to treat common agricultural pests, such as soybean aphid.*

MDH commends MDA on its rigorous monitoring program and its continuous efforts to improve the program. It is a valuable asset to our state and critical to protecting Minnesota's groundwater and surface water resources and informing best practices for the management of agricultural chemicals. As always, MDA staff has done an excellent job organizing and presenting a tremendous amount of complex data. Thank you again for the opportunity to provide comments.

Sincerely,

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cc: James Kelly, Manager, MDH Environmental Surveillance and Assessment Section

[3] Pesticide Regulation: 2020 Evaluation Report. Office of the Legislative Auditor, State of Minnesota. Available: https://www.auditor.leg.state.mn.us/ped/pedrep/pesticide2020.pdf

To Whom It May Concern:

The comments below are regarding the 2019 Water Quality Monitoring Report from Minnesota Department of Agriculture.

Pesticide Action Network (PAN) North America is one of five regional centers worldwide committed to replacing the use of hazardous pesticides with ecologically sound and socially just alternatives. PAN works in four key states: California, Minnesota, Iowa, and Hawai'i. Willa Childress has served as a representative from PAN on the Pesticide Management Plan Committee since 2019.

Neonicotinoids

Neonicotinoids continue to be found broadly in surface water monitoring and are beginning to show up in groundwater. The number of detections in groundwater will increase as time goes on, unless the use decreases—and remediation of groundwater is cost-prohibitive.

MDA should analyze use of neonicotinoids in the state that are used in seed coatings, and ask users to report these data if they do not currently have access to these data. As seed coatings are not used in response to a pest pressure that has already been identified, they are strictly prophylactic and not an integrated pest management approach. Therefore, the MDA should ask for these uses to be eliminated.

In 2014, EPA found that soybean seed coatings containing neonicotinoids had $0 benefit to farmers.[1] A growing body of research, including a new report this summer from Cornell University, suggests that the same holds true for corn.[2] The use of soybean seed coatings in MN could be stopped immediately and save farmers input costs, and would likely help decrease the amount of neonicotinoids found in Minnesota surface water and, eventually, the groundwater. In the case of corn, the supply of untreated seed continues to be a

[1] U.S. EPA. *Benefits of Neonicotinoid Seed Treatments to Soybean Production*. Office of Chemical Safety and Pollution Prevention, Biological and Economic Analysis Division; 2014.

[2] Grout, Travis A., et al. *Neonicotinoid Insecticides in New York State.* Cornell University; 2020.

prohibitive barrier for farmers who wish to transition away from treated seed or trial efficacy on their farm. The MDA should increase efforts to make treated seed more readily available in Minnesota and implement a program encouraging farmers to trial seed treatment efficacy on-farm.

These recommendations are in line with a formal recommendation presented by the Minnesota Office of the Legislative Auditor, which identified earlier this year a need to revisit state recommendations for pollinator protection. The MDA should actively request that the Legislature implement pesticide recommendations from the Governor's Committee on Pollinator Protection and MDA's own Neonic Review. Implementing these popular recommendations, framed around pollinator health, could also impact aquatic invertebrates and surface and groundwater contamination across the state.

Voluntary BMPs for frequently detected pesticides not working

Only three of the pesticides monitored by MDA in surface water are currently specified as pesticides of concern. However, in addition to the pesticides of concern, 2,4-D and metolachlor had detections of 85% and 79% of the surface water samples analyzed in 2019. There continue to be frequent detections even for those pesticides where there are active ingredient-specific best management practices (BMPs), and two of these are already designated as pesticides of concern (acetochlor and atrazine). The BMPs do not appear to be successful in decreasing detections. MDA should take additional steps for these frequently detected pesticides.

The most frequently detected pesticides seem to be prime candidates for MDA to examine more closely in terms of BMPs. MDA should determine and require additional best practices around their use. In addition, in spite of the US EPA's 2016 proposal to ban all agricultural uses of chlorpyrifos, Minnesota has not taken steps to ban this neurotoxic pesticide, which is currently only designated as a pesticide of concern. This pesticide poses a high risk to childhood brain development, according to US EPA. [3] The MDA should take steps to end this pesticide's use in the state, following the steps taken recently by a handful of other states, as well as the recent decision taken by the European Union.

MDA should mandate a version of BMPs for pesticides that display significant increasing trends in groundwater or adopt a state-specific label for all AIs.

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[3] U.S. EPA. *Chlorpyrifos: Revised Human Health Risk Assessment for Registration Review*.; 2016.

As long as statistically significant increasing trends of certain pesticides or their degradates appear in groundwater, MDA should require BMPs for use of these pesticides and determine ways to encourage farmers to adopt a true integrated pest management approach in using pesticides only as a last resort— especially with regards to those pesticides that show up frequently in MDA monitoring.

Statistically significant increases were found for a number of pesticides in groundwater. Acetochlor degradates had statistically significant increases in three PMR, including PMR 4. Atrazine or its degradates were found in every single PMR, and in several PMRs atrazine or degradates significantly increased in detection frequency. These increases are not surprising given the popularity of this herbicide, and its continued detections in MN groundwater are troubling given atrazine's known characteristics as an endocrine disrupter. Metolachlor degradates also significantly increased in detection frequency, as well as in the other markers (90th percentile and median) used by MDA for monitoring analysis. These increases in several PMRs for metolachlor add to the concerns, given that groundwater remediation is cost prohibitive and likely won't mitigate the spread of these pesticides in groundwater as use will continue.

For the additional pesticides monitored, bentazon, clothianidin, dimethenamid ESA, imazamox, saflufenacil, and thiamethoxam all showed statistically significant increased detections and for most also an increase in the 90th percentile concentration trends in PMR 4. MDA should pilot a mandatory version of BMPs for the pesticides found to display statistically significant trends of increasing detections, etc. in PMR 4, due to its vulnerability to groundwater contamination.

In summary, there seems to be an emphasis in tracking certain pesticides that contaminate groundwater more than others due to use factors that contribute to the observed patterns of detections, but MDA's only solution appears to be voluntary BMPs. MDA should determine some additional mandate that may help mitigate groundwater contamination by these most frequently detected pesticides.

Consistent with results from last year, alachlor did not display a trend or significant decreases in detections in groundwater corresponding with a deregistration of the herbicide in 2016 in MN. It appears that banning a pesticide is far more effective in decreasing detections than voluntary BMPs. MDA should be able to find a middle ground in mitigating these other pesticides that are still allowed for use in the state of Minnesota.

Private Well Pesticide Sampling

This program is beneficial for MN residents, especially as well water testing can be cost prohibitive. It's not clear from the program description whether residents using these wells receive guidance from the MDA regarding what they can do to mitigate exposures if there are detections in well water. On the MDA website, there are links to reverse osmosis information and to a low interest loan program for wells and drinking water. Hopefully this information is already provided to participants in the well testing program when results are reported back. If not, MDA should make sure that this information is provided to participants in mailings, as well as the links on the website.

We appreciate the opportunity to comment on the agency's findings, and if there are any additional clarifications we can provide, please contact: Willa Childress, 503-739-5195, willa@panna.org and Emily Marquez, 916-803-3586, emily@panna.org

Sincerely,

Willa Childress
Minnesota Organizer

Emily Marquez
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August 11, 2020

Commissioner Thom Petersen
Minnesota Department of Agriculture
625 Robert Street North
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RE: Meeting of the Pesticide Management Plan Committee, June 2020

Dear Commissioner Petersen:

Thank you for the opportunity to participate in the Minnesota Department of Agriculture's Pesticide Management Plan Committee meeting on June 25, 2020. My staff and I have reviewed the meeting materials, including the 2019 Water Quality Monitoring Report.

