2022 Atrazine Use (Legal and Illegal) Inspections Report

Wisconsin Department of Agriculture, Trade and Consumer Protection
Agricultural Resource Management Division
Environmental Quality Unit
Final (7-25-2023)

Introduction

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Agrichemical Management (ACM) Bureau is responsible for assuring compliance with Wis. Admin. Code, ch. ATCP 30 – Pesticide Product Restrictions (Wis. Admin. Code, ch. ATCP 30). Within that chapter, Subchapter VIII deals specifically with the legal- and illegal-use of any herbicide that contain the active ingredient atrazine. This report documents 2022 DATCP ACM inspections associated with atrazine legal- and illegal-use relative to Wis. Admin. Code, chs. ATCP 30.31-30.37, and provides a summary of the inspection program findings and trends.

Wisconsin's general restrictions and requirements for atrazine use have not changed since 2010. It is illegal in Wisconsin to apply any pesticide containing the active ingredient atrazine within an atrazine Prohibition Area (PA). Outside of a PA, atrazine use is restricted but not prohibited. Currently, there are no PAs under consideration for repeal (Wis. Admin. Code, ch. ATCP 30.375), or any active or under consideration research exemptions (Wis. Admin. Code, ch. ATCP 30.38).

Atrazine in drinking water remains a concern. The 2016 DATCP statewide survey of agricultural chemicals in groundwater indicated atrazine, or one of its metabolites, was detected in 26.4% of private drinking water wells in Wisconsin[1]. Regarding risk to human health, about 0.2% of the wells contained a total atrazine concentration exceeding the 3.0 micrograms per liter (µg/l or parts per billion [ppb]) Enforcement Standard (ES) listed within Wis. Admin. Code, ch. NR 140.

Atrazine Prohibition Area (Illegal-Use) Inspections

An atrazine PA restricts the ability to use a pesticide that contains the active ingredient atrazine within the designated boundaries. There are currently 101 atrazine PAs covering approximately 1.2 million acres within the state, of which about 247,000 acres are planted in corn (2022 data[2]). PAs are established once a groundwater sample collected from a drinking water well is found to contain greater than 3.0 ppb atrazine plus metabolites, and a subsequent investigation reveals that nearby agricultural practices (non-point source) contributed to the atrazine exceedance.

DATCP ACM Environmental Enforcement Specialists (EES) have performed annual atrazine illegal-use inspections since 2008. An inspection is performed on a field in agricultural production to verify compliance with Wis. Admin. Code, ch. ATCP 30.37, which states that *"…no person may apply atrazine in a prohibition area identified under s. ATCP 30.37…"*. The goal for 2022 was to perform at least one atrazine illegal-use

[1] Wisconsin Department of Agriculture, Trade and Consumer Protection, April 2017. Wisconsin Groundwater Quality. ARM-PUB-264 (rev. 03/17)
[2] United States Department of Agriculture National Agriculture Statistics Service. CropScape – Cropland Data Layer, 2020 Data. nassgeodata.gmu.edu/CropScape

inspection for each EES territory with a PA (13 total, one EES territory does not contain any PAs). Typically, inspections are performed during the growing season, before July 31, and on an existing field planted with corn.

PROGRAM APPROACH AND SELECTION CRITERIA

The first step is to select an agriculture field to inspect. Criteria used for field selection are listed below.

- The Environmental Quality (EQ) Unit Program Manager identifies a field within the PA for the EES to inspect based on atrazine concentration trends at nearby private drinking water wells that are not decreasing at an expected or acceptable rate based on a review of data associated with DATCP's Exceedance Well Sampling Program.
- Referral by neighbors that suggests atrazine may have been used on an agricultural field within the PA.
- Review by EES personnel of herbicide sales records where users of atrazine are known to farm within PAs.
- ESS personnel select a field within the PA where corn is currently grown and has not been inspected prior.

EES personnel meet with the agriculture field operator and/or owner and conducts a records check of the three prior growing seasons (i.e., years); gathers information on the crop(s) grown and the herbicides used on the selected field, and notes whether any herbicide product containing the active ingredient atrazine had been applied. The EES also collects three soil samples; two from the selected field to check for atrazine residue and one from a background location for comparison. These samples are analyzed at DATCP's Bureau of Laboratory Services (BLS) laboratory. The laboratory results are submitted to the Program Manager for evaluation. EES personnel then prepare a report using form ARM-ACM-453, rev 04/20, with appropriate supporting documentation. Reports are submitted to supervisors and the Program Manager for review, analysis, and memorialization.

