

**Proposed Designation of Imidacloprid,
Clothianidin, and Thiamethoxam as
"Surface Water Pesticides of Concern"
Public Comments**



From: Roots Return Heritage Farm

Date: Friday, February 14, 2020 1:02:05 PM

With regard to Notice of Preliminary Decision to Designate Clothianidin, Imidacloprid, and Thiamethoxam Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota, I would like to submit support for this action being done by the MN Department of Agriculture, but believe it is still too little, and too late.

Reading through the designation history, it continues to boggle my mind why the MPCA and adjoining agencies always take so long to act on any dangers or risks to MN public and environmental health. It appears the literature here states the levels of these neonicotins in our waters have been elevated above EPA levels since 2010. That is now a decade. A decade where pollinator plight, and food reproduction plight has been documented, with no further actions by the legislature or the MN Department of Agriculture, nor the Governor's office (Gov. Dayton's Pollinator Proclamation and subsequent committee came up with suggestions that have no teeth, no requirements, and no consequences if not acted upon by any actors involved). We need to return democratic needs above those of any special interests, or companies in MN. The needs of the many should rise to the needs of the few (profits) for anything positive to happen in MN landscapes, farming and food reproduction needs as well as honey producers across the state.

Please ensure the MDA passes not only the level of 'Surface Water Pesticides of Concern', but takes it to the next level; we are in danger of losing our waters for decades and generations to come. MPCA's numbers on all water bodies in MN is already well-documented and mapped. Any karst regions where these chemicals are used should be prohibited, period. Animal habitat goes first, human health goes next, and we're already there; especially in those areas of MN where typical non-organic or non-conservation practices are followed. A majority of the land affects the majority of the waters across that entire area. If you don't have prohibitive language in place, we will again in 10 yrs see the same exact results, which is not a healthier ecosystem, nor a healthier level of habitability of water bodies across MN, nor a good use of tax dollars (state agency salaries & resources).

People living outside agricultural communities are being angered by what goes on in agricultural communities when backs are turned to synthetic chemical poison use allowed and unregulated throughout MN. 'Renewing pesticide applicator license' is not a requirement of the state followed up on by anyone. If you have x number of producers in the state who use these applications, you should have just as many licenses applied for, and tracked. We don't have close to that number, hence our own problems created (this is only one of them), instead of solved. Water, air, and soil know no boundaries by the laws of nature, so having to pay for this practice decade after decade has angered non-ag residents, and rightly so. We are all downstream of one another.

Thank you

Lori D. Cox, Owner/Operator

Roots Return Heritage Farm, LLC

To: Leaf, Trisha (MDA)
From: Joe Hastings
Subject: Neonicotinoid Comments
Date: Friday, February 21, 2020 8:26:21 AM

Hello,

I am Joe Hastings, General Agronomist with American Crystal Sugar Company in Moorhead, MN. American Crystal Sugar Company is a grower owned cooperative with approximately 2,500 grower/shareholders producing sugarbeets on roughly 400,000 acres in the Red River Valley (RRV) in Minnesota and North Dakota. I received the announcement about the neonicotinoids and surface water concern and that this is open for comment with the Minnesota Department of Agriculture. Please see my comments below.

In sugarbeet production in the RRV, we have available to us 3 neonicotinoid insecticides used as seed treatments at very low AI levels. All three are not used together as a seed treatment, but each seed company may use one of the 3 neonicotinoid products as a seed treatment. Also there is a company, Vive, that has developed a imidacloprid product, Midac FC, that is only labeled for an In-furrow application at planting. Both of these methods for applying neonicotinoid products, seed treatment and In-furrow at plant, have a very low chance at causing concern to surface water concentrations do to their placement below the soil surface in the seed furrow at planting. The neonicotinoids used in sugarbeets help to control: wireworm, cutworm, and sugarbeet root maggot.

Controlling these pests is paramount in maintaining an acceptable stand of sugarbeets, particularly at the seedling stage, to produce a sugarbeet crop that is viable and of high quality allowing the most recoverable sugar/acre to be harvested. On one level, small reductions in the sugarbeet stand result in lower quality potential due to the uneven use of nutrients and fertilizer by the sugarbeet compromising the efficient accumulation of sugar in the sugarbeet root. On another level, large reductions in stand result in reduced yield and possible need to replant further reducing yield potential. Both in combination reduce the amount of sugar produced/acre. Our data and university research has shown that the optimum stand is 170 – 230 sugarbeets/100 feet of row. Anything less than this, and we start to see a decline in recoverable sugar produced per acre. Also, having gaps in the sugarbeet stand allows places for weeds to become established as they are not being shaded out by the competing sugarbeet canopy. So a good stand is a huge advantage in limiting weeds and their production of seed. These examples show why there is the need to have the neonicotinoid insecticide available to reduce the chance of a compromised stand. There are many environmental factors that can also reduce stand (wind, soil crusting, frost, flooding, etc.), so being able to have a mechanism to control insect pressure is critical.

In the sugarbeet industry we have very few options for effective insect control. There are only about

1mm acres of sugarbeets grown in the entire United States. American Crystal Sugar Company produces about 400,000 acres of sugarbeets in Minnesota and North Dakota. In 2019 roughly 225,000 of those acres were produced in Minnesota for our cooperative. It would be very harmful to our sugarbeet industry if we lost any labeled insecticide or had to have their use modified and reduce their effectiveness.

Thank you for allowing comment on neonicotinoid insecticide use in our sugarbeet industry. Please contact me if you have any further questions or concerns. I would be happy to talk with you.

Thanks again,

Joe Hastings

General Agronomist

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April 7, 2020

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

Comments on Designating Clothianidin, Imidacloprid, and Thiamethoxam as Surface Water Pesticides of Concern in Minnesota

The Xerces Society for Invertebrate Conservation (Xerces) is a nationwide conservation organization dedicated to protecting the invertebrates that sustain us, and we work with farmers and the public throughout Minnesota to promote conservation. Xerces has expertise in science-based conservation, with a focus on pollinators and aquatic invertebrates, and has been involved in the ongoing review of neonicotinoid insecticides in the state. We are writing to support Minnesota's proposed designation of clothianidin, imidacloprid, and thiamethoxam as 'surface water pesticides of concern' as their frequent detections in the state and across the country suggest that they are impacting surface water ecosystems.

Designating these insecticides as 'surface water pesticides of concern' in Minnesota is warranted. Clothianidin, imidacloprid, and thiamethoxam share similar toxicity to aquatic invertebrates, especially sensitive species that form the foundation of healthy rivers and streams. These sensitivities are outlined in a review paper that found neonicotinoids to be harmful to species, especially aquatic insects, at much lower levels than benchmarks at the time (Morrissey et al. 2015). While sampling and toxicity testing has often focused on imidacloprid, both clothianidin and thiamethoxam are also of concern. EPA's 2018 revision of the aquatic life benchmarks (ALB) for these pesticides was based on their greater toxicity to certain sensitive species versus standard test species. Still, even EPA's new ALBs likely underestimate risk, especially from clothianidin and thiamethoxam which have much higher ALBs than imidacloprid despite similarities in toxicity to aquatic species. The effects of mixtures of neonicotinoids are also unknown, but their combinations are likely additive or synergistic.

Since the ALBs were lowered to the current levels, surface water detections around the country have routinely exceeded the benchmarks. Minnesota has detected these pesticides in excess of the updated ALBs since 2010, suggesting that neonicotinoids have been consistently reaching waterways at harmful levels. Unfortunately, this is not unique to Minnesota. USGS surface water sampling throughout the Midwest has also found neonicotinoids, including in finished drinking water, as have sampling programs in California and other regions (Starner & Goh 2012; Klarich et al. 2017; Nowell et al. 2018). Some states and regions are taking steps to address surface water concerns, including the Central Coast Regional Water Quality Board in California that recently developed their own criteria for imidacloprid and are now working on criteria for clothianidin and thiamethoxam (Bower & Tjeerdema 2019). Their criteria development methodology may be useful to the Minnesota Pollution Control Agency in considering Minnesota-specific water standards for neonicotinoids.

In the EPA's ongoing registration review of neonicotinoids, they have acknowledged harmful surface water effects, including the potential contribution of neonicotinoid seed treatments to water contamination (EPA 2020). EPA is proposing mitigation intended to reduce contamination of surface water, including limited application rate reductions and drift/runoff mitigation, but it remains to be seen if these methods can be effective in reducing widespread contamination.

Minnesota's designation of these insecticides as surface water pesticides of concern will support the state's efforts to protect surface water and aquatic ecosystems. Once these pesticides are designated, the Department of Agriculture should design and implement strong best management practices to reduce surface water contamination. Neonicotinoids are commonly found in both agricultural and urban areas, so Minnesota must consider best management practices for all uses to effectively limit surface water contamination (Hladik et al. 2018). Reductions in use will also benefit struggling pollinator populations that are impacted by these insecticides.

We urge Minnesota to act to address neonicotinoid contamination that can harm foundational aquatic invertebrates through strong best management practices and/or changes to product registrations intended to reduce the use of neonicotinoids throughout the state. Thank you for considering these comments, and please do not hesitate to reach out with any questions.

Sincerely,

Sarah Hoyle
Pesticide Program Specialist

Sarah Foltz-Jordan
Senior Pollinator Conservation Specialist

References:

- Bower, J. and R. Tjeerdema. 2019. Water Quality Criteria Report for Imidacloprid: Phase III – Application of the pesticide water quality criteria methodology. University of California, Davis. Available at: https://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/docs/pesticide_criteria/imidacloprid_report_final_062519.pdf.
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- Hladik, M., S. Corsi, D. Kolpin, A. Baldwin, B. Blackwell, and J. Cavallin. 2018. Year-round presence of neonicotinoids in tributaries to the Great Lakes, USA. *Environmental Pollution* 235: 1022-1029.
- Klarich, K., N. Pflug, E. DeWald, M. Hladik, D. Kolpin, D. Cwiertny, and G. LeFevre. 2017. Occurrence of Neonicotinoid Insecticides in Finished Drinking Water and Fate during Drinking Water Treatment. *Environmental Science and Technology Letters* 4(5): 168-173.
- Morrissey, C., P. Mineau, J. Devries, F. Sanchez-Bayo, M. Liess, M. Cavallaro, and K. Liber. 2015. Neonicotinoid contamination of global surface waters and associated risk to aquatic invertebrates: a review. *Environment International* 74: 291-303.
- Nowell, L., P. Moran, T. Schmidt, J. Norman, N. Nakagaki, M. Shoda, B. Mahler, P. Van Metre, W. Stone, M. Sandstrom, and M. Hladik. 2018. Complex mixtures of dissolved pesticides show potential aquatic toxicity in a synoptic study of Midwestern US streams. *Science of the Total Environment* 613-614: 1469-1488.
- Starnner, K., and K. Goh. 2012. Detections of the neonicotinoid insecticide imidacloprid in surface waters of three agricultural regions of California, USA. *Bulletin of Environmental Contamination and Toxicology* 88(3): 316-321.

April 3, 2020

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

RE: Notice of Preliminary Decision to Designate Clothianidin, Imidacloprid, and Thiamethoxam
Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota

Dear Ms. Leaf:

Thank you for the opportunity to comment on the Minnesota Department of Agriculture's preliminary decision to designate three neonicotinoid pesticides (imidacloprid, clothianidin, and thiamethoxam) as "Surface Water Pesticides of Concern". MPCA supports this designation. In a response to the Pesticide Management Plan Committee meeting on June 19, 2019, MPCA expressed concern about the increased detection in surface waters of neonicotinoid pesticides, both individually and as a class, because of the potential for additive effects due to similar modes of action. MPCA recommended that MDA consider officially designating imidacloprid and clothianidin as "pesticides of concern" for surface water. MPCA also supported the inclusion of thiamethoxam in this category.