Specific to the responsibilities of the PMPC, the MDA has asked for members to consider two questions:

"As a result of your review of pesticides and water quality, is there a need for:

1) New determinations that would trigger development of pesticide water quality Best Management Practices or related actions for groundwater or surface water?
2) Pesticide product restrictions to protect water quality as a condition for registration?"

The MPCA strongly supports the efforts of the MDA to develop best management practices for use of chlorpyrifos following the special registration review scoping document in review at this time.

The MPCA also applauds MDA efforts to designate three commonly used neonicotinoids as pesticides of concern. The MPCA remains concerned about the increased detection in surface waters of these neonicotinoid pesticides, both individually and as a class because of the potential for additive effects due to similar modes of action. The MPCA appreciates MDA's further scrutiny of these neonicotinoids in their 2019 Water Quality Monitoring Report.

We look forward to the continued collaboration between our two agencies on issues of pesticide monitoring and analysis, and activities to consider best monitoring practices and assessment of the state's surface waters.

Thank you again for the opportunity to comment. If you have any questions about our comments, please contact me at (651) 757-2607 or catherine.neuschler@state.mn.us.

Sincerely,

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July 26, 2020

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Re: MN Pesticide Management Plan Committee (PMPC) 6/25/20 – Comments & Recommendations.

Syngenta would like to thank the MDA staff for organizing an excellent "virtual" meeting to review the 2019 Water Quality Monitoring Report (WQMR). This annual review to solicit comments from stakeholders continues to be an extremely valuable process. The Minnesota Department of Agriculture continues to have one of the most robust groundwater and surface monitoring programs in the nation. We sincerely appreciate the efforts and leadership that MDA management and staff put into the monitoring, programs and education to protect MN's water quality. These annual monitoring reports continue to demonstrate the success of the MDA's pesticide management and prevention efforts. Concentration are generally very low relative to standards and concentration trends are generally stable or show slight fluctuations at very low concentrations relative to water quality standards. MDA data dating back into the 1990's clearly shows long term declines associated with the pesticides in Common Detection. More recently, newly registered products when detected can be expected to have an increasing detection trend. These trends will inevitably level as has been the case with compounds monitored over the longer term. In addition, MDA's analytical ability has improved significantly over time and MDA now routinely detects concentrations in the parts per trillion. Therefore any detection must be put into context with the established water quality standards. These data reports continue to demonstrate that pesticide, when detected, are found at concentrations that are very low relative to established standards. This is in large part due to the success of MDA's prevention efforts and the voluntary BMP education that has been promoted by the MN Dept of Agriculture, University of Minnesota Extension, the pesticide registrants and the entire agricultural industry.

Committee members were asked to respond with our comments and recommendations to the Commissioner of Agriculture. MDA staff specifically asked committee members to address the following two questions:

1. Is there a need for: "New MDA determinations (Common Detection for Groundwater or Surface Water Pesticide of Concern determinations using the listing criteria articulated in statute and in the MN Pesticide Management Plan) that would trigger development of pesticide water quality BMP's or related actions for groundwater or surface water?"

2. Is there a need for: "pesticide product restrictions to protect water quality as a condition of registration?"

As noted above, the success of the MDA's pesticide management efforts and the implementation of generic and pesticide specific BMP education, as part of the MN PMP, have been well documented and validated through monitoring to be extremely effective. These efforts have resulted in detected concentrations of pesticides which are generally very low relative to water quality standards in both groundwater and surface water. Furthermore, trend analysis over the longer term has shown that concentrations have declined or remain relatively stable at very low levels. The MN Department of Agriculture, pesticide registrants and MN farmers should be commended for continued efforts to protect MN water resources. The current voluntary BMP education and outreach efforts are clearly working and should remain targeted toward the most vulnerable soils and geographic regions of the state.

Based on the monitoring data shared at the 6/25/20 PMP Advisory Committee meeting there is no need for additional declarations of "Common Detection" in ground water or "Surface Water Pesticide of Concern" determinations for surface water. Furthermore, given the continued success of the current BMP educational efforts there is no need or justification for further restrictions as a condition of registration for any of the pesticides reviewed. MDA should continue to evaluate any newly added analytes and detections over time and relative to relevant HRL's and appropriate WQ Standards.

The MDA should continue to promote both voluntary Generic & Pesticide Specific BMP's which have proven effective at minimizing detected concentrations in both groundwater and surface water. Furthermore, the MDA should continue to look for opportunities to communicate the success of the MN PMP efforts with producers, dealers, and the public including key policy makers. It is important that the public understands how the agricultural industry and MN farmers continue to be good stewards of our land and water resources as they continue to produce a safe and abundant food supply.

After reviewing the data provided to the PMP Committee we would offer the following comments in support of our conclusions and recommendations above.

Groundwater Comments

The MDA has developed a monitoring system that was by design targeted to be worst case and focuses on the most vulnerable soils and aquifers in each of Minnesota PMR's. To quote from the report "All monitoring sites were established to evaluate pesticide impacts to the most vulnerable groundwater condition in their associated PMR and were considered sensitive to contamination from activities at the land surface". The Table 2.0 2019 Summary of monitoring results versus reference values (page 2-5) speaks for itself. This chart shows the maximum concentration detected from all of these monitoring sites, which represent the most vulnerable locations throughout the state. The summary clearly shows that when detected concentrations are very low when compared with established water quality reference values. The MDA also provides data summaries in the report for pesticides in Common Detection showing median, 90th percentile and maximum concentration as well as charts showing data trends ranging from 2010 through 2019. (In the future, since MDA has data dating back into the 1990's, these data trend charts should include that data to display the longer term trends) These tables and charts confirm that detections remain very low relative to established standards and that any minor fluctuations or shorter term trends are at extremely low levels relative to established standards.

We have discussed at length the issue with MDA's methodology for established trend lines and the bias toward the first and the final sample. This issue will likely diminish each year when new data is added and longer term trends are displayed. However when MDA staff abbreviates these charts it exacerbates these biases. MDA should include data showing the longer term trends when the date is available. In addition, MDA needs to maintain the long term database especially for those products that are in Common Detection. It will continue to be an asset when evaluating and communicating the long term success of MDA programs and prevention efforts.

The groundwater data record "does not" show a single exceedance of a groundwater standard for any currently registered pesticide. Concentrations remain very low and most often orders of magnitude below established water quality standards. Once again, this is a testament to the programs and education implemented by MDA, the registrant, and the producers of Minnesota to protect groundwater through proper management and use of these important production tools. The data clearly demonstrates that stewardship efforts to protect water quality in MN have been extremely successful. Therefore, no further action is needed or justified by the monitoring data.

In 2016, MDA developed graphs which utilized the HRL or MCL as the upper bounds on the vertical axis (see the charts attached in the addendum to my comments). These graphs have not been provided to the committee or the public since 2016. I continue to believe that these graphs should be developed annually, reviewed with the PMPC committee and included in the final report. These graphs provide visual context of the monitored concentrations relative to established health based standards. The public, which only sees the annual Water Quality Monitoring Report, should be provided with these graphs as part of the official record. The importance of this is compounded by the fact that MDA is reporting detections in PPT rather than PPB. This results in values that '*appear larger*' and require context (for example; 300.00 ppt appears to the layperson as much larger than 0.30 ppb) and the public should be provided with these graphs in the official report.

Section 2.4, page 2-51 thru 2-73 summarizes additional pesticides, which are not in Common Detection. These compounds have generally been detected in PMR 4. Detections are far less frequent and concentrations are extremely low relative to the HRL, HBV, RAA or RA values established by MDH. These pesticides vary widely as to how long they have been marketed and sold in Minnesota, with some having 25+ years of use and with others registered more recently. MDA first began monitoring for these compounds in 2010 and should continue to include these compounds in their monitoring programs going forward. No product specific action are necessary or justified at this time. MDA should continue to promote general pesticide BMP's and follow the use of these products and associated trends over time.