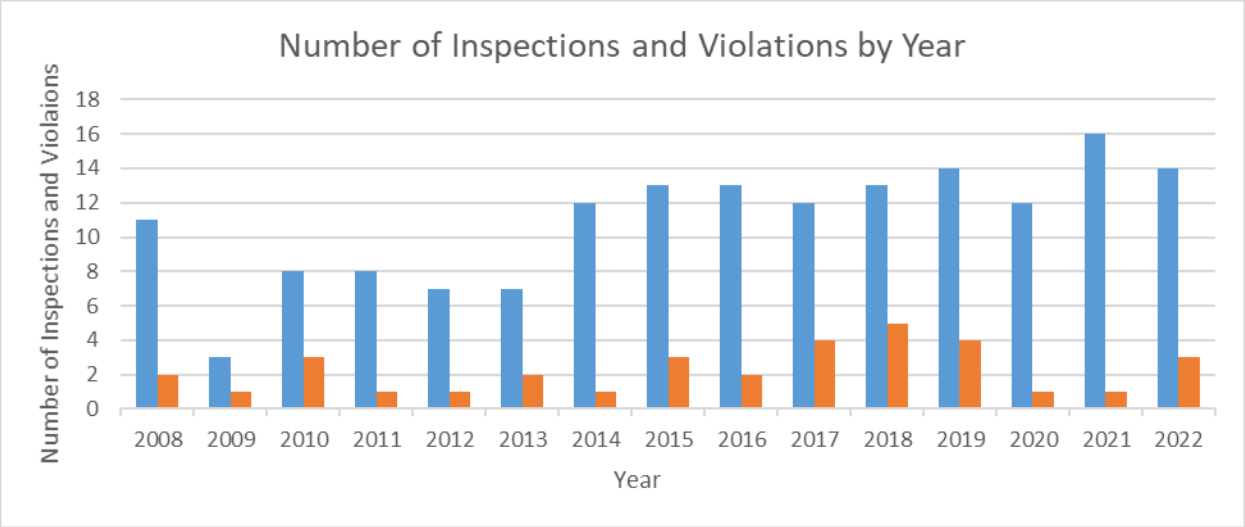
ILLEGAL-USE INSPECTIONS AND VIOLATIONS

In 2022, 14 inspections were performed in atrazine PAs with three violations recorded involving atrazine application within the PA. These illegal applications occurred within the following counties.

- Rock County - PA 93-54-02; application by the Grower. The operator of the property indicated he was aware of atrazine PAs, but was not aware the field in question was in a PA. The operator of the field is also the atrazine applicator. The operator/applicator does not hold a private application certification in Wisconsin. The operator/applicator was issued a financial civil forfeiture for applying atrazine in a PA and not having a pesticide applicator license in Wisconsin.
- Waushara County - PA 94-70-01; application by the Grower. The operator of the property indicated he was aware of atrazine PAs in Waushara County, but was not aware the field in question was in a PA. The operator of the field is also the atrazine applicator. The operator/applicator was issued a financial civil forfeiture for mixing and applying atrazine in a PA.
- Dodge County – PA 99-14-02; application by commercial entity. The applicator was issued a financial civil forfeiture for mixing and applying atrazine in a PA.

Since 2008, 163 inspections were performed in atrazine PAs, yielding an overall violation rate of 20.9% (34 locations). Commercial applicators provided service for 76 (46.6%) of the fields inspected, yielding a violation rate of 27.6%. Self-applicators accounted for the remaining 87 (53.4%) inspected fields, yielding a violation rate of 14.9%. Figure 1 depicts inspection and violations by year. A summary of atrazine illegal-use inspection results over the years is provided in Appendix A.

Figure 1: Atrazine Illegal-Use Inspections and Violations



Notes: *Number of atrazine illegal-use inspections within stated year.*
Number of violations associated with an atrazine illegal-use inspection within the stated year.

The atrazine illegal-use inspection program has encountered violations every year since inspections began in 2008. In 2022 the percentage of violations observed were similar to violation rates observed during the previous five years. It is important to note that EES personnel are searching for inspection locations with an increased chance that a violation may occur. This selection process introduces a bias regarding the selection of field(s) where an inspection will occur. A random approach in field selection versus the current field selection process would likely yield fewer violations.