The lowering of the Aquatic Life Benchmarks (ALB) in 2018 for the above-mentioned pesticides and the resulting exceedances documented since 2010 further validates the need for designation of "Surface Water Pesticides of Concern". We look forward to the continued collaboration between our two agencies on pesticide concerns. We will continue to work with you on coordinating pesticide monitoring activities and assessing surface water detections to determine waters that should be listed as impaired. We strongly support your department's action in relation to these neonicotinoids.

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,



Catherine Neuschler
Manager, Water Assessment Section
Environmental Analysis and Outcomes Division
Minnesota Pollution Control Agency



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Protecting Pollinators in Minnesota

April 8, 2020

Trisha Leaf
Minnesota Department of Agriculture
625 Robert Street North, St. Paul, MN 55115

RE: *Special Registration Review of Neonicotinoid Insecticides*

Pollinator Friendly Alliance is submitting public comments in this letter regarding the decision to designate clothianidin, imidacloprid, and thiamethoxam as surface water pesticides of concern in Minnesota.

Pollinator Friendly Alliance (PFA) is a Minnesota based conservation organization and a regional leader in the effort to protect pollinators. We work alongside scientists, educators, farmers, and local communities to restore pollinators, increase habitat and reduce pesticide use. We support Minnesota's proposed designation of clothianidin, imidacloprid, and thiamethoxam as "surface water pesticides of concern".

The widespread use of systemic neonicotinoid insecticides in agriculture results first in contamination of the soil near treated crops, secondly on plants threatening non-target and pollinator insect species, and thirdly in the transfer of residues to the aquatic environment. Monitoring studies in Minnesota and internationally have revealed contamination of creeks, rivers and lakes, and reduced abundance in aquatic insects when concentrations of neonicotinoid insecticides are present. With many species populations already in decline, these pesticide impacts could push aquatic species past recovery. Especially of concern are mayflies and other nymphs that serve as keystone species for aquatic ecosystems and primary food sources for river fish.

The EPA has publicly commented on the harmful surface water effects including neonicotinoid seed treatment water contamination. However, we believe the EPA's proposed mitigation plan for surface water and runoff contamination is not robust enough to be effective.

Minnesota's designation of neonicotinoid insecticides as surface water pesticides of concern will be consistent with the State's efforts to protect waters and aquatic ecosystems and also contribute positively to the state's commitment to protect pollinators.

Finally, we encourage the Minnesota Department of Agriculture to take this opportunity to help fulfill the responsibility of protecting the State's people, resources and way of life from potential harm including pesticide contamination of water, and loss of ecosystem keystone species.

Sincerely, and Thank you,
Laurie Schneider, Executive Director
Pollinator Friendly Alliance
laurie@pollinatorfriendly.org



David Flakne
Syngenta Crop Protection LLC
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9501 Paragon Place #101
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April 8, 2020

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

Subject: Comments on MDA's Preliminary Decision to Designate Clothianidin, Imidacloprid, and Thiamethoxam Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota

Dear Ms. Leaf,

Syngenta Crop Protection would like to thank you and the MN Department of Agriculture (MDA) for accepting comments concerning MDA's preliminary consideration of clothianidin and thiamethoxam for possible listing as "Surface Water Pesticides of Concern".

The Minnesota Department of Agriculture has an excellent state-wide screening and monitoring program for agricultural pesticides occurring in surface and groundwaters. MDA also does an excellent job in the analysis, management, and reporting of the monitoring data. We concur with the analytical results for clothianidin and thiamethoxam as reported in the Departments 2018 Water Quality Monitoring Report.

The monitoring data however "does not" justify listing thiamethoxam or clothianidin as "Surface Water Pesticides of Concern. Syngenta is concerned by the MDA's use of chronic versus acute benchmarks in their review and evaluation of detected concentrations. Duration is a critically important component in the development of aquatic benchmarks and in the evaluation of monitored results. MDA's dismissal of the duration component of US EPA's Aquatic Life Benchmark for pesticides results in conclusions which are not supported by sound science or good public policy. US EPA Aquatic Life Benchmarks are developed for acute (48- or 96- hour) and chronic (21-day) durations. The acute Benchmark for clothianidin is 11,000 ng/L and the chronic Benchmark is 50 ng/L. The Departments monitoring results are only from sampling events of 96-hours or less and reflect an acute duration. Yet the Department is using the chronic benchmark based on a 21-day duration in their evaluation of detections and to determine compliance. 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 actually exceeds a benchmark. Thiamethoxam results and comparison to standards are also handled in this same fashion.

When using the US EPA clothianidin Aquatic Life acute duration and concentration Benchmark of 11,000 ng/L, there are no reported MDA samples, out of 1,764 that exceed 10% of the Benchmark concentration. For thiamethoxam, one sample out of 2,201 exceeded 10% of the acute aquatic life benchmark concentration. Therefore, the monitoring data clearly documents that there is no need or justification for MDA to classify clothianidin or thiamethoxam as "Surface Water Pesticides of Concern".

Please find attached our documentation for these comments. Should you have questions or need further clarification, please contact me at 608-770-3525.

Sincerely,

David Flakne

David Flakne
Senior Director, State Affairs
Syngenta Crop Protection LLC

CC: MDA Commissioner, Thom Peterson
Josh Stamper, MDA
Dan Stoddard, MDA

Response to Minnesota Department of Agriculture Pesticide and Fertilizer Management Division, Notice of Preliminary Decision to Designate Clothianidin, Imidacloprid and Thiamethoxam Neonicotinoid Insecticides as “Surface Water Pesticides of Concern” in Minnesota. April 9, 2020

INTRODUCTION

The basis for identifying clothianidin and thiamethoxam as surface water pesticides of concern is identified in the Public Notice published by the Minnesota Department of Agriculture in the Minnesota State Register, Monday February 10, 2020 (44 SR 879).

“A “Surface Water Pesticide of Concern” means the detection of a pesticide in surface water at concentrations of concern relative to a water quality “Reference Value” not due to misuse or unusual or unique circumstances, but likely to be the result of normal use of product or practice. The proposed determinations of clothianidin, imidacloprid, and thiamethoxam as Surface Water Pesticides of Concern are based on the following guidelines as recommended in the PMP: In 2018, the Environmental Protection Agency (EPA) lowered the Aquatic Life Benchmarks (ALB) for clothianidin from 1100 ng/L to 50 ng/L, imidacloprid from 1050 ng/L to 10 ng/L and thiamethoxam from 17,500 ng/L to 740 ng/L.

The MDA monitoring results from 2010 to 2018 show clothianidin, imidacloprid, and thiamethoxam detections in several state rivers and streams approached or exceeded the EPA’s updated ALB’s for these pesticides. When using the updated ALB’s:

- *Clothianidin detections exceeded the updated ALB 83 times in Minnesota rivers and streams since 2010.*
- *Every imidacloprid detection across Minnesota rivers and streams has been above the updated ALB since 2010.*
- *Thiamethoxam detections exceeded the updated ALB twice in Minnesota rivers and streams since 2010. While exceedances for thiamethoxam remain low, thiamethoxam is being included, in part, due to clothianidin detections. Clothianidin is a breakdown product of thiamethoxam.”*

USEPA AQUATIC LIFE BENCHMARKS

As referenced in the Public Notice, the US EPA has updated the Aquatic Life Benchmarks (ALB) for Clothianidin and Thiamethoxam. The MDA referenced the new ALB's for clothianidin as 50 ng/L and thiamethoxam as 740 ng/L. In practice, The MDA dismisses the duration portion of the Aquatic Life Benchmark. In 2019, The US EPA published the acute clothianidin concentration at 11,000 ng/L based on a 48 or 96-hour LC50 duration (Invertebrates) and the chronic concentration at 50 ng/L based on a 21-day duration life cycle test (invertebrates). The acute thiamethoxam concentration ALB is 17,500 ng/L based on a 48 or 96-hour LC50 duration (Invertebrates) and the chronic thiamethoxam concentration is 740 ng/L based on a 21-day duration life cycle test on invertebrates. *

US Environmental Protection Agency Aquatic Life Benchmarks for Fresh Water Invertebrates as of September 30, 2019

	Clothianidin	Thiamethoxam	Benchmark Duration
Acute	11,000 ng/L	17,500 ng/L	48- or 96-hours
Chronic	50 ng/L	740 ng/L	21-day average

*US EPA, 2019. <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>

* Cavaliero, Morrissey, Headley, Peru and Liber, Comparative Chronic Toxicity of Imidacloprid, Clothianidin, and Thiamethoxam to *Chironomus Dilutus* and Estimation of Toxic Equivalency Factor, Environmental Toxicology and Chemistry, Vol. 36, No. 2, pp. 372-382, 2017.

* Mank and Krueger, CGA 293343 Technical: A 48-hour static Acute Toxicity Test with the Midge (*Chironomus riparius*), Wildlife International Ltd., Novartis Crop Protection, Inc., Novartis Study Number 819-98, FIFRA Subdivision E, Series 72-2, October 15, 1998.

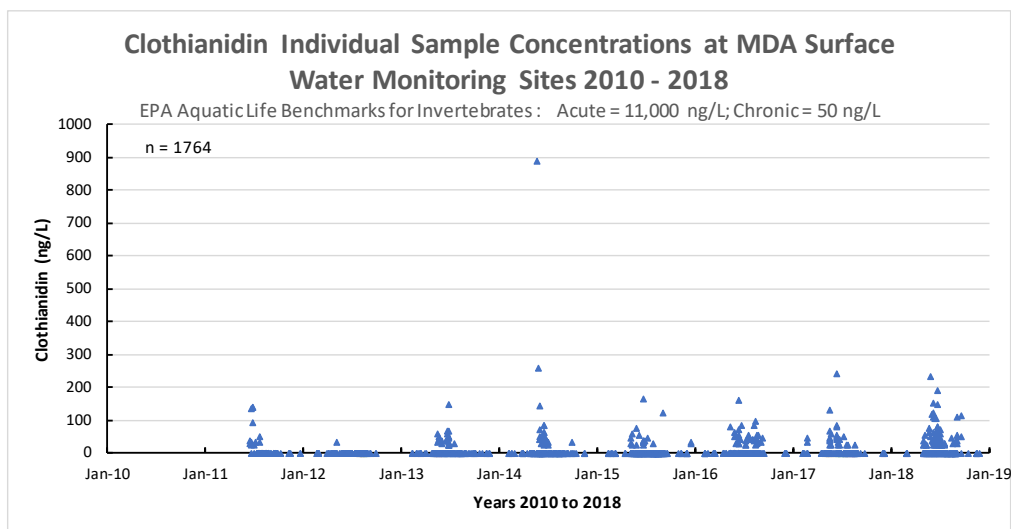
MDA SURFACE WATER MONITORING DATA 2010 – 2018

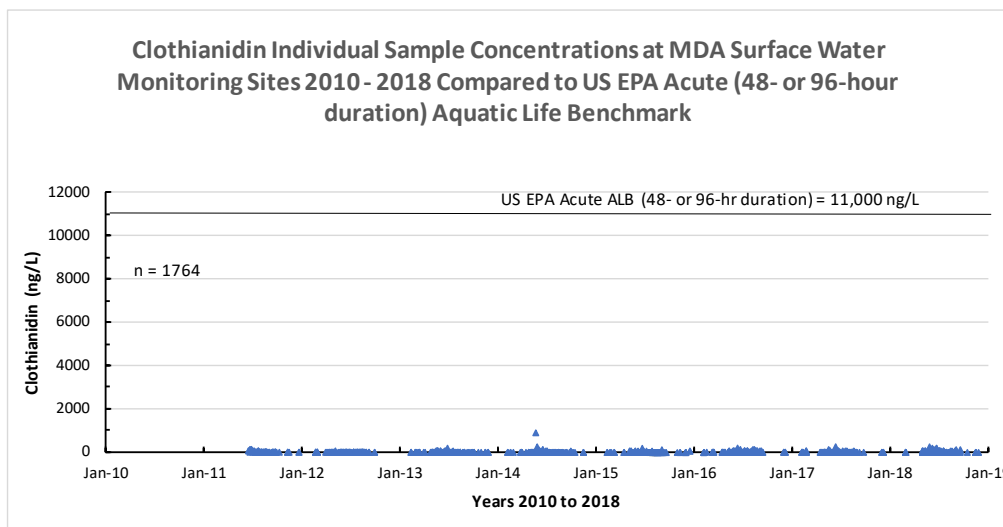
MDA surface water monitoring data from 2010 to 2018 were downloaded from the US EPA Water Quality Portal (WQP) system on February 10 and again on February 13, 2020. The data query included all Minnesota clothianidin and thiamethoxam monitoring data reported by any agency. In addition to the MDA, the United States Geologic Survey, the National Park Service and the Upper Sioux Agency reported data for these two compounds between 2010 and 2018. In preparing the Microsoft Excel data file for analysis the following procedures were incorporated: a) segregate and separate USGS, NPS and Upper Sioux Agency data, b) segregate and separate MDA rainfall, groundwater, quality assurance data (field blanks, quality control samples) c) convert Activity start date and Result measure Value fields from text to numbers, d) convert to a common ng/L concentration for Results measure Value field. Data were then sorted by compound.