Surface Water Comments:

General Comment: Once again, the data summaries for surface water were helpful in evaluating detected concentration relative to established standards. The MDA staff also provided the committee with a summary of Tier 1, Tier 2, and Tier 3 monitoring which are completed annually to demonstrate how MDA has targeted limited resources toward priority Tier 3 locations throughout the state.

The Tier 1 & 2 monitoring data was presented for 2019 for selected compounds and additional data was provided for 2006 thru 2019 and summaries from 2015 thru 2019. Tier 3 monitoring data was shared with the committee with detections evaluated and summarized into detected frequency, maximum and median concentrations as well as a summary of samples exceeding 10% and 50% of the Chronic WQ Standard. Historical data was also summarized for acetochlor, atrazine and chlorpyrifos which have been listed by the MDA as "Surface Water Pesticides of Concern".

Additional data was provided for newly detected pesticides as well as for metolachlor, which has been monitored for many years. Prior PMP committees and the Commissioner of Agriculture have determined that metolachlor "does not" justify listing based on low level detections relative to the established WQ standards. Metolachlor is very rarely detected at concentrations of relevance to water quality standards. In 2019 there were only two samples out of 689 which exceeded 50% of the chronic aquatic life criteria in tier three monitoring. Since 2011 metolachlor has averaged 3 detections per year over 10% of the chronic criteria. While detections will vary from year to year based on timing of application relative to precipitation events, the data clearly demonstrates that metolachlor does not present a risk to MN surface water based on established water quality standards.

The PMP articulates under what conditions a pesticide, detected in surface water, should be considered for "Pesticide of Concern" status in surface water. The PMP states: (I have underlined portions for emphasis)

> *"To provide flexibility in evaluating and responding to concentrations that might lead to future impairment listings of water bodies, and in recognition of the complex variables that can contribute to peak concentrations, there is no single value or percentage of a reference value that will trigger the development of preventive actions such as voluntary pesticide-specific BMPs or educational campaigns. Instead, <u>preventive actions will be considered when surface water monitoring results for a pesticide exceed 10% to 50% of its reference value</u>. The commissioner*

will consider a number of factors in determining if an exceedance means that the pesticide is a surface water pesticide of concern requiring initiation of specific preventive actions. The most important factors will be monitoring and use trends. For example, if the use of a pesticide is stable or increasing, and the concentration is at 10 to 50% of its reference value and exhibits an increasing trend, then preventive actions may be taken to ensure that the water body does not become impaired."

Furthermore the PMP instructs the Pesticide Management Plan Committee to consider:

1. *The scientific validity of the data upon which the recommendations are based.*
2. *The extent of use and general use profile and the anticipated status of registration of the pesticide.*
3. *The existence of a water quality standard, water quality criterion, or water quality guideline for the pesticide or breakdown product set by the MPCA. In the absence of a standard, an analysis will be conducted to determine whether to request a standard, if one has not already been requested.*
4. *Trends and concentrations of the pesticide in surface waters and the relationship of the detected concentrations relative to a water quality standard, water quality criterion, or water quality guideline.*
5. *Consider all other associated land use factors which may be considered unique or unusual such as agronomic, meteorologic or hydrologic events.*

Surface water pesticide of concern status may not be appropriate in a number of cases where a pesticide has been detected in surface water in Minnesota. Detections which are low relative to a surface water reference value or which are sporadic and not indicative of widespread presence as a result of use in accordance with label directions will need to be evaluated by the committee and the commissioner. It may not be appropriate for determining a surface water pesticide of concern and developing BMPs for a product which is being phased out or likely will have its use significantly reduced. The commissioner may promote generic (core) BMPs, and the MDA and the registrant may coordinate additional prevention efforts."

Atrazine Comments: The data clearly demonstrates that the detected concentrations of atrazine in surface water remain well below the current MN PCA Chronic Criterion of 10ppb. Concentrations are also well below the values established by US EPA. In fact, atrazine has rarely exceeds even 10% of the MN Chronic Criterion. In 2019 there were 4 samples out of 689 that exceeded 50% of the Chronic Standard. Furthermore, atrazine concentration trends have declined significantly in Minnesota and nationwide as producers have adjusted use practices and utilized setbacks and buffers required by the label and promoted as part of MDA's Surface Water BMP's for atrazine. The success of MN BMP promotion and the registrants voluntary label changes have clearly resulted in declining concentration trends in surface water to levels that are well below established water quality criteria. This has been validated by both USGS and MDA monitoring. Clearly the Atrazine BMP's have been effective and the educational and outreach continues. No further action is necessary or justified.

Acetochlor Comments: The 2019 data presented for acetochlor shows that 11 samples exceeded the 3,600 ng/L chronic standard and 21 samples exceeded 50% of the chronic standard. While this is higher than the previous year it may be a function of weather patterns in 2019 and should be further evaluated. In addition, these grab samples should in most cases need to be compared to the acute criteria and would not exceed the standard when duration is accounted for. MDA, the registrants and the grower community continue their education and monitoring efforts in several targeted water bodies shown to be historically vulnerable. MDA Surface Water BMP's for acetochlor have been revised and MDA should continue with its efforts to promote setbacks and buffers in these vulnerable areas. These practices have proven effective for other pesticides and MDA should continue to monitor trends for acetochlor to evaluate the success of these BMP education and outreach efforts.

Metolachlor Comments: As stated above, the use of metolachlor changed significantly since 1997 when EPA granted the registration for the "Reduced Risk" pesticide S-Metolachlor. S-metolachlor received the "Reduced Risk" classification from EPA due to the significant reduction in use rates that could be achieved with this new active ingredient. The rates of S-metolachlor are 30-40% less than the rates used for the old formulation of metolachlor. This has resulted in a significant reduction in pounds used in Minnesota and has also helped, over the long term, to insure that detected concentrations of metolachlor in surface water remain low relative to established water quality criteria.

The Commissioner of Agriculture decided in 2002 that metolachlor was not a "Surface Water Pesticide of Concern" and MDA decided to continue to watch detections over time to evaluate trends. This decision has been confirmed in each subsequent year. Detections have continued to fluctuate from year to year based on timing of rainfall events, however detections remain very low relative to established standards. In addition, the MN PCA increased the Chronic Criterion for metolachlor in 2011 from 10ppb to 23ppb. This further supports the conclusion that detections of metolachlor <u>do not</u> pose a risk to MN surface water.

The PMP contemplates a "Pesticide of Concern" determination when the "*concentration is at 10 to 50% of its reference value and exhibits an increasing trend"*. Since the introduction of S-metolachlor detected concentrations have declined and concentrations are infrequently detected above 10% of the chronic criteria. Since 2010 metolachlor has averaged only 3 detections per year over 10% and there has been only five detections over 50% of the standard in the last seven years. The longer term trends since the introduction of S-Metolachlor have clearly shown a decline in concentrations. Therefore, there continues to be no scientific basis or justification for listing metolachlor as a "surface water pesticide of concern". To do so would be inconsistent with the guidance outlined in the MN PMP.

Chlorpyrifos Comments: The Commissioner determined in April of 2012 that Chlorpyrifos should be listed as a Surface Water Pesticide of Concern. Since that time MDA has made adjustments to its monitoring and has completed the development of Pesticide Specific BMP's for chlorpyrifos. Prior to 2008 when the chronic standard was established at 41ng/L, it had rarely been detected at levels of concern. Detections have increased as detection limits have continued to decline In 2019 Chlorpyrifos was detected in 3 out of 689 samples; all three were over the Chronic Standard of 41 ng/L. This is fewer detections than 2018 monitoring. These detections should continue to be evaluated relative to standards and duration. MDA should continue their promotions of Chlorpyrifos BMPs targeting education toward PMR's 1, 6, 7, and 8 were the majority of detections occur. MDA should continue to monitor and evaluate trends. MDA should also gather local use data in affected areas to determine if additional BMP's could be warranted. However, no further regulatory action appears to be justified at this time.