ATRAZINE IN SOIL SAMPLES

Overall, atrazine concentrations in excess of laboratory detection limits have been identified in 16.0% (26 out of 163 locations) of soil samples collected from fields associated with atrazine illegal-use inspections. In 2022, of the three locations where a violation was identified (e.g. a field location where atrazine was illegally applied), no atrazine was detected in excess of laboratory reporting limits (0.03 parts per million [ppm]) in any of the soil collected from those three locations. Over the course of the inspection program, atrazine was detected in soil samples collected from ten of the 31 fields where atrazine was illegally applied to fields (self-reported by operator or applicator). Detected atrazine concentrations in these samples ranged from 0.0346 to 0.949 ppm.

Over the course of the inspection program, the top three compounds that have been detected in soil are metolachlor, atrazine and acetochlor. Overall, 19 different compounds have been detected in soil samples collected during the inspection program at concentrations greater than laboratory reporting limits. Table 1 identifies the compounds detected more than twice and their maximum detected concentration.

In 2022, concentrations of metolachlor, atrazine, acetochlor, boscalid, and alachlor were detected in excess of laboratory reporting limits in soil samples. Acetochlor was detected at a concentration of 2.18 ppm in a soil sample collected during an inspection completed in Portage County, PA 99-50-01. This is equal to the previous maximum concentration detected for acetochlor. Alachlor was detected at concentrations (0.695 and 0.170 ppm) in excess of laboratory reporting limits in the two soils samples collected during an inspection completed in Jackson County, PA 94-27-03. At this location, a commercial entity does provide application services because the land owner does not hold a Wisconsin pesticide applicator license. Based on the residual concentrations it would appear that alachlor may have recently been applied at this field. A follow up investigation was performed because alachlor applications by commercial applicators have not been allowed in Wisconsin since use was discontinued in 2016. If a land owner applied an alachlor product purchased prior to 2016 to agricultural fields, an applicator license would be required. During subsequent interviews with the application service provider and the property owner, neither admitted to applying or had knowledge to the

source of the residual alachlor concentrations. At this point, the investigation is closed since nobody admitted to the alachlor application and there is no evidence to prove when the material was actually applied to the field.

Table 1: Soil Sample Results for the Atrazine Illegal-Use Inspection Program

Analyte	Number of Detections	Maximum Concentration (ppm)
metolachlor	97	1.46
atrazine	41	0.949
acetochlor	41	2.18
pendimethalin	11	2.96
simazine	11	0.587
boscalid	7	1.11
alachlor	5	0.695
tefluthrin	2	0.622
chlordane	2	0.423
chlorothalonil	2	1.76
terbufos	2	3.58
dimethenamid	2	0.146

Notes: ppm = parts per million

Over the course of the inspection program, atrazine was detected in soil samples collected from 12 fields where the operator or applicator either did not admit to using atrazine or had records indicating atrazine was not applied to the field. Two of these atrazine detection instances occurred in 2022. The first, at a location in Jackson County, PA 94-27-03, where atrazine was detected in one soil sample at a concentration of 0.0572 ppm. The second, at a location in Iowa County, PA 93-25-01, where atrazine was detected in two soil samples at concentrations of 0.233 and 0.274 ppm. For most of these 12 sites, the detected atrazine concentrations are considered low. Potential explanations for the detected atrazine detected in soil samples collected during these investigation are as follows:

- Carry-over from previous use within the field (prior to the three-year record review conducted during the inspection);
- Atmospheric disposition;
- Carry-over from equipment that was used at a field where atrazine was applied;
- Residue from atrazine applied at adjacent or nearby fields (that may be inside or outside the PA); or
- Illegal use on that field and not having proper paperwork, or the willingness, to admit to the violation.

