



# 2019 Atrazine Use (Legal and Illegal) Inspections Report

Wisconsin Department of Agriculture, Trade and Consumer Protection  
*Agricultural Resource Management Division*  
 Environmental Quality Unit  
 Final (2-18-20)

## Introduction

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Agrichemical Management (ACM) Bureau is responsible for assuring compliance with Wisconsin Administrative Code (WAC) Chapter ATCP 30 - Pesticide Product Restrictions. Within that chapter, Subchapter VIII deals specifically with the legal and illegal use of any herbicide that contain the active ingredient atrazine. This memo documents 2019 DATCP ACM inspections associated with atrazine legal- and illegal-use relative to ATCP 30.31-37 rules, 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 being considered for repeal (ATCP 30.375), or any active or under consideration research exemptions (ATCP 30.38).

Atrazine in drinking water does remain 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. Regarding risk to human health, about 0.2% of the wells contained a total atrazine concentration exceeding the 3.0 parts per billion (ppb) WAC Ch. NR 140.10 Enforcement Standard (NR 140 ES).

## Atrazine Prohibition Area (Illegal-Use) Inspections

An atrazine PA eliminates 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 251,000 acres are planted in corn (2017 data). 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 the source of the atrazine can be contributed to nearby agricultural practices (non-point source).

DATCP ACM Environmental Enforcement Specialists (EES) have performed atrazine illegal-use inspections annually since 2008. An inspection is performed on a field in agricultural production to check on compliance with ATCP 30.37, which states that "*no person may apply atrazine in a prohibition area listed in the rule*". The goal for 2019 was for each Investigation & Compliance Unit EES to complete one atrazine illegal-use inspection within their territory (13 total). Ideally, the inspection would be completed during the growing season shortly after 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. This is determined in one of the following ways:

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

EES personnel meet with the agriculture field operator and/or owner and conducts a records check of three previous years, gathers information on the crops grown and the herbicides used on the selected field, and notes whether any herbicide product containing the active ingredient atrazine has been applied. The EES also collects two soil samples from the selected field to check for atrazine residues via DATCP's Bureau of Laboratory Services (BLS) laboratory. The laboratory results are submitted to the EQ Unit Program Manager for evaluation. EES personnel then complete a narrative form (ARM-ACM-453, rev 2016) with figures and appropriate documentation, and submit to their supervisors and EQ Unit Program Manager for memorialization.

The illegal-use inspection locations are then identified on a layer on the DATCP Mapping Tool. This tool aids EES and EQ Unit personnel to identify inspection field locations, future targets, and provides a quick view to get historical inspection information.

## ILLEGAL-USE INSPECTIONS AND VIOLATIONS

In 2019, 14 inspections were performed in atrazine PAs with four violations recorded, all involving atrazine application within the PA. One of the illegal applications were the responsibility of self-applicators and three were the responsibility of commercial applicators. Several violations were with applicators that knew a PA was located in the area, but did not know the actual dimensions thus applying atrazine in the PA unknowingly. One of the fields in violation also had elevated atrazine concentrations in collected soil samples (0.0336 parts per million).

All four of the violators will be receiving a financial penalties. Two of the four have already settled with the Agency and the other two are being processed. Violators will be fined for each year (incident) that atrazine was applied to fields within the PA. Two violation are associated with one incident (self-applicator and a commercial applicator), one for two incidents (commercial applicator), and one for three incidents (commercial applicator).

Since 2008, 121 inspections were performed in atrazine PAs, yielding an overall violation rate of 24% (29 locations). Commercial applicators provided service to 59 (48.8%) of the fields yielding a violation rate of 30.5%. Self-applicators accounted for 62 locations yielding a violation rate of 17.7%. [Table 1](#) provides a summary of violations versus inspections over time. A summary table of the atrazine illegal-use inspections over the years is provided in [Appendix A](#).

Table 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.

We can interpret from the data that we continue to encounter violations in our atrazine illegal-use inspection program. Visually, we can interrupt that in 2019 we had a similar percentage of violations in comparison to the previous five years. However, we need to recognize that the EES personnel are searching for inspection locations with the greatest chance a violation may be occurring. We are using information that bias our field selection for inspections. A “more” random field selection approach would likely lower the number and percent of violations.

### ATRAZINE IN SOIL SAMPLES

Concentrations of atrazine in excess of laboratory detection limits have been detected in 17.4% (21 out of 121 locations) of soil samples collected from fields associated with atrazine illegal-use inspection. In 2019, of the four violations (field locations where atrazine was illegally applied), atrazine was detected in excess of laboratory reporting limits in soil samples from only one of the fields. Over the course of the inspection program, of the 29 sites where atrazine was illegally applied to fields (self-admitted by operator or applicator), atrazine was detected in soil samples from ten of the fields. The detected atrazine concentration range has been 0.0346 to 0.949 parts per million (ppm).

Over the course of the inspection program, the top three compounds that have been detected in soil are metolachlor, atrazine and acetochlor. Overall, over 15 different compounds have been detected greater than laboratory reporting limits in soil samples collected during the inspection program. [Table 2](#) depicts the compounds detected more than twice and their identified maximum concentration.