The surface water dataset consists mostly of single-day samples with a sampling frequency of up to 21 samples per year, with most having 8-16 samples per year. Typically, samples were collected between May and August. There were 269 sample results of composited samples collected on a storm or flow-event based sampling with a duration of up to 96-hours. There were no sample results reported for a 21-day duration.

Clothianidin in Minnesota Surface Waters

The WQP dataset contained 1,763 surface water sample results between 2010 and 2018. There were 203 detections of clothianidin (detection limit of 25 ng/L). The maximum detected clothianidin concentration was 892 ng/L. There were no sample concentrations that exceeded US EPA acute (48- to 96-hour duration) ALB concentration of 11,000 ng/L. The maximum detected concentration (892 ng/L) was 8 times lower than the acute ALB (11,000 ng/L).





In comparing data in the Water Quality Portal (WQP) to those reported by MDA in the 2018 Water Quality Report, the maximum clothianidin reported in the WQP was 260 ng/L. The maximum reported concentration in the 2018 Water Quality Report was 892 ng/L. Correspondence with Bill VanRyswyk of the MDA revealed:

“The MDA identified some atypical detections in Fish Creek compared to the other urban streams in our network. In response the MDA started an investigation related to a possible point source in the watershed. A possible point source was identified in the watershed and enforcement actions and a subsequent investigation were conducted. Clothianidin and thiamethoxam were not a focus of the enforcement actions. Pending the outcome of the investigation the data from Fish Creek was withheld from our annual reporting until 2018.

As a result of the enforcement actions and subsequent investigation, Table 4-5 of the 2017 annual report does not include the 892 ng/L clothianidin detection that occurred in Fish Creek on May 19, 2014. Following the investigation in Fish Creek watershed, the MDA added the historical data from Fish Creek to the dataset for the 2018 annual report.

Apparently, the data is not yet updated in the Water Quality Portal (formerly STORET). We had it flagged in our database while the investigation was occurring. We subsequently removed the flag; however, due to upgrades of our database system (EQuIS) the data push to the Water Quality Portal has been delayed. “

It is documented that the maximum 2010 – 2018 detected clothianidin concentration from the MDA Water Quality monitoring program was 892 ng/l in 2014 at a site with documented point source contamination and Agency enforcement actions. (NOTE: This sample date and concentration was added into the data set used for this analysis.)

The Surface Water Pesticides of Concern Public Notice and the 2018 Water Quality Report state: “clothianidin exceeds the EPA Aquatic Life Benchmark of 50 ng/L, 83 times between 2010 and 2018”. The MDA data from WQP had 82 samples that equaled or exceeded 50 ng/L. One sample reported at 50 ng/l does not exceed 50 ng/L. The 892 ng/L sample referenced in the above paragraph was not included in WQP.

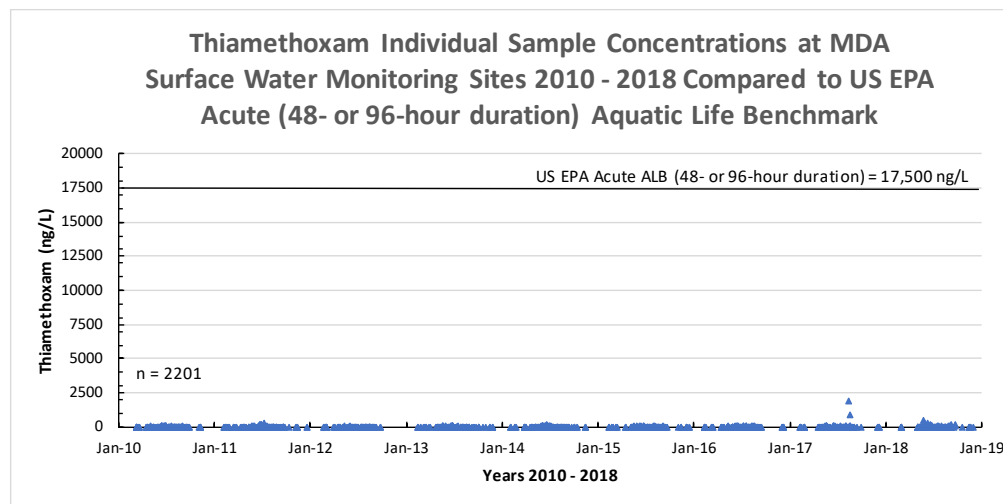
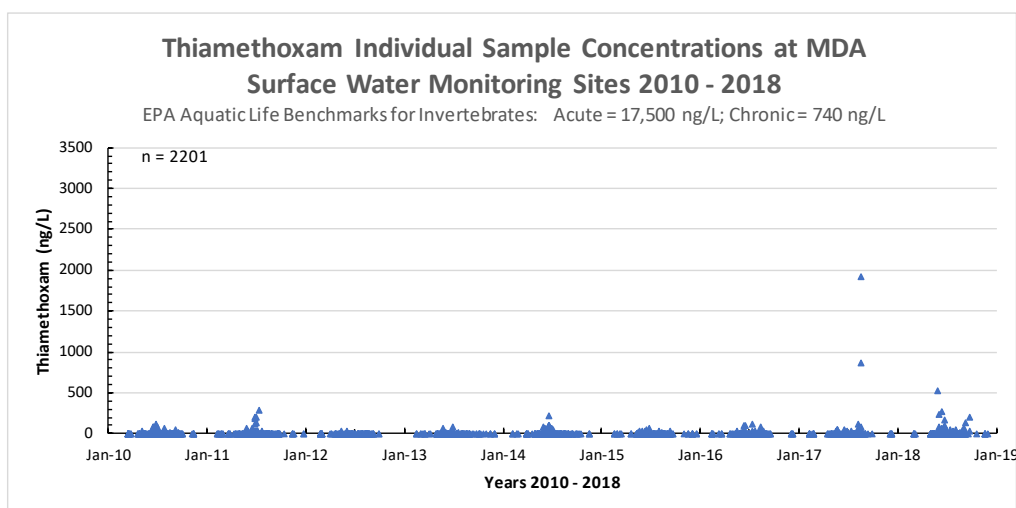
This is where the duration portion of the Aquatic Life Benchmark is dismissed by the MDA. The acute duration (48- to 96-hour) sample results are compared to the chronic 21-day duration benchmark. The US EPA chronic Aquatic Life Benchmark concentration (50 ng/L) is based upon a 21-day duration life cycle test for invertebrates (Natural Resources Defense Council, January 7, 2016). The maximum duration of any sample reported in the MDA dataset was 96-hours. Sample results should be compared to the compatible 48- to 96-hour duration acute ALB of 11,000 ng/L. By dismissing the duration part of the ALB equation (acute vs chronic durations), an additional safety margin of 220 times is incorporated.

The maximum clothianidin concentration reported between 2010 and 2019 was 892 ng/L, 8 times below the acute ALB of 11,000 ng/L. There were no sample concentrations based upon a chronic duration of 21-days. Terminology

in the 2018 Water Quality Report and the Surface Water Pesticides of Concern Public Notice incorrectly state that Aquatic Life Benchmarks were exceeded.

Thiamethoxam in Minnesota Surface Waters

The WQP dataset contained 2,201 thiamethoxam surface water sample results between 2010 and 2018. There were 161 detections of thiamethoxam (detection limit of 25 ng/L). The maximum detected thiamethoxam concentration was 1,920 ng/L. All sample results were from monitoring programs with a sampling duration of 96-hours or less. There were no sample concentrations that exceeded US EPA 48- or 96-hour duration acute ALB concentration of 17,500 ng/L. The maximum detected concentration (1920 ng/L) was 9 times lower than the acute ALB (17,500 ng/L).

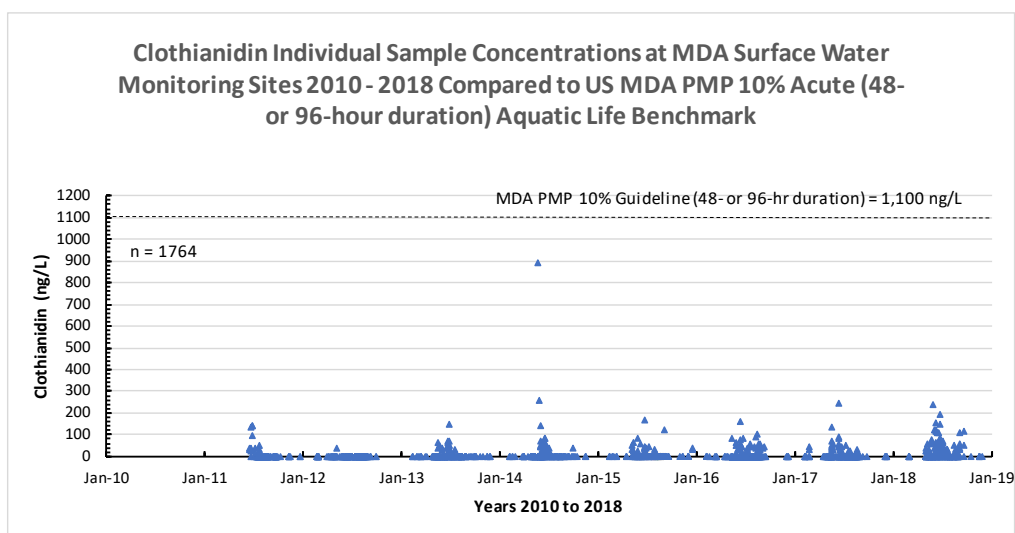


The Surface Water Pesticides of Concern Public Notice and in the 2018 Water Quality Report states that thiamethoxam exceeded the EPA Aquatic Life Benchmark of 740 ng/L, two times between 2010 and 2018. The MDA data from WQP showed that two samples had thiamethoxam concentrations of greater than 740 ng/L. This again is where the duration portion of the Aquatic Life Benchmark is dismissed by the MDA. The acute duration (48- to 96-hour) sample results are compared to the chronic 21-day duration benchmark. The US EPA Aquatic Life Benchmark chronic concentration (740 ng/L) is based upon a 21-day duration life cycle test of invertebrates (Natural Resources Defense Council, January 7, 2016). The maximum duration of any sample reported in the MDA dataset was 96-hours. Sample results should be compared to the compatible 48- to 96-hour acute ALB of 17,500 ng/L. By dismissing the duration part of the ALB equation (acute vs chronic durations), an additional safety margin of 24 times is incorporated.