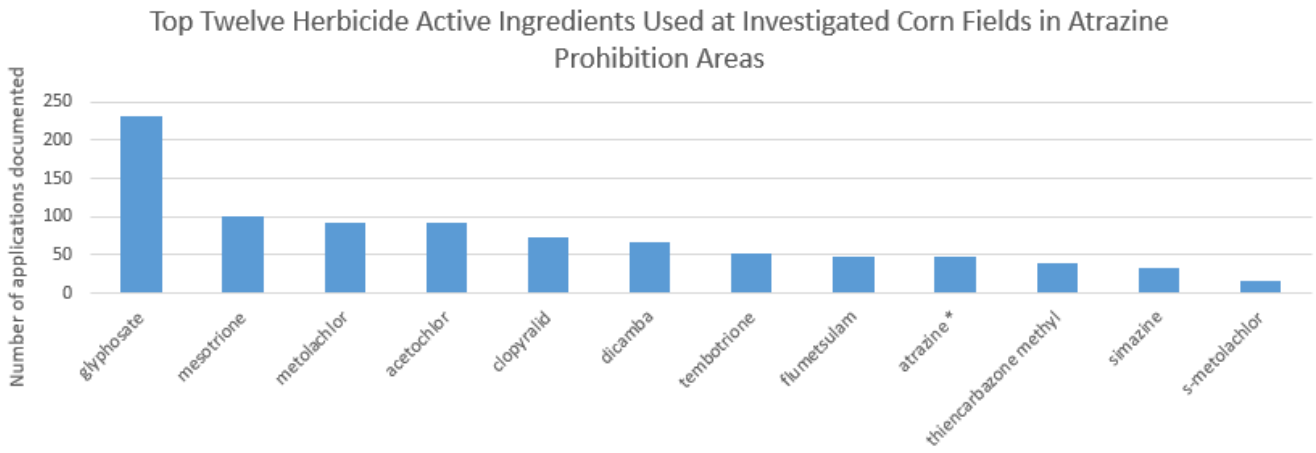
Currently, there is no reliable scientific understanding to explain the atrazine source or time of application in these type of scenarios. It is likely that these low concentrations will have no detrimental effect on local groundwater quality. However, if the detected atrazine concentrations are a result of illegal use (used prior to the three year inspection window, falsified records, or lack of cooperation by violator), the protocol of following up with the field operator and/or applicator would be implemented. Current DATCP protocol is to perform follow-up inspections if atrazine concentrations in a soil sample exceeds a threshold of 0.25 ppm. Prior to 2022, the threshold for follow-up inspections had only been met once, in 2010, in soil samples collected from Iowa County (0.274 ppm). A follow-up investigation is being performed to further evaluate the reasoning for the atrazine in the soil.

HERBICIDES USED IN PAS

As part of the atrazine illegal-use inspection in a PA, EES staff also collect crop and herbicide information for the current year and previous two years. A compilation of this information indicates that over 55 different

active agrichemicals have been applied on the investigated corn fields within PAs inspected. By far, the most commonly used herbicide active ingredient is glyphosate. Figure 2 depicts the 12 herbicides most frequently used on the cornfields inspected within PAs. Based on the biased approach for field selection and the inspection information collected, atrazine is the ninth most common active ingredient used on fields within the PAs.

Figure 2: Herbicide Use Recorded During Atrazine Illegal-Use Inspection Program



Notes: **Illegal use of atrazine*

Number of times agrichemical was reportedly applied to inspected fields.

Note: glyphosate has not been analyzed as part of the inspection program's soil sampling. Based on chemical composition, it is unlikely that glyphosate will migrate from soil and affect groundwater quality.

Atrazine Legal-Use Inspections

An atrazine legal-use inspection is completed on a field with agricultural crops to verify compliance with Wis. Admin. Code, chs. ATCP 30.31 and ATCP 30.32. The goal for 2022 was for each EES to complete at least one atrazine legal-use inspection within their territory (14 total). Typically, inspections are performed during the growing season on an existing field planted with corn. Records for the current season and the two prior years are reviewed as part of the inspection.

PROGRAM APPROACH AND SELECTION CRITERIA

The first step is to select an agriculture field to inspect. Criteria used for field selection are listed below.

- The Program Manager identifies a field outside of a PA for the EES to inspect either because of an on-going investigation or atrazine concentrations were detected in nearby private drinking water wells.
- Referral by neighbors that suggest potential atrazine use on the agricultural fields at excessive application rates.
- Review by EES personnel of herbicide sales records indicative of atrazine sales.
- ESS personnel select a field outside of a PA that has not been inspected and corn is currently being grown.