Neonicotinoid Insecticide Comments: The monitoring data presented in the 2019 Water Quality Monitoring Report does not justify listing imidacloprid, clothianidin or thiamethoxam as Surface Water Pesticides of Concern. Maximum 2019 detected concentrations (grab or 48-hr composite) were 201 ng/L for clothianidin, 32 ng/L for imidacloprid and 241 ng/L for thiamethoxam. These concentrations are 1.8%, 8.3% and 1.4% of the respective acute aquatic life benchmarks. Out of 380 samples in 2019, no clothianidin, imidacloprid or thiamethoxam concentration exceeded 10% of their respective acute Aquatic Life Benchmark concentration.

Chronic ALB standards were established by the USEPA based upon a 21-day duration. The maximum sampling duration of samples in the Department monitoring program was 4-day composite and reflect an acute duration. Detections must be put in context with established water quality standard concentration and duration. The Department uses the chronic benchmark (based on a 21-day duration) to evaluate detections and determine compliance on samples with an acute duration. This reduces the clothianidin concentration benchmark from 11,000 ng/L to 50 ng/L, a 220% reduction. In this instance, it changes whether clothianidin is orders of magnitude below the aquatic benchmark or it exceeds a benchmark. Imidacloprid and thiamethoxam results and comparison to standards are handled in this same fashion. All exceedances referenced in the 2019 Water Quality Monitoring Report are the result of an acute duration sampling frequency compared to a chronic duration standard.

I would like to thank the MDA staff for all the hard work that went into preparing for the “Virtual” PMP committee meeting. Furthermore, I would also like to thank the Commissioner of Agriculture for the opportunity to serve on this important committee.

If you have any questions please don’t hesitate to call.

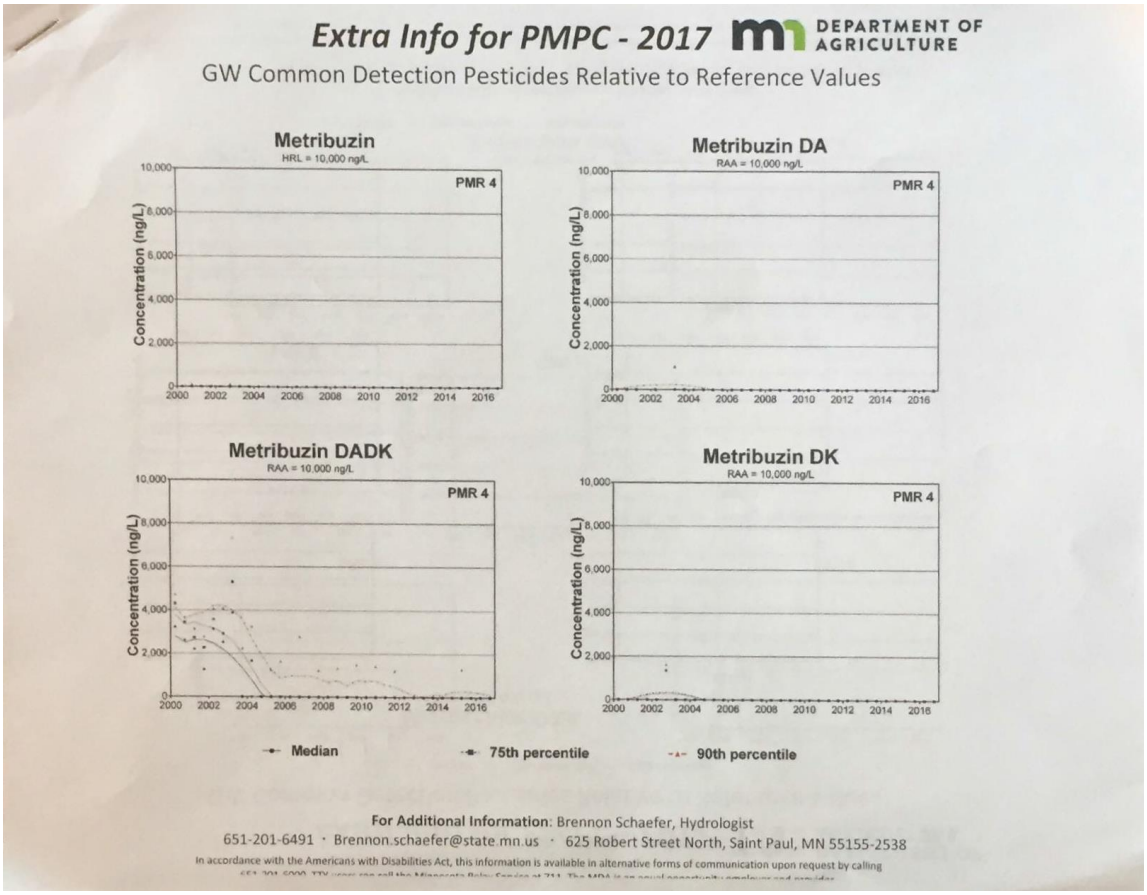
Sincerely,

David Flakne

David Flakne
Senior Director, State Affairs
Syngenta

CC: Commissioner, Thom Peterson, Josh Stamper, MDA, Dan Stoddard, MDA
Warren Formo, MAWRC, Kevin Paap, MFB, Bill Bond, MCPR, Adam Birr, MN Corn, Tom Slunecka MN Soy, Jeff Case, CLA

<u>Addendum: MDA’s Extra Info for PMPC – 2017 Supplemental Report: These graphs should be completed annually and included in the full report.</u>



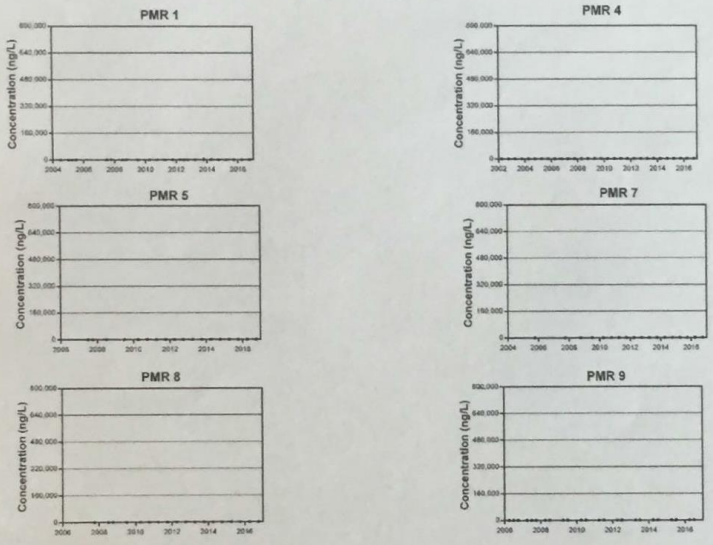
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Metolachlor OXA

HRL = 800,000 ng/L



Median 75th percentile 90th percentile

For Additional Information: Brennon Schaefer, Hydrologist
651-201-6491 · Brennon.schaefer@state.mn.us · 625 Robert Street North, Saint Paul, MN 55155-2538