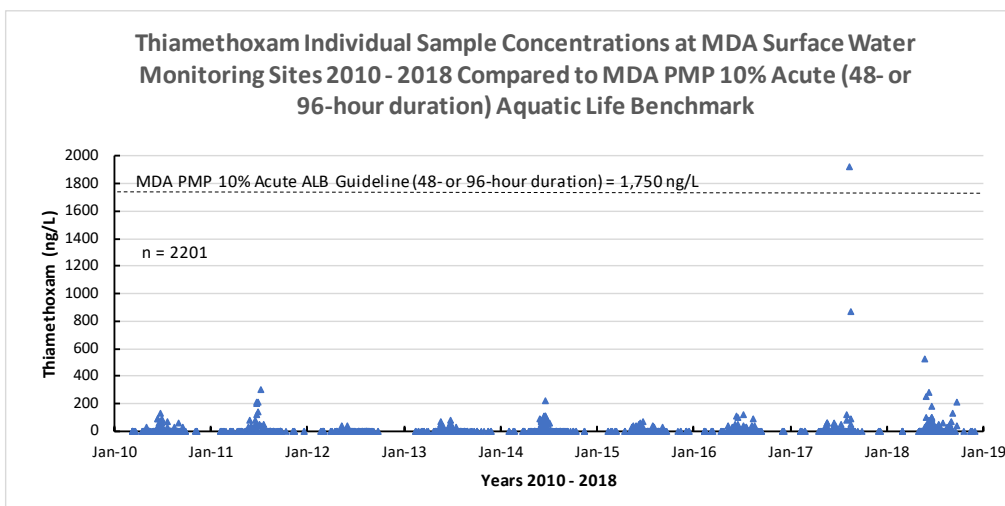
The maximum thiamethoxam concentration reported between 2010 and 2018 was 1,920 ng/L, 9 times below the acute ALB of 11,000 ng/L. There were no sample concentrations based upon a chronic duration of 21-days. Terminology in the 2018 Water Quality Report and the Surface Water Pesticides of Concern Public Notice incorrectly state that Aquatic Life Benchmarks were exceeded.

MDA PESTICIDE MANAGEMENT PLAN 10% OF ALB GUIDELINE FOR SURFACE WATER PESTICIDE OF CONCERN

The Minnesota Department of Agriculture adopted a Pesticide Management Plan (PMP) in November of 2007. The PMP specifies a guideline for identification of a pesticide to be identified as a Surface Water Pesticide of Concern. "Preventative actions will be considered when surface water monitoring results for a pesticide exceed 10 to 50% of its reference value" (PMP, page 64). The 10 – 50% guideline when applied to clothianidin yields a guideline of 1,100 ng/L (0.10 X 11,000 ng/L). In the following chart individual monitoring points are plotted against this guideline. Of the 1,764 MDA clothianidin samples reported, there are no concentrations greater than 1,100 ng/L.

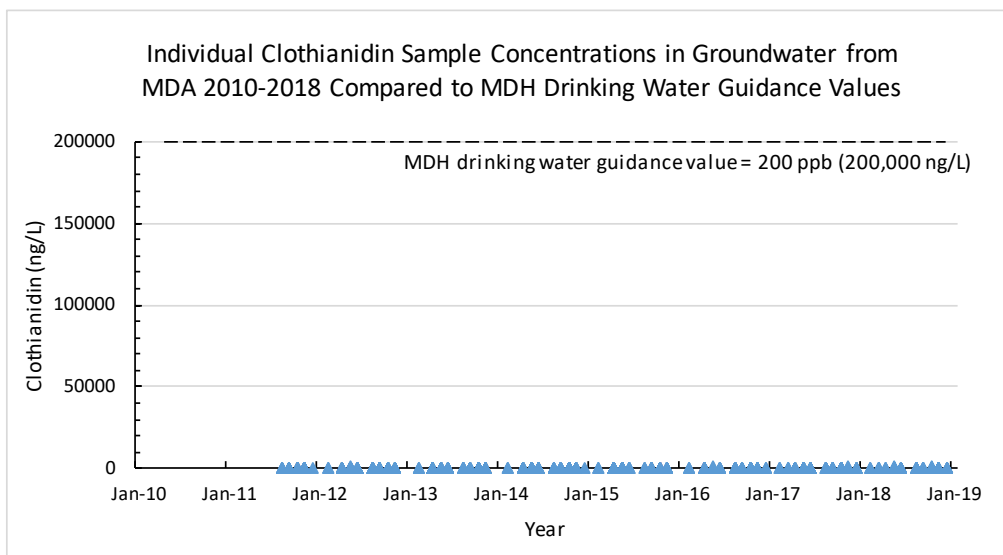


The 10 – 50% guideline when applied to thiamethoxam yields a guideline of 1,750 ng/L (0.10 X 17,500 ng/L). In the following chart individual thiamethoxam monitoring points are plotted against this guideline. Of the 2,201 MDA thiamethoxam samples reported, there is one sample concentration greater than 1,750 ng/L.

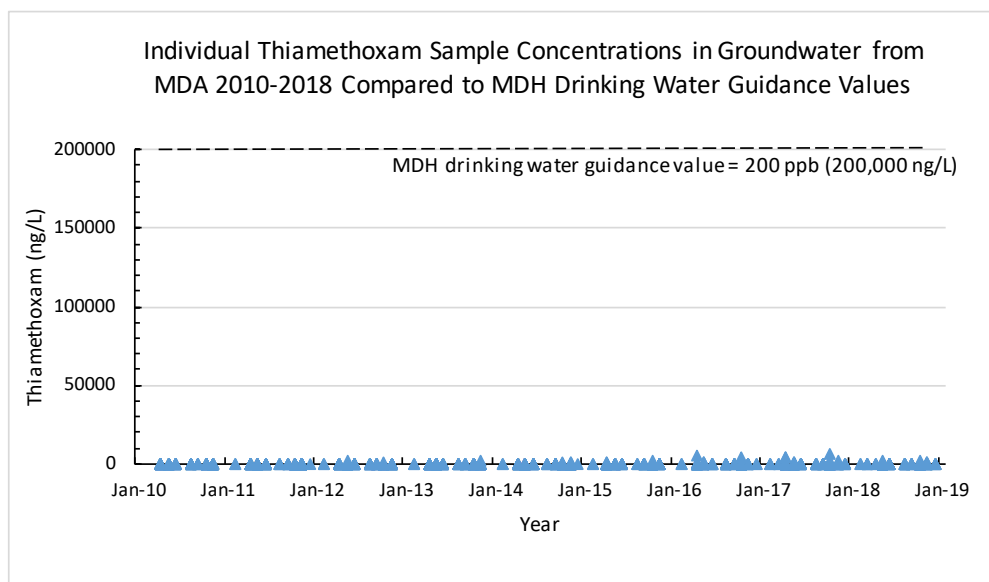


CLOTHIANIDIN AND THIAMETHOXAM IN MINNESOTA GROUNDWATERS

The MDA 2018 Water Quality reported 1,916 Clothianidin groundwater results between 2010 and 2018. Clothianidin was detected in 268 samples (LOQ= 25 ng/L). The maximum detected concentration was 1610 ng/L collected in 2012. The Minnesota Department of Health (2016) issued a drinking water guidance value of 200 ppb (200,000 ng/L) for clothianidin. The maximum detected clothianidin concentration was over one hundred times below this guidance concentration.



The MDA 2018 Water Quality reported 2,293 thiamethoxam groundwater results between 2010 and 2018. Thiamethoxam was detected in 154 samples (LOQ= 25 ng/L). The maximum detected concentration was 6340 ng/L collected in 2017. The Minnesota Department of Health (2016) issued a drinking water guidance value of 200 ppb (200,000 ng/L) for thiamethoxam. The maximum detected thiamethoxam concentration was over thirty times below this guidance.



Location Description	Location Code	Sample Date	Sample End Date	Sample Type	Clothianidin (ng/L)
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	5/19/2014		G	892
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/28/2014		G	260
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/12/2017		G	246
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/30/2018		G	237
DUTCH CREEK AT 100TH ST, 0.5 MILES W OF FAIRMONT	S003-000	6/21/2018		G	191
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/22/2015		G	167
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/9/2016		G	162
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/8/2018		G	154
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/21/2018		G	150
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/25/2013		G	150
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/2/2014		G	144
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/24/2011		G	141
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/27/2011		G	141
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/23/2011		G	137
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/17/2017		G	132
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/6/2015	9/10/2015	CT-T	123
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/9/2018	6/13/2018	CT-T	123
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	5/31/2018		G	120
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/20/2018		G	116
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/8/2018		G	114
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/5/2018		G	110
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/10/2018	6/13/2018	CT-T	108
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/18/2018		G	106
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	8/11/2016		G	100
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/27/2011	7/1/2011	CT	96.5
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/13/2017		G	88
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	8/9/2016	8/13/2016	CT-T	86.2
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/16/2014		G	85.5
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/23/2016		G	85.4
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/14/2014	6/19/2014	CT	84.4
BLUE EARTH R, 0.25 MI N OF CSAH-9, 2 MI W OF RAPIDAN	S005-379	6/22/2018		G	84.2
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/13/2017		G	81.7
COTTONWOOD R AT COTTONWOOD ST BRG IN NEW ULM. MN	S001-918	6/22/2018		G	81.3
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/11/2016		G	80.3
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/27/2015		G	80
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	5/25/2018		G	77.7
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/14/2016	6/18/2016	CT-T	75.2
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/2/2014		G	73
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/21/2018		G	72.8
REDWOOD R AT CSAH-17, 3 MILES SW OF REDWOOD FALLS	S001-679	7/5/2018		G	72.3
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	6/24/2013		G	68.4
MID FK WHTWTR R AT CR-107, 5 MI N OF ST. CHARLES	S001-831	5/15/2017	5/19/2017	CT-T	68.2
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	6/21/2013		G	67.3

Appendix A - Individual Clothianidin Concentrations > 50 ng/L 2010-2018, Sorted by Concentration
(continued)

Location Description	Location Code	Sample Date	Sample End Date	Sample Type	Clothianidin (ng/L)
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/21/2018		G	67.2
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/19/2014	6/23/2014	CT	65.6
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/20/2018	6/24/2018	CT-T	65
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/16/2014	6/19/2014	CT	64.8
REDWOOD R AT CSAH-17, 3 MILES SW OF REDWOOD FALLS	S001-679	5/24/2018		G	64.6
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/8/2018	6/12/2018	CT-T	64.5
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/27/2016		G	63.1
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/11/2015		G	62.8
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	6/20/2018		G	61.8
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	5/17/2013	5/20/2013	CT	61.4
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	7/3/2018		G	61.2
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/21/2013	6/25/2013	CT	60.6
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/21/2017		G	59.2
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	8/23/2016	8/27/2016	CT-T	58.5
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/8/2015		G	58.4
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/25/2018		G	58.2
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/18/2018		G	58.1
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/9/2018		G	58
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/12/2017	6/16/2017	CT-T	57.9
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	8/17/2016		G	57.2
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	9/3/2018	9/7/2018	CT-T	56.6
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/13/2016		G	56
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	7/18/2016		G	55.8
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/19/2014	6/23/2014	CT	54.8
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	6/19/2014		G	54.4
SILVER CR., CSAH-41 BY EAST UNION	S000-843	5/30/2018		G	54.2
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	7/10/2017		G	53.6
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	5/26/2016	5/28/2016	CT-T	53.5
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/13/2017		G	53.3
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/2/2014	6/6/2014	CT	52.9
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/16/2014	6/18/2014	CT	52.4
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	7/21/2011		G	52.2
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/15/2014	6/19/2014	CT	51.8
BLUE EARTH R, 0.25 MI N OF CSAH-9, 2 MI W OF RAPIDAN	S005-379	7/18/2016		G	51.7
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/14/2016	6/18/2016	CT-T	51.4
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/19/2014	6/23/2014	CT	51.4
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	9/20/2018	9/24/2018	CT-T	51.3
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	5/20/2013	5/22/2013	CT	50.8
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/26/2013		G	50.4
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	7/2/2018		G	50

Appendix A - Individual Clothianidin Concentrations > 50 ng/l from MDA 2010-2018, Sorted by Monitoring Location