EES staff meet with the agriculture field operator and/or owner and conducts a records check, gathers information on the crops grown and the herbicides used on the selected field, and notes whether any herbicide product containing atrazine has been applied. If atrazine is applied, the inspector verifies the rate of application and how the applicator determined that use rate (e.g. soil texture). EES staff then prepares a report (Form ARM-ACM-535, rev 04/20) with figures and appropriate documentation. Reports are submitted to supervisors and the Program Manager for review, analysis, and memorialization.

If a field selected for inspection has the infrastructure for an irrigation system, additional information is obtained to ensure compliance with Wis. Admin. Code, ch. ATCP 30.31(3). Wis. Admin. Code, ch. ATCP 30.31(3)(b) states, "…no person may apply irrigation water to any site to which atrazine product has been applied for a 2-year period following the application of atrazine product, unless the application of irrigation water is conducted in accordance with an irrigation management program that does not cause the field moisture capacity in the root zone of the soil being irrigated to be exceeded."

If applicable, EES staff then discusses or reviews the Irrigation Management Program. The Irrigation Management Program must demonstrate procedures that ensure irrigation will not cause field moisture capacity in the soil's root zone to be exceeded.

No soil samples are collected as part of the atrazine legal-use inspection.

LEGAL-USE INSPECTIONS AND VIOLATIONS

In 2022, 12 inspections were completed for atrazine legal-use outside PAs with three violations recorded. Each of the violations were associated with improper or incomplete recordkeeping; no violation resulting from improper application rates were observed.

Since 2014, there have been 110 legal-use inspections completed yielding a violation rate of 22.7% (25 locations). Figure 3 provides a summary of violations versus inspections by year. Commercial applicators provided service at 51 of the 110 (46.4%) fields inspected, with a violation rate of 13.7%. Self-applicators accounted for the remaining 58 fields, with a violation rate of 35.3%. Recorded violations can be separated into three categories described below:

- 72% of the violations (18 fields) are due to incomplete or improper recordkeeping (this would include no or poorly developed/executed Irrigation Management Plans);
- 20% of the violations (five of the fields) are due to atrazine over-application (i.e. applying at rates for fine or medium soil texture on course soil fields); and
- 12% of the violations (three fields) were solely for no or poorly developed/executed Irrigation Management Plans.

A summary table of the atrazine legal-use inspections over the years is included in Appendix B.

Figure 3: Atrazine Legal-Use Inspections and Violations

Notes: *Atrazine legal-use inspections*
Violations determined

With the exception of 2020, violations have been recorded in every year of the program. For legal-use inspections, the violation rate for self-applicators applicators (35.3%) is greater than commercial applicators

(13.7%). The opposite trend was observed for illegal-use inspections. The greater violation rate for self-applicators outside of PAs is likely related to familiarity with the rules. Commercial applicators are more familiar with atrazine illegal-use rules, and more aware of the requirements because they work both within and outside of PAs. Because self-applicators work mostly outside of PAs, they may not be as familiar with the applicable rate rules.

IRRIGATION MANAGEMENT PLANS

Since EES staff started conducting atrazine legal-use inspections, 12 inspections were completed at fields that required an Irrigation Management Plan. In prior years, it was noted that the reviewed plans were inconsistent with varying levels of detail, and little to no description of processes. Only two of the sites were issued warnings due to an absence of a plan and a poorly developed and executed plan. However, EES staff reported that over 58% of existing plans could use improvements.

2023 Program Goals and Objectives

In 2023, the atrazine illegal- and legal-use inspection program will continue. Program goals are listed below.

- At least one atrazine illegal-use inspection will be completed inside a PA for 13 of the 14 EES territories.
- Two additional atrazine illegal-use inspections will be completed inside PAs in Portage and Columbia Counties to further evaluate atrazine concentrations observed in local groundwater samples.
- At least one atrazine legal-use inspection will be completed for each EES territory.
- A 2023 Summary Report will be completed at the end of the inspection season.

The Program Manager has provided a number of recommended fields for both atrazine illegal- and legal-use inspections for 2023 field selection. For 2023, a continual greater focus will be placed on fields within PAs where commercial applicators are used and where irrigation is used.