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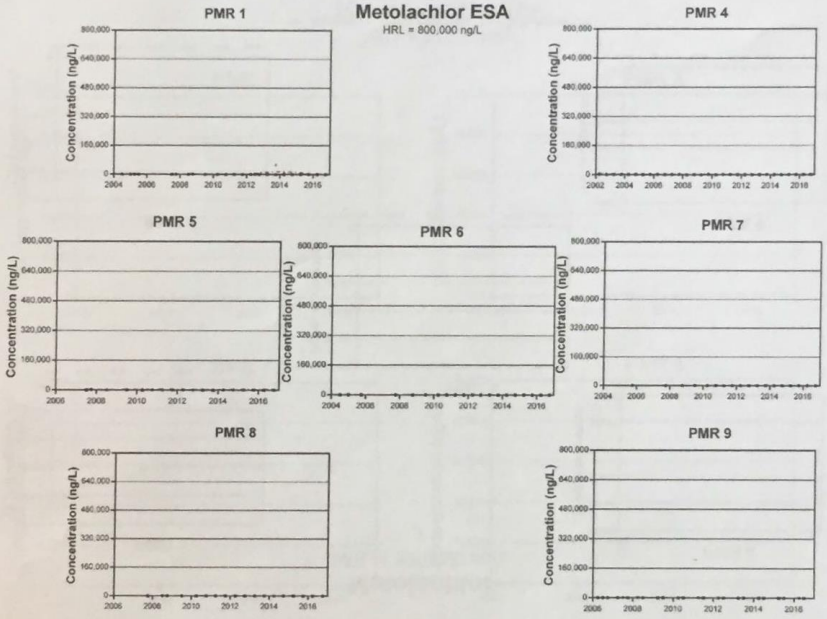
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Metolachlor ESA

HRL = 800,000 ng/L



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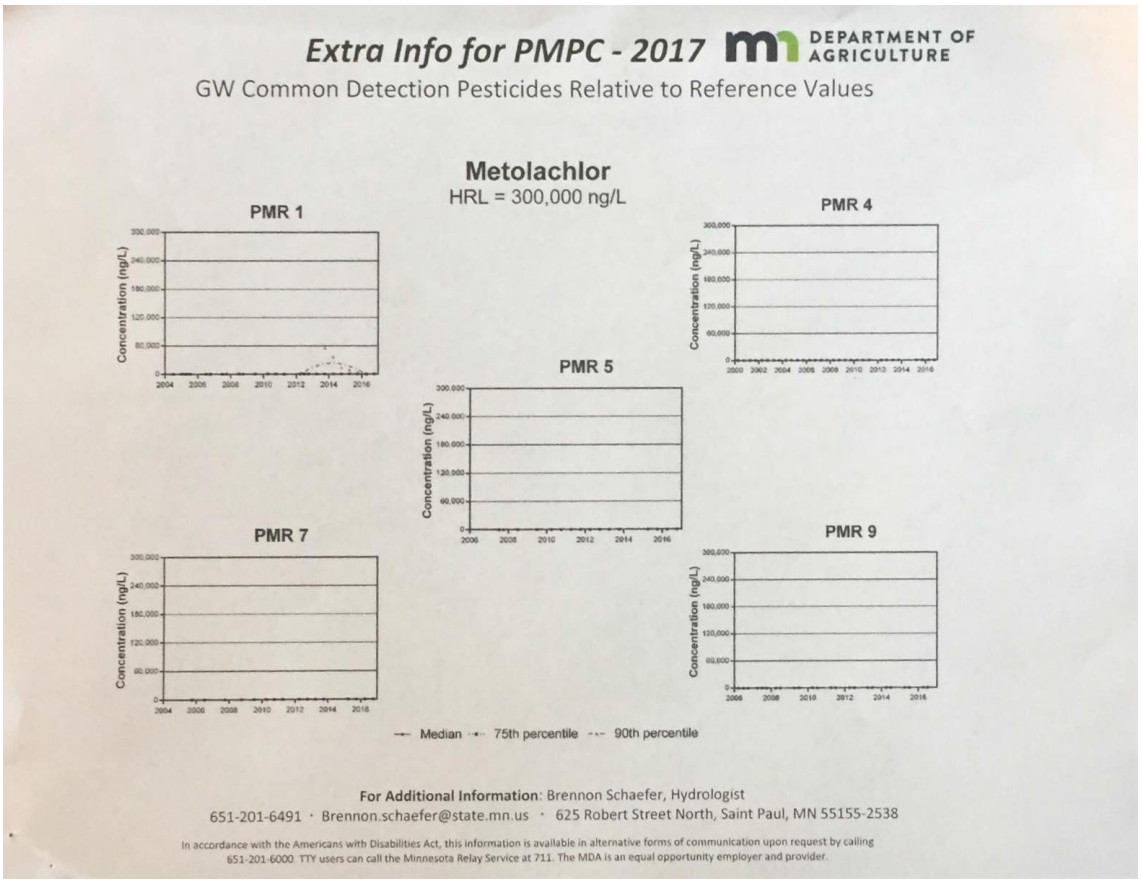
Extra Info for PMPC - 2017
DEPARTMENT OF AGRICULTURE
GW Common Detection Pesticides Relative to Reference Values
Metolachlor
HRL = 300,000 ng/L
PMR 1
PMR 4
PMR 5
PMR 7
PMR 9
Concentration (ng/L)
Median
75th percentile
90th percentile
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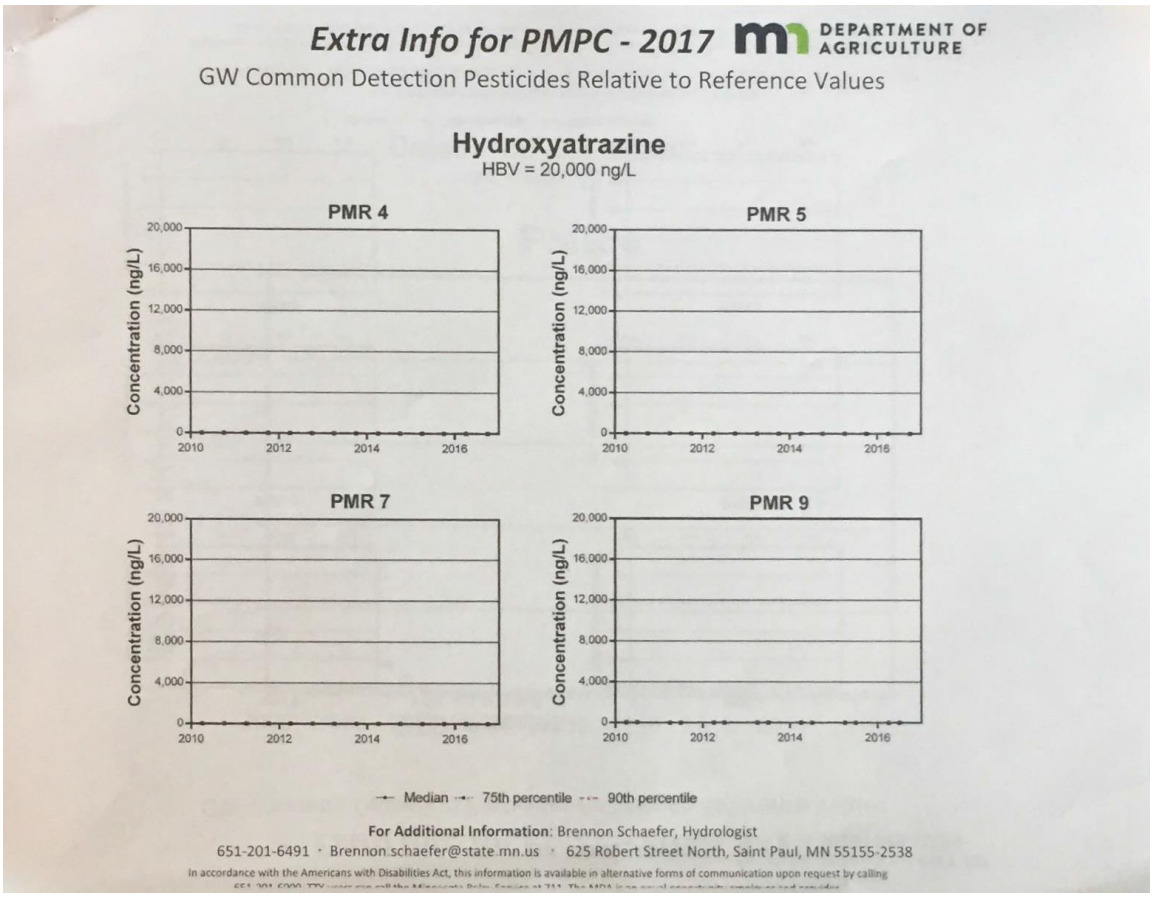
Extra Info for PMPC - 2017
DEPARTMENT OF AGRICULTURE
GW Common Detection Pesticides Relative to Reference Values
Hydroxyatrazine
HBV = 20,000 ng/L
PMR 4
PMR 5
PMR 7
PMR 9
Concentration (ng/L)
20,000
16,000
12,000
8,000
4,000
0
2010
2012
2014
2016
Median
75th percentile
90th percentile
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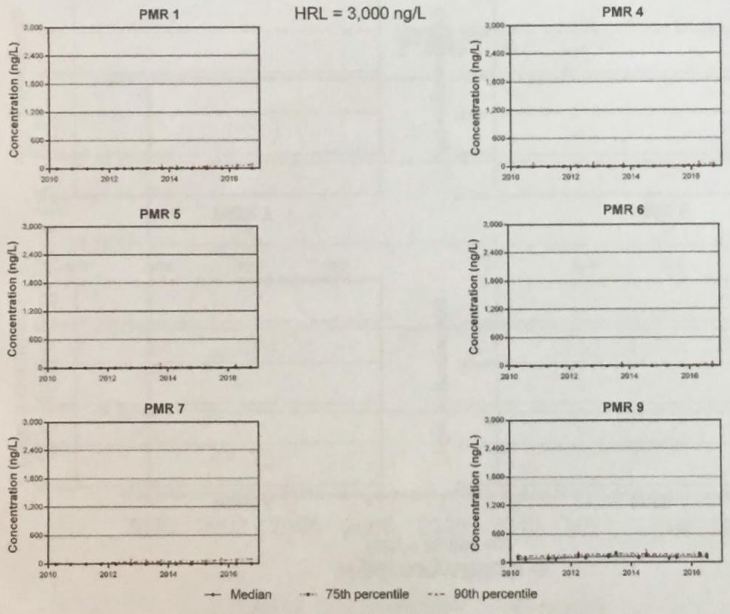
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