Location Description	Location Code	Sample Date	Sample End Date	Sample Type	Clothianidin (ng/L)
BLUE EARTH R, 0.25 MI N OF CSAH-9, 2 MI W OF RAPIDAN	S005-379	6/22/2018		G	84.2
BLUE EARTH R, 0.25 MI N OF CSAH-9, 2 MI W OF RAPIDAN	S005-379	7/18/2016		G	51.7
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/24/2011		G	141
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/27/2011		G	141
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/23/2011		G	137
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/8/2018		G	114
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/27/2011	7/1/2011	CT	96.5
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/19/2014	6/23/2014	CT	54.8
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/2/2014	6/6/2014	CT	52.9
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	7/21/2011		G	52.2
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	5/31/2018		G	120
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	6/20/2018		G	61.8
CEDAR RIVER 1.5 MI S OF AUSTIN, MN	S000-001	7/2/2018		G	50
COTTONWOOD R AT COTTONWOOD ST BRG IN NEW ULM. MN	S001-918	6/22/2018		G	81.3
DUTCH CREEK AT 100TH ST, 0.5 MILES W OF FAIRMONT	S003-000	6/21/2018		G	191
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	5/19/2014		G	892
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	6/21/2013		G	67.3
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/2/2014		G	73
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/21/2018		G	72.8
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/8/2018	6/12/2018	CT-T	64.5
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/25/2018		G	58.2
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	9/3/2018	9/7/2018	CT-T	56.6
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/15/2014	6/19/2014	CT	51.8
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	6/14/2016	6/18/2016	CT-T	51.4
LESUEUR R AT MN-66 1.5 MI NE OF RAPIDAN, MN	S000-340	9/20/2018	9/24/2018	CT-T	51.3
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/12/2017		G	246
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/22/2015		G	167
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/8/2018		G	154
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/21/2018		G	150
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/6/2015	9/10/2015	CT-T	123
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/20/2018		G	116
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	9/5/2018		G	110
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	8/9/2016	8/13/2016	CT-T	86.2
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/14/2014	6/19/2014	CT	84.4
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	6/14/2016	6/18/2016	CT-T	75.2
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	7/10/2017		G	53.6
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 MI N BE	S001-210	5/26/2016	5/28/2016	CT-T	53.5
MID FK WHTWTR R AT CR-107, 5 MI N OF ST. CHARLES	S001-831	5/15/2017	5/19/2017	CT-T	68.2
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/28/2014		G	260
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/30/2018		G	237
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/9/2016		G	162
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/25/2013		G	150
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/2/2014		G	144
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/17/2017		G	132
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/18/2018		G	106
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	8/11/2016		G	100
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/16/2014		G	85.5
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/23/2016		G	85.4
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/13/2017		G	81.7
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/27/2015		G	80
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/27/2016		G	63.1
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	6/8/2015		G	58.4
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/9/2018		G	58
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	8/17/2016		G	57.2
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	7/18/2016		G	55.8



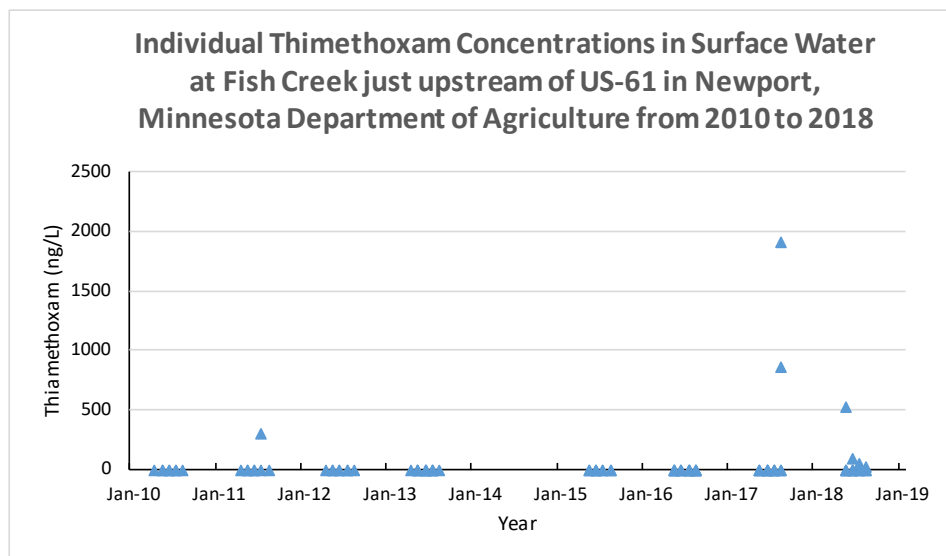
Individual Clothianidin Concentrations Greater Than 50 ng/l from MDA 2010-2018, Sorted by Monitoring Location
(continued)

Location Description	Location Code	Sample Date	Sample End Date	Sample Type	Clothianidin (ng/L)
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/11/2016		G	80.3
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/21/2018		G	67.2
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/11/2015		G	62.8
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	5/21/2017		G	59.2
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/13/2017		G	53.3
PIPESTONE CRK ON CSAH-13 4.5 MI W OF PIPESTONE	S000-510	6/26/2013		G	50.4
REDWOOD R AT CSAH-17, 3 MILES SW OF REDWOOD FALLS	S001-679	7/5/2018		G	72.3
REDWOOD R AT CSAH-17, 3 MILES SW OF REDWOOD FALLS	S001-679	5/24/2018		G	64.6
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/10/2018	6/13/2018	CT-T	108
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/19/2014	6/23/2014	CT	65.6
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/20/2018	6/24/2018	CT-T	65
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/16/2014	6/19/2014	CT	64.8
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	5/17/2013	5/20/2013	CT	61.4
ROOT R, MB AT CSAH-21, 3 MI S OF PILOT MOUND	S004-842	6/12/2017	6/16/2017	CT-T	57.9
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/9/2018	6/13/2018	CT-T	123
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/21/2013	6/25/2013	CT	60.6
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	8/23/2016	8/27/2016	CT-T	58.5
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/16/2014	6/18/2014	CT	52.4
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	6/19/2014	6/23/2014	CT	51.4
ROOT R, SB AT CSAH-12 IN CARIMONA	S004-839	5/20/2013	5/22/2013	CT	50.8
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/13/2017		G	88
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/18/2018		G	58.1
S FK WHITEWATER R AT CR-112 2 MI W OF ALTURA	S000-321	6/13/2016		G	56
SILVER CR., CSAH-41 BY EAST UNION	S000-843	5/30/2018		G	54.2
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	5/25/2018		G	77.7
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	6/24/2013		G	68.4
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	7/3/2018		G	61.2
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD LAKE, MN	S007-314	6/19/2014		G	54.4

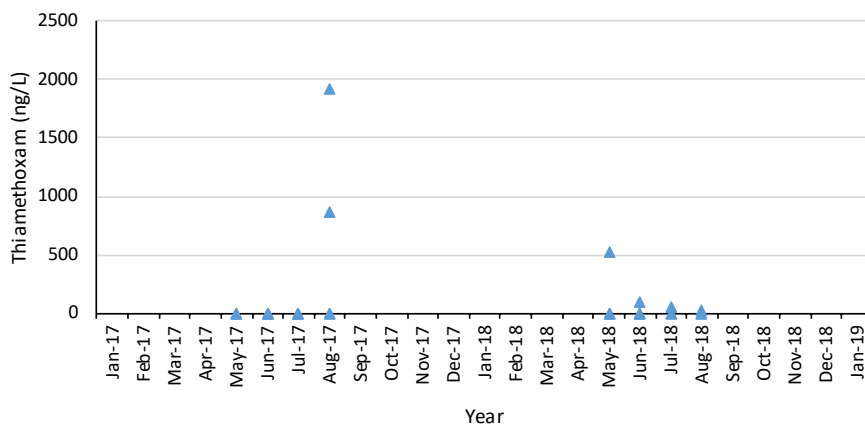
Appendix B - Thiamethoxam Concentrations > 740 ng/L (>200 ng/L shown) 2010-2018,
Sorted by Concentration

Location Description	Location Code	Sample Date	Sample End Date	Sample Type	Thiamethoxam ng/L
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	8/14/2017		G	1920
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	8/16/2017		G	865
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	5/25/2018		G	526
FISH CK JUST UPSTM OF US-61 IN NEWPORT	S005-376	7/11/2011		G	298
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 I	S001-210	6/8/2018		G	277
NF ZUMBRO R AT CSAH-30, 1 MI NW OF WANAMINGO	S004-383	5/30/2018		G	248
YELLOW MEDICINE R AT MN TH-274, 4.5 MI N OF WOOD L	S007-314	6/19/2014		G	223
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/22/2011		G	214
BUFFALO R AT CR-108, 2 MI SE OF GEORGETOWN	S002-125	6/27/2011		G	211
LITTLE BEAUFORD DITCH TRIB TO BIG COBB R, SH22 0.5 I	S001-210	9/20/2018		G	208

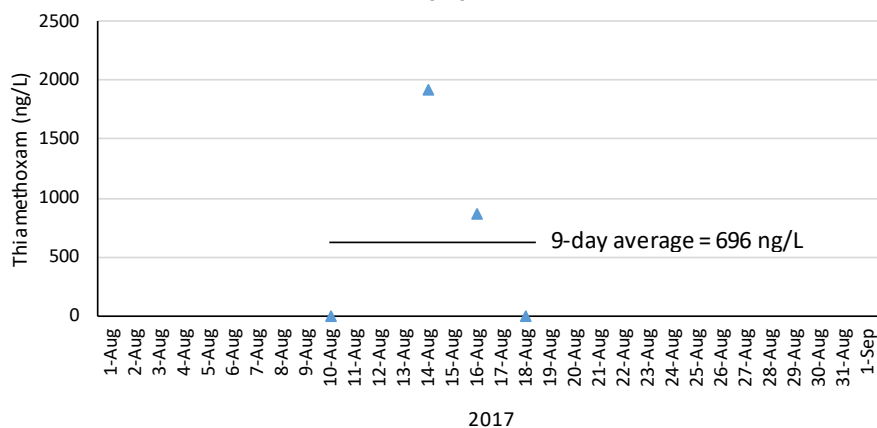
The highest 4 thiamethoxam concentrations occurred at Fish Creek just upstream of US-61 in Newport in 2017 and 2018. Following are period of record data (2010-2018, 2017-2018 and August 2017) for Fish Creek just upstream of US-61 in Newport. The highest two thiamethoxam concentrations were collected two days apart, bracketed over a nine-day period with non-detection concentrations. The nine-day average was 696 ng/L.



Individual Thimethoxam Concentrations in Surface Water at Fish Creek just upstream of US-61 in Newport, Minnesota Department of Agriculture from 2017 to 2018



Individual Thimethoxam Concentrations in Surface Water at Fish Creek just upstream of US-61 in Newport, Minnesota Department of Agriculture from 8/1/2017 to 9/1/2017



Individual Thiamethoxam at Fish Creek from MDA, 2010-2018

Date	TMX (ng/L)	Date	TMX (ng/L)	Date	TMX (ng/L)
04/30/10	0	06/13/13	0	08/19/16	0
05/13/10	0	06/21/13	0	08/22/16	0
05/26/10	0	06/23/13	0	05/10/17	0
06/08/10	0	07/09/13	0	05/16/17	0
06/23/10	0	07/11/13	0	05/19/17	0
07/07/10	0	07/31/13	0	06/13/17	0
07/22/10	0	08/15/13	0	06/15/17	0
08/10/10	0	05/15/15	0	06/22/17	0
04/22/11	0	05/29/15	0	06/26/17	0
05/12/11	0	06/15/15	0	07/14/17	0
05/20/11	0	06/22/15	0	07/18/17	0
06/15/11	0	06/23/15	0	07/21/17	0
06/21/11	0	07/06/15	0	08/10/17	0
07/11/11	298	07/28/15	0	08/14/17	1920
07/19/11	0	08/07/15	0	08/16/17	865
08/15/11	0	08/19/15	0	08/18/17	0
04/18/12	0	05/10/16	0	05/02/18	0
05/02/12	0	05/12/16	0	05/04/18	0
05/24/12	0	05/25/16	0	05/25/18	526
06/14/12	0	05/27/16	0	05/29/18	0
06/29/12	0	06/09/16	0	06/06/18	0
07/13/12	0	06/13/16	0	06/07/18	0
07/18/12	0	06/29/16	0	06/18/18	94.6
08/15/12	0	07/06/16	0	06/22/18	0
04/30/13	0	07/08/16	0	07/13/18	50.1
05/15/13	0	07/27/16	0	07/17/18	0
05/20/13	0	07/29/16	0	07/31/18	0
05/22/13	0	08/04/16	0	08/15/18	0
06/12/13	0	08/08/16	0	08/28/18	29.6
				08/31/18	0

April 8, 2020

Trisha Leaf
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155
Trisha.leaf@state.mn.us

Re: Commissioner's Preliminary Decision to Designate Clothianidin, Imidacloprid, and Thiamethoxam Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota

On behalf of Minnesota Crop Production Retailers (MCPR), we request that Commissioner Petersen NOT designate Clothianidin, Imidacloprid, and Thiamethoxam as Surface Water Pesticides of Concern. The MCPR represents the Crop Input organizations and professionals which provide the crop input products and services for Minnesota's farmers. You can find more information here (www.mcpr-cca.org)

We urge Commissioner Petersen to consider the following points.