APPENDIX A

TABLE OF ATRAZINE ILLEGAL-USE INSPECTIONS

Year	Inspections			Violations			Atrazine Detects in Soil	Year Notes
	Total	Private App	Commercial App	Total	Private App	Commercial App		
2008	11	11	0	2	2	0	1	Atrazine detect in soil at farm in PA 93-65-02; Walworth County. Letter of concern submitted. Other violation was improper records
2009	3	3	0	1	1	0	1	Atrazine illegally used by unlicensed applicator in PA 96-33-01, Lafayette County, and soil detects. Letter warning issued.
2010	8	6	2	3	2	1	2	Atrazine illegally used in PA 00-56-01 in St. Croix County (private applicator). No paperwork. No soil detects. Letter warning issued. Non-violation with soil detect associated with equipment carry-over. Second was record-keeping issue. Atrazine illegally used in PA93-65-01 in Walworth County (commercial applicator, Conserv FS-Zenda). No soil detects.
2011	8	6	2	1	1	0	1	Atrazine illegally used in PA 93-22-01 in Grant County (private applicator). Soil detects. Letter warning issued.
2012	7	0	7	1	0	1	1	Atrazine illegally used in PA 98-37-01 in Marathon County (commercial applicator, Central Wisconsin Cooperative). Soil detects. Letter warning issued.
2013	7	5	2	2	1	1	1	Atrazine illegally used in PA 93-48-01 in Pierce County (private applicator). Letter warning issued. Atrazine illegally used in PA 93-09-02 in Chippewa County (commercial applicator, Asgrow Services). No soil detects. Atrazine detect in soil collected within PA 93-57-04, which was not further investigated. Note: this does not include the seven United Coop locations where they self-identified in violation for atrazine application.
2014	12	5	7	1	0	1	2	Atrazine illegally used in PA 94-56-02 in St. Croix (commercial applicator, Countryside Cooperative). Soil detects. Atrazine detect in soil collected within PA 93-54-05, which was not further investigated.
2015	13	6	7	3	0	3	4	Atrazine illegally used in PA 93-09-01 in Chippewa County (commercial applicator, River Country Coop). Soil detects. Verbal warning issued. A second, atrazine illegally used in PA 93-09-01 in Chippewa County (commercial applicator, River Country Coop). Soil detects. Verbal warning issued. Atrazine illegally used in PA 93-09-02 in Chippewa County (commercial applicator, River Country Cooperative). No soil detects. Verbal warning issued. Atrazine detect in soil collected within PA 95-25-01, which was not further investigated. Atrazine detect in soil collected within PA 93-65-02, which was not further investigated.
2016	13	8	5	2	1	1	1	Atrazine detect in soil collected within PA 98-63-01, which was not further investigated. First and second violations were associated with improper records. Verbal guidance provided in both instances.
2017	12	3	9	4	0	4	3	Atrazine illegally used in PA 93-25-01 in Iowa County (commercial applicator, Premier Cooperative). Soil detects. Written warning issued. Atrazine illegally used in PA 93-45-02 in Outagamie County (commercial applicator, Greenville Coop [which was taken over by United Cooperative in 2017]). No soil detects. Written warning issued and case developed. Atrazine illegally used in PA 02-29-01 in Juneau County (commercial applicator, Allied Cooperative). Soil detects. Written warning issued. Atrazine detect in soil collected within PA 94-56-02, which was not further investigated. Atrazine illegally used in PA 93-62-01 in Trempealau County (commercial applicator, Countryside Cooperative). No soil detects. Written warning issued.
2018	13	5	8	5	2	3	2	Atrazine illegally used in PA 97-50-01 in Portage County (commercial applicator, Provision Partners Coop). No soil detects. Atrazine illegally used in PA 93-09-02 in Chippewa County (self applicator). Soil detects. Written warning issued. Atrazine illegally used in PA 94-56-02 in St. Croix County (commercial applicator, Federated Coop Inc.). No soil detects. Written warning issued. Atrazine illegally used in PA 11-11-01 in Columbia County (self applicator). No soil detects. Written warning issued. Atrazine illegally used in PA 98-63-01 in Vernon County (commercial applicator, Ag Consulting and Products). Soil detects. Written warning issued.
2019	14	4	10	4	1	3	2	Atrazine illegally used in PA 94-42-01 in Monroe County (commercial applicator, Allied Cooperative). One soil sample had atrazine detect (0.0366 ppm). Financial penality imposed for two instances**.** Atrazine illegally used in PA 96-54-01 in Rock County (commercial applicator, Landmark Services Coop.). No soil detects. Financial penality imposed for one instance. Atrazine illegally used in PA 98-37-01 in Marathon County (commercial applicator, Provision Partners). No soil detects. Financial penality imposed for three instances. Atrazine illegally used in PA 93-09-02 in Chippewa County (self applicator). No soil detects. Financial penality imposed for one instance.
2020	12	9	3	1	0	1	1	Atrazine illegally used in PA 93-09-02 in Chippewa County (commercial applicator, River Country Coop). No soil detects. Financial penality imposed for one instance. Atrazine detect in soil sample collected from PA 97-50-03, which was not further investigated.
2021	16	8	8	1	0	1	2	Atrazine illegally used in PA 97-27-01 in Jackson County (commercial applicator, Melrose Farm Supply). No soil samples were chemcially analyzed. Official warning imposed for one instance. Atrazine detect in soil samples collected from PAs 93-56-01 and 93-09-02, which were not further investigated.
2022	14	8	6	3	2	1	2	Atrazine illegally applied in one location, PA 93-54-02 in Rock County (self applied, Mueller Farms), and applied and mixed at two other locations; PA 94-70-01 in Waushara County (self applied, Bacon Farms) and PA 99-14-02 in Dodge County (commercial applicator, Country Visions Cooperative). No atrazine soil detects at these three locations. Financial penality imposed on all three. Atrazine detect in soil samples collected from PAs 94-27-03 (Jackson County) and 93-25-01 (Iowa County). Further investigation on Iowa County site becasue of excessive atrazine concentrations. Official warning imposed for each.
	163	87	76	34	13	21	26	
		53.4%	46.6%	20.9%	14.9%	27.6%	16.0%	