DEDI-Atrazine

HRL = 3,000 ng/L



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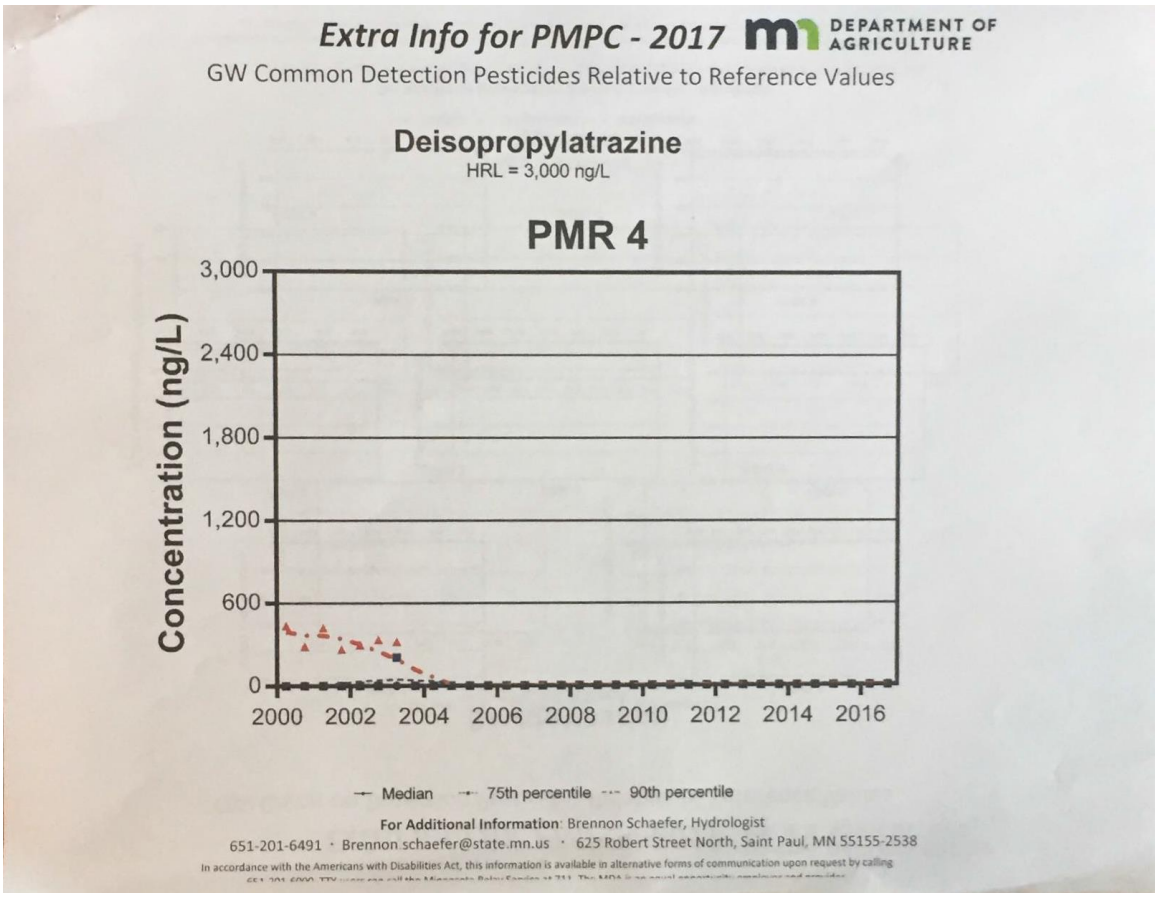
Extra Info for PMPC - 2017
DEPARTMENT OF AGRICULTURE
GW Common Detection Pesticides Relative to Reference Values
Deisopropylatrazine
HRL = 3,000 ng/L
PMR 4
Concentration (ng/L)
3,000
2,400
1,800
1,200
600
0
2000
2002
2004
2006
2008
2010
2012
2014
2016
Median
75th percentile
90th percentile
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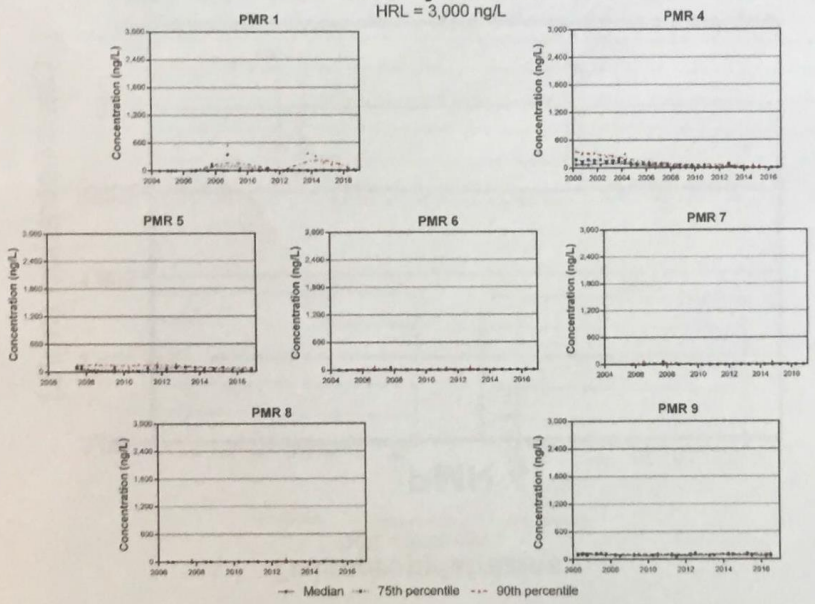
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Desethylatrazine