1. These neonicotinoid pesticides are very important tools used by MCPR members to provide farmers with the products and services to protect their crops, providing effective control of destructive insects. MCPR members and their customers which are the Minnesota farmers take pesticide stewardship very seriously and use these products safely. As a result, detections in surface waters are reasonably rare and seldom exceed aquatic life benchmarks.
2. As noted in the call for comments, "MDA monitoring results from 2010 through 2018 show clothianidin, imidacloprid, and thiamethoxam detections in several state rivers and streams approached or exceeded the EPA's updated ALBs for these pesticides." **The MDA has erred in comparing sample results for clothianidin and thiamethoxam to chronic standards without consideration of duration. This comparison is not scientifically defensible and should not be used as a basis for the proposed designation.**
3. Also, from the call for comments, "The Pesticide Management Planning Committee members provided comments to the Commissioner to designate these three neonicotinoids, as "surface water pesticide of concern". This is very misleading, suggesting that the committee voted or reached consensus on this recommendation. In fact, this issue was raised only in the comments submitted by a few individual committee members. Other committee members provided comments stating that this action is not necessary and oppose this designation. We concur with their recommendation to NOT designate these compounds as Surface Water Pesticides of Concern.
4. The Pesticide Management Planning Committee was also asked to provide input into the process by which pesticides could be removed from the Surface Water Pesticides of Concern. The apparent rush to add new compounds to the

list very troubling given that the MDA has only recently begun consideration of how a pesticide would be removed from the list and has not taken public input on this topic, which should be an agenda item for the 2020 PMP Committee meeting.

Sincerely,

Bill Bond

William E. Bond
Executive Director
Minnesota Crop Production Retailers
15490 101st Ave N., Suite 100
Maple Grove, MN 55369
P: 763.235.6466
bill@mcpr-cca.org
www.mcpr-cca.org



From: Kay Erickson <k@kerickson.org>
Sent: Thursday, April 9, 2020 10:16 AM
To: Leaf, Trisha (MDA)
Subject: comment, pesticides of concern

I fully support the designation of clothianidin, imidacloprid and thiamethoxam as "pesticides of concern." We need to use everything in our power to protect our freshwater. It is under threat in so many ways, from overuse, to climate change, to pollution from chemicals to road salt and more.

This designation will allow the Department of Agriculture to develop plans reduce this particular source of pollution.

It's time we realized our very lives depend on our water resources.

Thank you for your consideration,
Karen Erickson
27930 Smithtown Road
Shorewood, MN 55331

Leaf, Trisha (MDA)

From: Amelia Kroeger <ackroeger@aol.com>
Sent: Thursday, April 9, 2020 10:25 AM
To: Leaf, Trisha (MDA)
Subject: Designating as surface water pesticides of concern - a brief comment

Without a doubt and on behalf of clean, safe water, clothianidin, imidacloprid and thiamethoxam neonicotinoid should be designated surface water pesticides of concern. Better yet, as rapidly as possible replaced with earth, sky, water safe alternatives.

**Amelia Kroeger
1404 Gettysburg Ave N
Golden Valley MN 55427**

Leaf, Trisha (MDA)

From: Margot Monson <mpmonson.insx@gmail.com>
Sent: Friday, April 10, 2020 12:07 AM
To: Leaf, Trisha (MDA)
Subject: Special registration review of Neonicotinoid pesticides

As an aquatic biologist I urge you to support the registration of the Neonicotinoids, clothianidin, thiamethoxam, and imidacloprid, as pesticides of concern due to the many documentations of their presence in surface waters. We have repeatedly seen decreased invertebrate abundance in waters impacted by Neonicotinoids, especially those habitats adjacent to or otherwise connected to agricultural landscapes planted in corn and soybean crops. These crops are almost universally planted with seeds pretreated with Neonicotinoids, meaning that a very high percentage of the chemical content ends up in the soil, and the subsequent erosion creates runoff into contiguous aquatic habitats. In order for any ecosystem to be sustained and healthy, it must have the natural balance achieved with plant and animal diversity. The most heavily used systemic pesticides in agricultural systems are the Neonicotinoids, which work well for the purpose for which they were developed, to kill insects. The presence of natural populations of insects and other invertebrates is essential to ecosystem health and sustainability. The FWS and DNR studies have reported reduced abundances of species in insect orders, including the Ephemeroptera, Plecoptera, and Tricoptera, of which certain species are biological indicators of water quality.

There have also been reports of the reduced presence of various amphibians, such as frogs, which are sustained by healthy insect diets.

The point must be made clear that a diverse insect population is absolutely critical to the health of many animal species, from fish to amphibians, reptiles, birds, and to humans. In addition, many of these important insects are detritivores, so critical in maintaining water quality and so human health.

I ask you to support the registration of the neonicotinoids as pesticides of concern in surface waters.

Sincerely,

Margot Monson, entomologist

22 Ludlow Ave

St Paul, MN 55108



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

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April 9, 2020

Bayer U.S. LLC
Crop Science Division

700 West Chesterfield Parkway W
Chesterfield, MO 63017
Tel. +1 919 549 2303
danyel.ward@bayer.com

www.bayer.com

RE: Notice of Preliminary Decision to Designate Clothianidin,
Imidacloprid, and Thiamethoxam Neonicotinoid Insecticides
as “Surface Water Pesticides of Concern” in Minnesota

Dear Ms. Leaf,

Bayer appreciates the opportunity to comment on the Minnesota Department of Agriculture Commissioner’s preliminary decision to designate neonicotinoid insecticides clothianidin, imidacloprid, and thiamethoxam (herein referred to as neonicotinoids) as “surface water pesticides of concern”. The preliminary decision for designation is triggered by review of surface water monitoring data relative to surface water reference values, in this case the updated aquatic life benchmarks derived by the US EPA. There is no value or percentage of reference values (i.e., aquatic life benchmarks) for surface water detections that trigger designation as “surface water pesticide of concern” or development of BMP and educational programs. Bayer is fully committed to the sustainable use of neonicotinoids as demonstrated by Bayer, and other nitroguanidine neonicotinoid registrants, stewardship programs publically outlined in the EPA dockets for the registration review of imidacloprid¹, dinotefuran, clothianidin, and thiamethoxam. Bayer will continue to work with Minnesota on stewardship and implementation of BMPs but believes the proposed designation of imidacloprid as a “surface water pesticide of concern” is unwarranted.

Designation of “surface water pesticide of concern” should be reserved for compounds identified at concentrations in surface water that are of concern to the health of aquatic communities on a temporal and spatial scale that is indicative of concern with normal use. Imidacloprid does not satisfy these conditions. The wealth of available monitoring data clearly demonstrate low risk to aquatic organisms even when comparing to the EPA aquatic life benchmarks, which are designed for focusing further investigation and not determining the presence of harm.

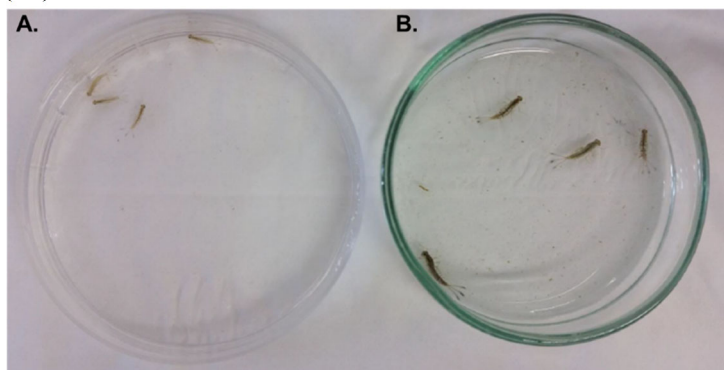
Reference Values:

Imidacloprid has one of, if not the, most well characterized aquatic organism toxicity profiles of all insecticides. Thanks to vast product development and independent research efforts, a wealth of data from laboratory to environmentally relevant field studies is available for establishment of robust thresholds (reference values) for protection of aquatic organisms of interest and characterizations of potential risks associated with chemical detections from water monitoring programs. These data clearly demonstrate aquatic invertebrates, specifically aquatic insects, are the most sensitive aquatic organisms with fish and aquatic plants being insensitive even when exposed at the limit of solubility in some cases.² Based on this understanding, evaluation of potential impacts on aquatic environments often involves comparing detections or exposure

concentrations to reference values specific for aquatic invertebrates. The reference values considered in the notice of preliminary decision to designate clothianidin, imidacloprid, and thiamethoxam as “surface water pesticides of concern” are the aquatic invertebrate acute and chronic aquatic life benchmarks derived by EPA Office of Pesticide Programs. Acute and chronic values are derived from studies conducted under highly controlled laboratory conditions where test organisms are continuously exposed to maintained concentrations of the compound, generally for 48-96 hours or 21-28 days for acute and chronic respectively. These aquatic life benchmarks are not intended to indicate a level above which harm will occur but rather focus efforts on understanding the source and biological implications of surface water exceedances considering the full set of best available toxicological data to understand potential impacts under environmental conditions. Therefore, surface water exceedances of the aquatic life benchmark should alone should not cause concern and any potential for concern should further be diminished considering the studies that are the basis for the aquatic life benchmarks and inappropriate manner in which surface water detects are compared to these values.

The acute and chronic aquatic life benchmarks for imidacloprid are based on mayfly studies performed in the Netherlands by Roessink et al. 2013.³ These studies were performed at the forefront of efforts to investigate sensitivity of mayfly to pesticide exposure and as such the conditions under which these tests were conducted have since been determined to be inappropriate. The Roessink et al. 2013 studies subjected the test organisms to a suboptimal feeding regime, high light intensity, and long photoperiod that resulted in high stress conditions unlike those encountered by the organisms in the natural environment, leading to poor quality test organisms. Evidence of diminished test organism quality under these conditions was presented when wild organisms were compared to organisms under refined test conditions and test conditions used in the Roessink et al. 2013 studies as part of a ring test for mayfly acute test development involving Gaia Research Institute of Ecosystem Analysis and Assessment, Wageningen University and observed by the Dutch Board for the Authorisation of Plant Protection Products and Biocides (Ctgb). The comparison clearly demonstrated mayfly held under the conditions used in the Roessink et al. studies were suboptimal with smaller size, slower development, and lower proportion of organisms successfully emerging as adults compared to those captured from native environments or held under the conditions defined by the current testing protocol.