APPENDIX B

TABLE OF ATRAZINE LEGAL-USE INSPECTIONS

Year	Inspections			Violations			Inspection Notes	Irrigation	Soil Moisture Method	In Compliance	Irrigation Notes
	Total	Self/ Private App	Commercial App	Total	Private App	Commercial App					
2011	1	1	0	1	1	0	Applied rate of 1 lb/acre in a coarse soil texture field in Jackson County. Letter warning issued.	0			
2014	2	0	2	1	0	1	No written irrigation plan for field in Chippewa County.	1	None	0	Did not have a written Irrigation Management Plan.
2015	8	2	6	2	1	1	Two violations due to improper record paperwork (Waushara [Heartland Farms] and Marathon [Amish] counties). Verbal warning issued.	2	Soil probes (commercial)	0	Did not inspect written plan, suspect one does not exist.
2016	12	7	5	4	3	1	Four violations due to improper record paperwork (Dodge, Eau Claire, Waushara [Insight FS] and Juneau counties). Verbal warning for three, and also written warning for lack of Irrigation Management Plan in Juneau County.	1	None	0	Written warning issued due to lack of Irrigation Management Plan.
2017	16	10	6	4	3	1	Three violations due to improper paperwork (Lincoln, Winnebago, and Walworth counties). Verbal warnings issued. Applied rate of 0.8 lb/acre in a coarse soil texture field in Columbia County. Verbal warning issued.	5	One hand textured (commercial in Chippewa County) and one soil probes.	5	Two of the five could use improvements.
2018	13	7	6	5	3	2	Three violations due to improper paperwork (St. Croix, Columbia, and Juneau counties). Verbal and written warnings issued. Both commercial violations were over application, 1.0 lb/acre (Rusk County Farm Supply) and 0.78 lb/acre (Allied Cooperative) in a coarse soil texture field in Rusk and Adams counties, respectively. Written warnings issued.	1		1	
2019	14	6	8	1	1	0	One violation due to improper paperwork (Iowa County). Verbal warning issued.	0			
2020	15	6	8	0	0	0	No violations. However, a 2018 field with fine soils received a 1.5 lbs/acre. But no information on 2017 application.	1	Probes in field and hand-checked.	1	
2021	17	10	7	4	3	1	All four violations were assocaited with improper documentation.	1		0	Did not have a written Irrigation Management Plan. Operator assesed the need through tracking precipitation, consulting the forecast, and periodically visually inspecting soil moisture and crop conditions.
2022	12	9	3	3	3	0	All three violations were associated with improper documentation.	0		0	
TOTALS	110	58	51	25	18	7		12		7	
		52.7%	46.4%	22.7%	35.3%	13.7%		10.9%		58.3%	