HRL = 3,000 ng/L



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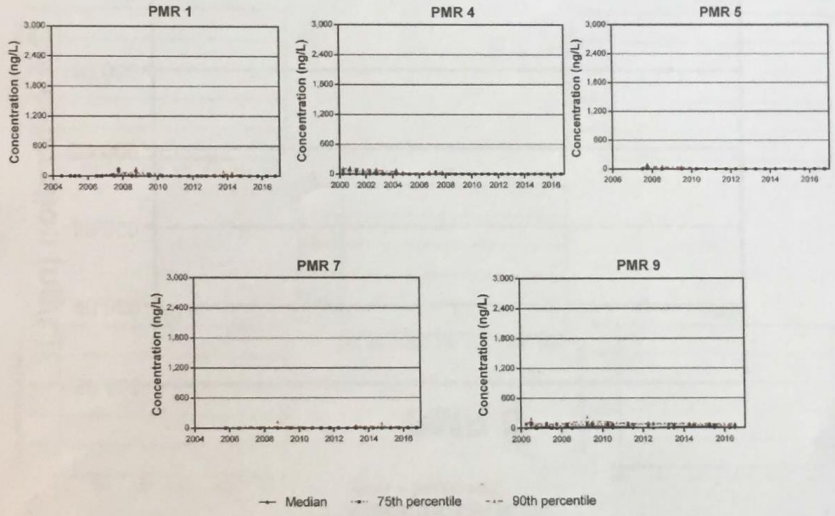
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Atrazine

HRL = 3,000 ng/L



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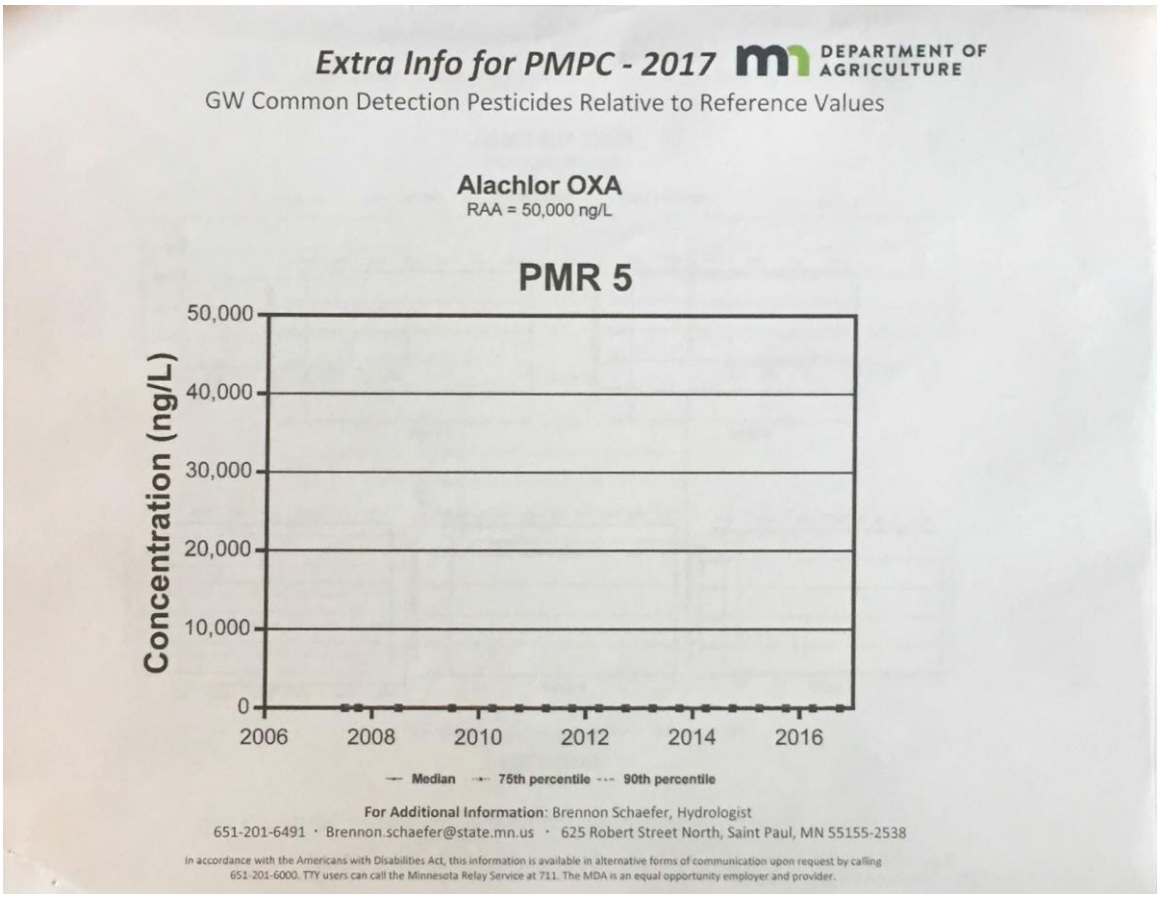
Extra Info for PMPC - 2017
DEPARTMENT OF AGRICULTURE
GW Common Detection Pesticides Relative to Reference Values
Alachlor OXA
RAA = 50,000 ng/L
PMR 5
Concentration (ng/L)
50,000
40,000
30,000
20,000
10,000
0
2006
2008
2010
2012
2014
2016
Median
75th percentile
90th percentile
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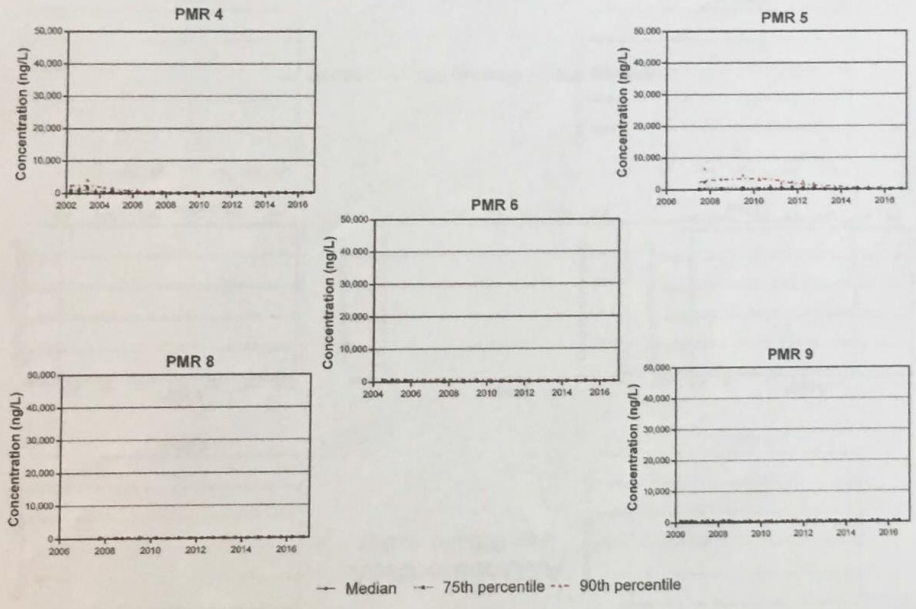
GW Common Detection Pesticides Relative to Reference Values