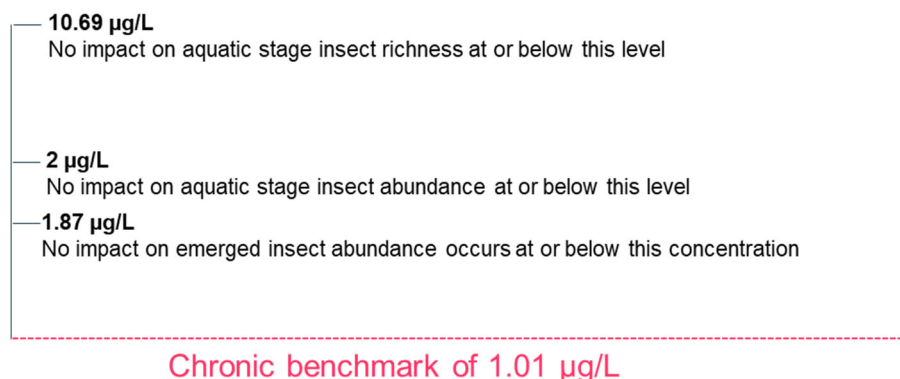
Figure 1. Comparison of mayfly under Roessink et al. 2013 conditions (A.) with current protocol (B.)



The poor condition of the mayfly used in the Roessink et al. 2013 studies gives low confidence that the endpoints derived from those studies are appropriate for establishing aquatic life benchmarks. Further, the endpoints are not consistent with recent studies published by Raby et al. 2018a,b^{4,5} that rely on more appropriate test conditions which became available after the release of the preliminary EPA aquatic risk assessment for registration review of imidacloprid. EPA has reviewed the Raby et al. 2018a,b studies and reported the studies to be robust and suitable for quantitative risk assessment as well as for comparison across the nitroguanidine neonicotinoids. The Raby et al. 2018a,b studies, report acute LC50 endpoints from 5.62 to 12000 µg ai/L for seven different mayfly species and chronic endpoint representing the test level where no effects were observed (NOEC) of 1 µg ai/L. While these values are more appropriate for use as reference values (aquatic life benchmarks) than the Roessink et al. 2013 based endpoints, these lab based studies have higher uncertainty regarding the representativeness to impacts under environmental conditions as compared to mesocosms.

Mesocosms are studies performed in natural or artificial aquatic systems, such as ponds or streams, with aquatic communities exposed under natural conditions. The organisms, test system, and compound behavior matches expectations for the natural environment where the compound is used. Given the representativeness of mesocosm, aquatic life benchmarks based on these studies are the most appropriate for interpreting monitoring detections. For imidacloprid, the available mesocosm data has been evaluated and a chronic aquatic life benchmark (1.01 µg ai/L) has been derived. The derivation of this aquatic life benchmark and use for evaluating risk to aquatic systems of current uses has been published.^{6,7} The chronic aquatic life benchmark of 1.01 µg ai/L is the threshold at which chronic exposures with average concentrations at or below this value will have no effect on the aquatic community. An acute aquatic life benchmark was not derived from the mesocosm data since the nature of the study design is not intended to derive endpoints from short term exposures. In the absence of an acute reference value the highly conservative approach of comparing single surface water detects (i.e., representations of acute exposure) to the chronic mesocosm based aquatic life benchmark of 1.01 µg ai/L may be taken. This is suggested rather than rely on the aquatic laboratory based aquatic life benchmark based on the Raby et al. 2018a,b data in this situation due to the chronic mesocosm data demonstrating the acute lab based studies highly overestimate the sensitivity of the aquatic community.

Figure 2: Threshold values for effects observed in mesocosms relative to the chronic aquatic life benchmark derived in Whitfield-Aslund et al. 2016 and Moore et al. 2016





Comparison of Surface Water Detections to Reference values:

In the notice of preliminary decision to designate clothianidin, imidacloprid, and thiamethoxam neonicotinoid insecticides as “surface water pesticides of concern,” comparison of surface water detections and aquatic life benchmarks are incorrectly performed with single detections compared to chronic aquatic life benchmarks. Chronic aquatic life benchmarks, either lab or mesocosm based, represent concentrations at which there is high confidence no adverse effects will occur from continuous chronic exposure (21-28 days) at the level that defines the benchmark. A single surface water detection provides only a snapshot in time of the possible exposure level; it does not provide information on the chronic exposure concentrations and should therefore not be compared to the chronic aquatic life benchmarks.

Evaluation of all surface water detections from the USGS Water Quality portal clearly demonstrate the pulsed nature of imidacloprid detections with exceedance of any reference value being short term, or acute, in nature. Therefore, in the absence of a time series of surface water detections for a single site that is representative of the chronic exposure that is the basis for derivation of chronic aquatic life benchmarks, surface water detections should be compared to the acute aquatic life benchmarks, or in the case of imidacloprid, to the chronic mesocosm based aquatic life benchmark as discussed in the prior section.

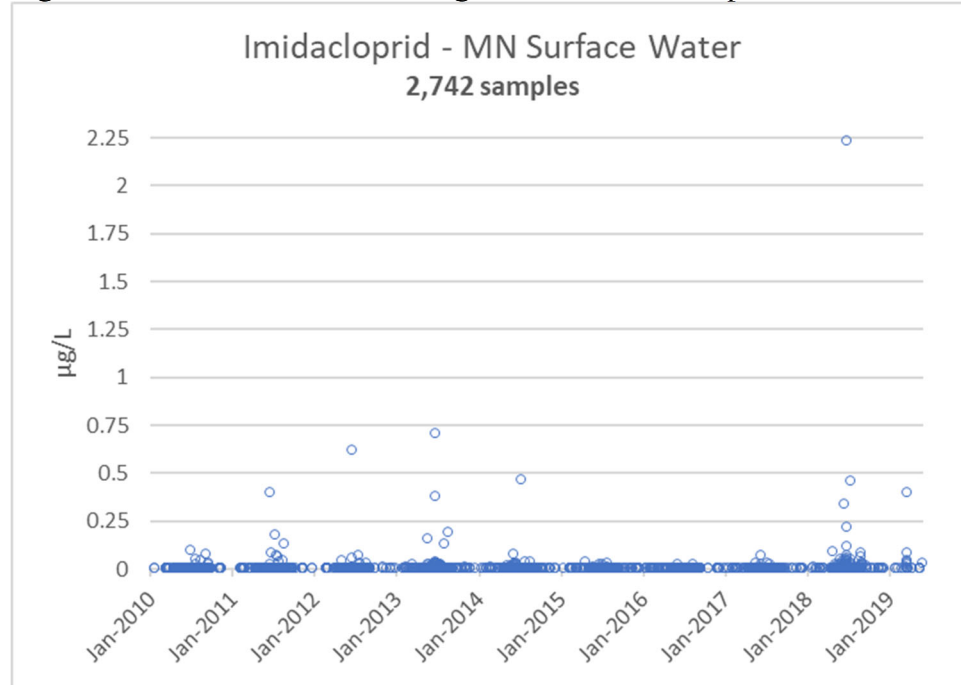
Surface Water Monitoring Detections:

Review of surface water monitoring data in Minnesota concludes a lack of spatial scale, frequency, duration, and magnitude of detections that warrant concern for aquatic invertebrate communities.

In the notice of preliminary decision to designate clothianidin, imidacloprid, and thiamethoxam as “surface water pesticides of concern” in Minnesota it is stated, “Every imidacloprid detection across Minnesota rivers and streams has been above the updated ALB [aquatic life benchmark] since 2010.” This is misleading and inaccurate statement. From a download of all imidacloprid monitoring data from the USGS Water Quality portal (download date March 4, 2020) a total of 2,724 surface water samples from Minnesota surface waters (190-351 sample per year, 2011-2018) are available for analysis (graphed in Figure 3). Based on these data, statement included in the notice is inaccurate for the following reasons:

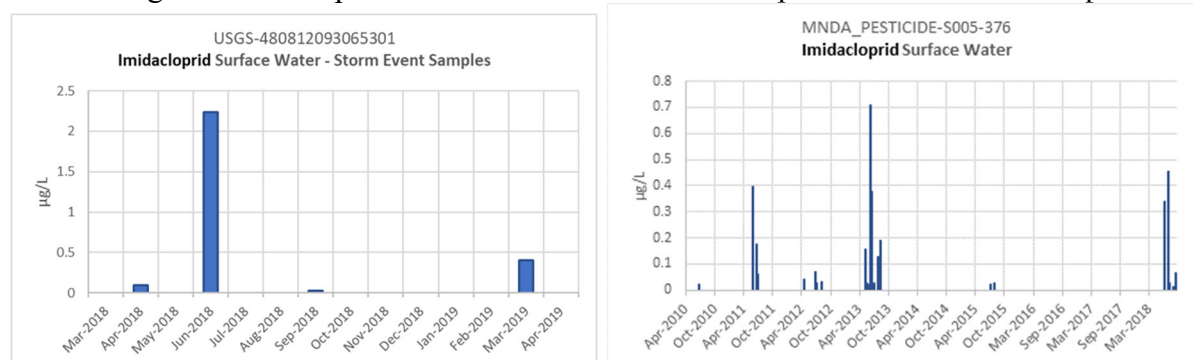
- 1.) As described previously, the comparison of a chronic aquatic life benchmark (ALB) to a single surface water detection concentration is not appropriate.
- 2.) Only 7 samples (0.3%) exceeded the EPA acute aquatic life benchmark of 0.385 $\mu\text{g ai/L}$.
- 3.) Only 1.6% of samples exceed 10% of the EPA acute aquatic life benchmark.
- 4.) Only 5% of all surface water samples exceeded EPA chronic imidacloprid aquatic life benchmark (0.01 $\mu\text{g ai/L}$). It should also be mentioned that the reporting limits were above 0.01 $\mu\text{g ai/L}$ for all but 2 samples, and therefore all detections would by default be above the new ALB, but it does not indicate a widespread occurrence that is implied by the statement.

Figure 3: Surface water monitoring results for imidacloprid in Minnesota from 2011-2018



The acute nature of these higher detections can be seen in Figure 4 showing multiple samples collected from the sites with the two highest detections of imidacloprid.

Figure 4: Temporal evaluation of imidacloprid detections at representative monitoring locations, with the highest imidacloprid detections that demonstrate rapid decline of observed peaks



Surface water monitoring programs rarely follow a random design, which would be required to understand the spatial scale of imidacloprid detections under normal used conditions. Rather, as noted by EPA in the Section 1.3 of the Agency's response to public comments on the preliminary risk assessment for imidacloprid⁸, "These monitoring data are not being used to represent an unbiased nation-wide representation of surface water concentrations. There are undoubtedly biases related to non-random selection of sites and timing of sampling." This is clearly demonstrated with the highest imidacloprid detections in Minnesota. The USGS-5301 site samples were all identified as storm event samples, and are samples collected from an urban drain. The highest detection occurred after an overnight rain of 1-inch. Although sampling was



not sufficiently frequent to demonstrate the rapid decline in residues, the MNDA-376 site has shorter sampling intervals and shows the rapid decline of the observed peak values.

On a national scale, a similar pattern is seen with only a small percentage of the 31,173 surface water samples exceeding the most robust aquatic life benchmark (mesocosm based benchmark of 1.01 $\mu\text{g ai/L}$) for evaluating potential adverse effects to aquatic systems. These data provide strong evidence there should not be concern for adverse effects on aquatic systems from the normal use of imidacloprid.

Conclusion:

Imidacloprid detections in surface water do not warrant designation as a “surface water pesticide of concern.” The preliminary evaluation on which the preliminary decision to designate was lacking scientific validity with regards to the reference values (aquatic life benchmarks) used for evaluation and interpretation of the monitoring data. Reference values for protection of aquatic ecosystems derived using the best available data to represent potential harm under environmentally realistic conditions have been published and should be considered.^{6,7} Further, surface water monitoring data in Minnesota demonstrates no trend of increasing detection frequencies or detections of a higher percentage of reference values. Detections are generally low with sporadic peaks followed by rapid dissipation. Based on the available data, current use of imidacloprid, under normal use practice, is not a concern for aquatic systems.

Again, thank you for the opportunity to provide comments on this preliminary decision. Please let me know if you have any questions.

Best Regards,

A handwritten signature in blue ink, reading "Danyel L. Ward".