Alachlor ESA

RAA = 50,000 ng/L



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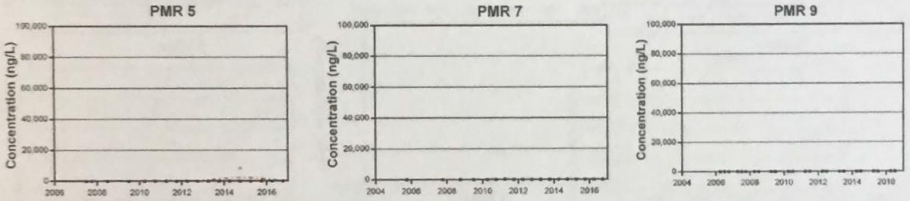
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Acetochlor OXA

HRL = 100,000 ng/L



Median 75th percentile 90th percentile

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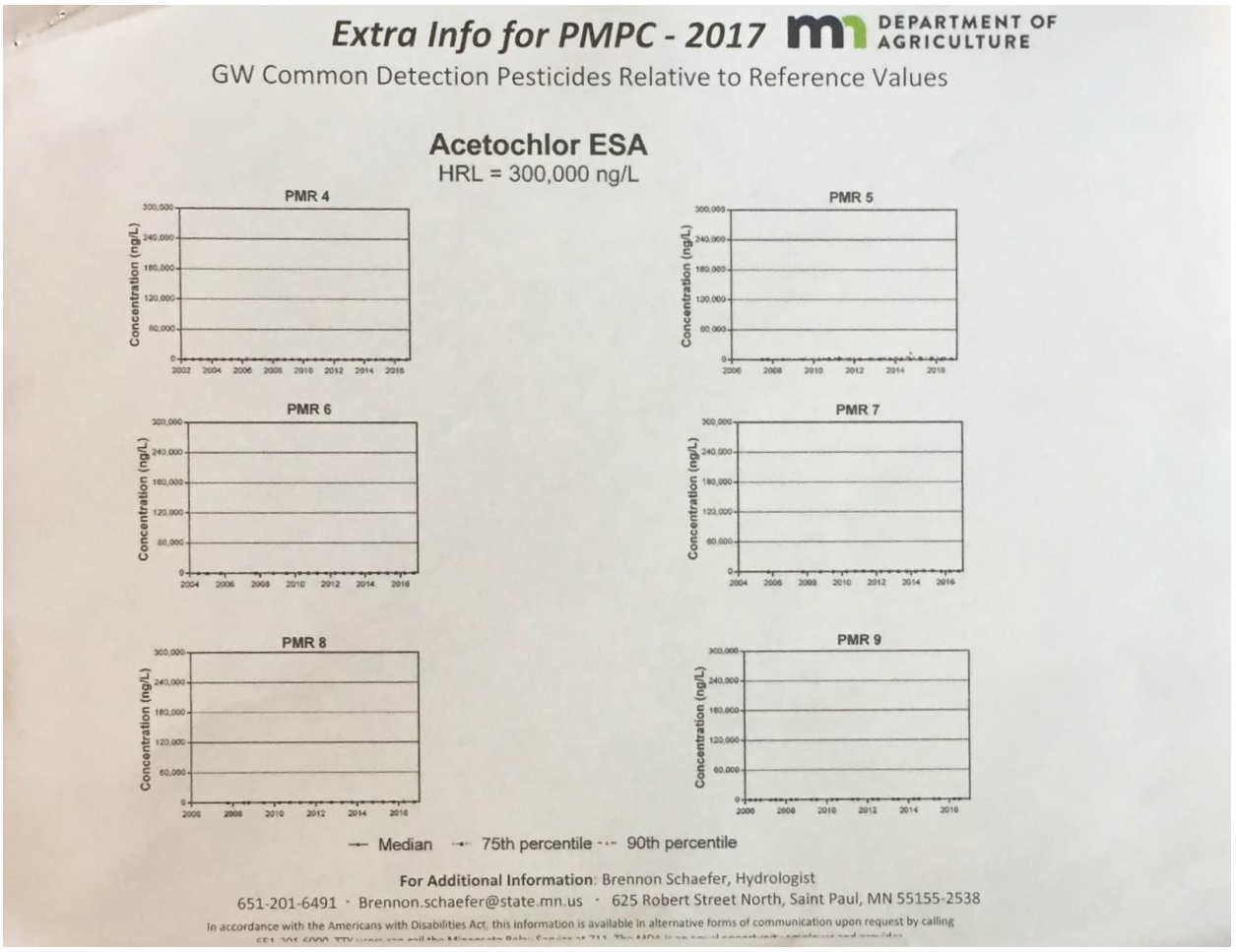
Extra Info for PMPC - 2017
DEPARTMENT OF AGRICULTURE
GW Common Detection Pesticides Relative to Reference Values
Acetochlor ESA
HRL = 300,000 ng/L
PMR 4
PMR 5
PMR 6
PMR 7
PMR 8
PMR 9
Concentration (ng/L)
Median
75th percentile
90th percentile
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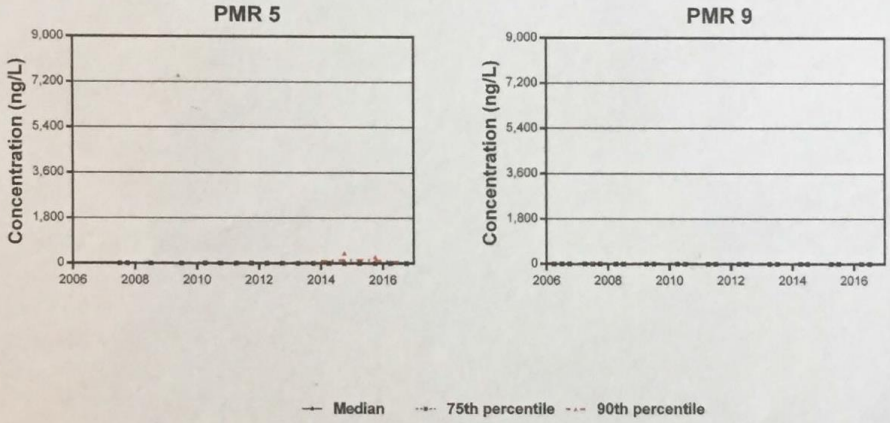
Extra Info for PMPC - 2017

DEPARTMENT OF AGRICULTURE

GW Common Detection Pesticides Relative to Reference Values

Acetochlor

HRL = 9,000 ng/L



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Golf Course Superintendents Association of America

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Executive Director

Jack MacKenzie CGCS
MGCSA
10050 204th Street N
Forest Lake, MN 55025
651/324-8873

July 24, 2020

To: Trisha Leaf
State Program Administrator
Pesticide and Fertilizer Management Division
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155-2538

Thank you for the opportunity to represent the golf community, as well as the public, during the recent Pesticide Management Plan Committee meeting. The 2020 virtual presentation was very well composed and presented. Kudos on a well thought out and published series of documents. Because I have been active on the committee for some time, it was easy to follow and consider all aspects of the material.

The highly educated and interested individuals you bring to the table reflect the importance of this issue to our agencies, businesses and the community at large. Each year I find the materials more and more relevant and am pleased to share the information with my constituents in the golf industry.

In answer to the predominant questions provided:

Is there a need for new Minnesota Department of Agriculture determinations that would trigger development of pesticide water quality Best Management Practices or related actions for groundwater or surface water?

No, not at this time as the detection procedures and management in place are currently sufficient. I heartily endorse the continued monitoring of our public and private waters.

Is there a need for pesticide product restrictions to protect water quality as a condition for registration?

No, not at this time as there. Programs in place, such as BMP guidelines and continued emphasis upon responsible product use, are adequate, thus in my mind there is no need for additional restrictions as a condition of registration for the materials reviewed.

Please continue to enhance public communications as to the importance of this pesticide review effort. Considering it is one of the best programs in the country, it should be touted.

Respectfully Submitted,

Jack MacKenzie
Executive Director, MGCSA