Danyel L. Ward
North American Knowledge & Information Management (KIM) Lead/
State Regulatory Lead



www.hummingforbees.org

P. O. Box 712, Excelsior, MN 55331 / info@hummingforbees.org

Tricia Leaf
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155

April 9, 2020

Re: Minnesota Department of Agriculture's preliminary designation of neonicotinoids as a "pesticides of concern" in surface water.

Humming for Bees strongly supports classifying Clothianidin, Imidacloprid, and Thiamethoxam as "surface water pesticides of concern."

Humming for Bees is a 100% volunteer, grass-roots organization dedicated to contributing to a sustainable future for bees and other pollinators. In 2014, we worked with the City of Shorewood to pass the first Bee Safe City Resolution in Minnesota and continue to facilitate policy that supports pollinators.

Scientific studies show the presence of these chemicals in the environment compromise the health of pollinators directly and also aquatic life as the chemicals migrate into the water systems. The effects are both lethal and sub-lethal where insect behaviors and aquatic biology are changed. With reduced populations of both insects and the smallest aquatic animals, the larger animal populations, such as birds, are also reduced as the food sources are negatively impacted. Poor water quality is really a root of a variety of environmental issues, including soil quality, compromised food systems, and the loss of diversity in living things.

We count on the Minnesota Department of Agriculture to do their part of regulating pesticides that negatively impact our water.

Please continue your work to address the important issue of clean water and classify Clothianidin, Imidacloprid, and Thiamethoxam as "surface water pesticides of concern" thus protecting one of our most important resources, our surface water.

Sincerely,

Jeff Dinsmore, Patricia Hauser
Co-founders, Humming for Bees

9 April 2020

Trisha Leaf
Pesticide and Fertilizer Management Division
Minnesota Department of Agriculture
625 Robert Street North St. Paul, MN 55155
trisha.leaf@state.mn.us

Dear Trisha Leaf,

Thank you for the opportunity to comment on the Minnesota Department of Agriculture's (MDA) preliminary decision to designate Clothianidin, Imidacloprid, and Thiamethoxam as "surface water pesticides of concern" in Minnesota.

We send these comments on behalf of Pesticide Action Network (PAN), a non-profit, public interest organization representing the concerns of over 100,000 supporters across the country, including farmers, farmworkers, health professionals, members of sustainable agriculture, labor, environmental and consumer groups and individuals concerned with the safety, sustainability, fairness and integrity of our food and agricultural system.

PAN strongly supports the changed designation of three commonly detected neonicotinoid (neonic) pesticides in Minnesota waterways. Studies show that Clothianidin, Imidacloprid, and Thiamethoxam are harmful to a variety of aquatic invertebrates and insects, and at much lower rates than previously assigned benchmarks¹. Despite some revisions to aquatic life benchmarks (ALB) in 2018, the EPA's current benchmarks are still likely higher than they should be and do not account for synergistic qualities of many chemistries when mixed. Nevertheless, surface water detections in Minnesota and across the country routinely exceed the existing set of federal benchmarks, suggesting that harmful levels of neonicotinoids are an ongoing environmental threat.

Because the vast majority of neonicotinoid insecticides are applied to the landscape through seed treatments, EPA and MDA are limited in their capacity to monitor and mitigate neonicotinoid use.² Following MDA's 2016 review of neonicotinoids and pollinators, the agency issued eight proposed action steps for continued neonicotinoid use.³ We support the MDA's continued work

¹ Morrissey, C. A., Mineau, P., Devries, J. H., Sanchez-Bayo, F., Liess, M., Cavallaro, M. C., & Liber, K. (2015). Neonicotinoid contamination of global surface waters and associated risk to aquatic invertebrates: a review. *Environment international*, 74, 291-303.

² Alford, A., & Krupke, C. H. (2017). Translocation of the neonicotinoid seed treatment clothianidin in maize. *PloS one*, 12(3), e0173836.

³ Eight Proposed Action Steps Regarding Use of Neonicotinoids. 2016. <https://www.mda.state.mn.us/8-proposed-action-steps-regarding-use-neonicotinoids>

towards completing these action steps to effectively reduce high surface water detections of neonics.

Research also suggests that neonicotinoids harm species higher up the food chain, including fishes, birds, and mammals.⁴ It is clear that the safety of neonics should be reevaluated and that the economic benefits of neonic use should also be assessed by MDA, given research suggesting low efficacy of seed treatments in the Upper Midwest⁵. As the Department of Agriculture responds to the emerging science, we urge for the Department to prioritize increased and novel collaboration with other state agencies to explore and mitigate neonic harm.

Currently, the Minnesota Department of Natural Resources (DNR) is leading the Minnesota Deer Neonicotinoid Project to study deer exposure to pesticides. MDA should support this additional research and work to nimbly respond to results when they are released.

Another opportunity for collaboration on this issue is with the Minnesota Pollution Control Agency (MPCA). If neonics exceed MDA standards, MPCA may consider listing those waters as impaired and needing a Total Maximum Daily Load.

Finally, though no Minnesota agency is currently monitoring neonicotinoids and human health, MDA should coordinate closely with the Minnesota Department of Health as peer agencies in neighboring states add neonicotinoids to the list of analytes for regular biomonitoring.

PAN strongly urges the MDA to continue taking bold, practical steps to address neonicotinoid exposure in Minnesota's waterways. We look forward to the opportunity to support MDA's work and its commitment to ecological pest management and human and environmental health.

Sincerely,

A handwritten signature in black ink, appearing to read 'Willa Childress', is written over a light beige rectangular background.

Willa Childress
Minnesota Organizer

Pesticide Action Network North America
3438 Snelling Avenue, Minneapolis, MN 55406

⁴ Gibbons, D., Morrissey, C., & Mineau, P. (2015). A review of the direct and indirect effects of neonicotinoids and fipronil on vertebrate wildlife. *Environmental Science and Pollution Research*, 22(1), 103-118.

⁵ Petzold-Maxwell, JL, LJ Meinke, ME Gray, RE Estes, and AJ Gassmann. 2013. "Effect of Bt maize and soil insecticides on yield, injury, and rootworm survival: implications for resistance management." *Journal of Economic Entomology*, 106(5): 1941-1951.



April 9, 2020

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

Re: Comments on MDA's Preliminary Decision to Designate Clothianidin, Imidacloprid and Thiamethoxam Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota

Dear Ms. Leaf,

The Minnesota Corn Growers Association (MCGA) appreciates the opportunity to comment on the Minnesota Department of Agriculture's (MDA) preliminary decision to designate Clothianidin, Imidacloprid and Thiamethoxam as "Surface Water Pesticides of Concern." MCGA represents nearly 6,500 corn farmer members but works closely with the Minnesota Corn Research and Promotion Council and all of Minnesota's 24,000 corn farmers on voluntary Best Management Practices (BMPs) for pesticides.

MCGA recognizes the important and quality work of the MDA state-wide screening and monitoring program for detection of agricultural pesticides in surface and groundwater. The annual monitoring reports demonstrate the success of pesticide management and prevention efforts through development and grower adoption of pesticide BMPs. We appreciate the work of MDA to analyze, manage and report monitoring data. However, we do not think the monitoring data provides justification to list Thiamethoxam or Clothianidin as "Surface Waters Pesticides of Concern."

One of our main concerns is that duration is a critically important component of U.S. EPA's Aquatic Life Benchmark and appears to not be considered in the chronic versus acute benchmarks in the review and evaluation of detected concentrations. Not properly considering the duration component in evaluation of EPA's Aquatic Life Benchmark led to a conclusion not based on accepted scientific practice. Therefore, on behalf of our members, we request that MDA not designate Clothianidin, Imidacloprid and Thiamethoxam as Surface Water Pesticides of Concern.

MCGA supports detailed comments and analysis submitted by Pesticide Management Planning Committee member, Syngenta, which provides analysis and justification for why these pesticides should not be designated as surface water pesticides of concern.

MCGA strongly supports adherence to label directions when applying and handling all pesticides including those falling into the neonicotinoid family of pesticides. As stated in our March 2020 comments on proposed revisions to the Pesticide Management Plan (PMP), we support maintaining the current approach for prevention and management of pesticides, when detected, utilizing education and voluntary BMP's to target improvements in water quality.

Finally, as also stated in our March 2020 comments on the PMP, we support the development of a process for removing pesticides from Common Detection and would participate in discussions to determine criteria and approaches for a removal process. We think this should also be applied to Surface Water Pesticides of Concern and would support the Pesticide Management Planning Committee to address this topic.

Thank you for the opportunity to submit comments on MDA's preliminary decision to designate Clothianidin, Imidacloprid and Thiamethoxam as "Surface Water Pesticides of Concern."

Sincerely,

A handwritten signature in black ink, appearing to read "Les Anderson". The signature is fluid and cursive, with a large initial "L" and "A".

Les Anderson
President
Minnesota Corn Growers Association

April 9, 2020

Trisha Leaf
Minnesota Department of Agriculture
625 Robert Street North
St. Paul, MN 55155
Trisha.leaf@state.mn.us

Re: Commissioner's Preliminary Decision to Designate Clothianidin, Imidacloprid, and Thiamethoxam Neonicotinoid Insecticides as "Surface Water Pesticides of Concern" in Minnesota

On behalf of Minnesota farmers, we request that Commissioner Petersen NOT designate Clothianidin, Imidacloprid, and Thiamethoxam as Surface Water Pesticides of Concern. We urge Commissioner Petersen to consider the following points.

These neonicotinoid pesticides are important tools used by farmers to protect their crops, providing effective control of destructive insects. Farmers take pesticide stewardship very seriously and use these products safely. As a result, detections in surface waters are reasonably rare and seldom exceed aquatic life benchmarks.

As noted in the call for comments, "MDA monitoring results from 2010 through 2018 show clothianidin, imidacloprid, and thiamethoxam detections in several state rivers and streams approached or exceeded the EPA's updated ALBs for these pesticides." The MDA has erred in comparing sample results for clothianidin and thiamethoxam to chronic standards without consideration of duration. This comparison is not scientifically defensible and should not be used as a basis for the proposed designation.

Also from the call for comments, "The Pesticide Management Planning Committee members provided comments to the Commissioner to designate these three neonicotinoids, as "surface water pesticide of concern". This is very misleading, suggesting that the committee voted or reached consensus on this recommendation. In fact, this issue was raised only in the comments submitted by a few individual committee members. Other committee members provided comments stating that this action is not necessary and oppose this designation. We concur with their recommendation to NOT designate these compounds as Surface Water Pesticides of Concern.

The Pesticide Management Planning Committee was also asked to provide input into the process by which pesticides could be removed from the Surface Water Pesticides of Concern. The apparent rush to add new compounds to the list is disconcerting given that the MDA has only recently begun consideration of how a pesticide would be removed from the list and has not taken public input on this topic, which should be an agenda item for the 2020 PMP Committee meeting.

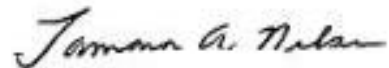
Sincerely,



Kevin Paap, President
Minnesota Farm Bureau Federation



Jamie Beyer, President
Minnesota Soybean Growers
Association



Tamara A. Nelsen, Executive
Director
Minnesota AgriGrowth Council



Northern Plains Potato Growers
Association
Donavon Johnson, President



Charlie Vogel, Executive Director
Minnesota Association of Wheat
Growers



Harrison Weber, Executive Director
Red River Valley Sugarbeet Growers
Association



Thurs., April 9, 2020

Dear MN Dept. of Ag,

We are 79 yr. old citizens of our state! This letter is one of deep concern for the waters of our MN and the effects of chemicals (specifically 3 neonic: clothianidin; Imidacloprid; Thiamethoxam)

We are specifically asking of MN Dept. of Ag. to formally list the above neonic as pesticides of concern.

Also, as part of this request, you should know I volunteer with the U of MN extension and work with citizens on veg. gardening ^{and} rain gardens! Over 20 yrs. I've seen the results of more chemicals being used by citizens as our insects have been depleted broadly.
^{amphibians}
^{birds}

Many thanks for understanding and considering our request!

Sandy and Tom Ahlstrom
6085 Riviera Ln., Excelsior
55331