Table 2: Soil Sample Results for the Atrazine Illegal-Use Inspection Program

Pesticide Analyte	Count Of Analyte Detects	Maximum Concentration (in ppm)
metolachlor	64	1.46
atrazine	32	0.949
acetochlor	26	2.18
pendimethalin	10	2.96
simazine	9	0.508
boscalid	3	1.11
tefluthrin	2	0.622
chlordan	2	0.423
chlorothalonil	2	1.76
dimethenamid	2	0.146

Notes: ppm parts per million

Over the course of the inspection program, there have been atrazine detections in soil samples collected from seven fields where the operator or applicator did not admit or had records indicating atrazine was not applied to the field. One of these instances occurred in 2019. For these seven sites, for the most part, the detected atrazine concentrations have been very minimal. It is not known whether the atrazine detected is a:

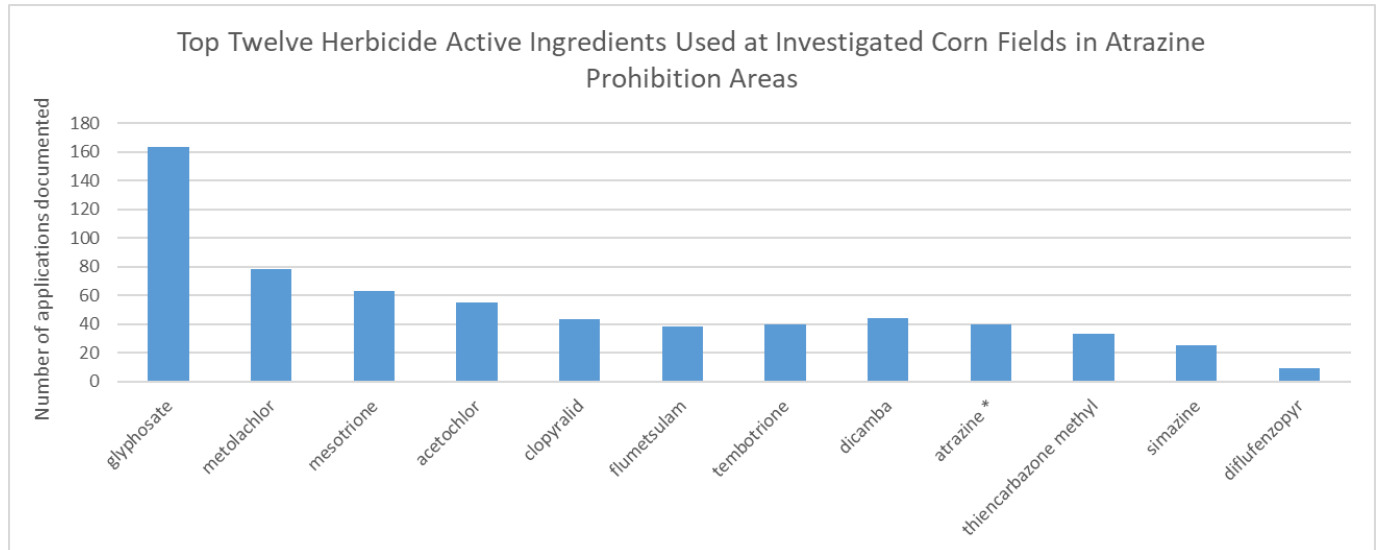
- Result of carry-over from previous use within the field (prior to the three-year record review conducted during the inspection);
- Residue from atrazine being used from adjacent/neighboring fields (that could be inside or outside the PA); or
- Actual illegal use on that field and not having proper paperwork, or the willingness to admit to the violation.

Currently, we do not have a reliable scientific understanding to determine the atrazine source or time of application in these type of scenarios. It is likely that the minimal detected concentration will not have a 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, or falsified records or lack of cooperation by violator), protocol to follow back with field operator and/or applicator would be enacted. Current DATCP protocol is that if atrazine concentrations in soil samples were detected in excess of 3.0 ppm, further investigation would be necessary. We have not encountered atrazine concentrations in excess of that limit in any of the inspections.

## HERBICIDES USED IN PAS

When an EES conducts an atrazine illegal-use inspection in a PA, they collect crop and herbicide information for the current year and the previous two years. A compilation of this information indicates that over 55 different active agrichemicals have been applied on the investigated corn fields within the PAs. By far the most commonly used herbicide active ingredient is glyphosate. Table 3 shows the top twelve herbicides used on the selected corn fields within the PAs. Based on the bias approach of the inspection program and the collected data, atrazine is the ninth most common active ingredient used in the atrazine PAs.

Table 3: 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 had not been chemically analyzed for as part of the inspection program’s soil sampling. Based on chemical composition, it was not anticipated that glyphosate has the ability to detrimentally affect groundwater quality. However, with the apparent wide-spread use, DATCP requested BLS to develop an acceptable protocol and method to reliably determine for the presence and concentration of glyphosate, AMPA metabolite and glufosinate ammonium starting with groundwater samples. In 2019, a successful pilot testing program was implemented to determine the validity of testing for glyphosate in water. If laboratory capacity is available, the 2020 soil sampling associated with the atrazine illegal-use inspections program will also include glyphosate, AMPA metabolite and glufosinate ammonium analysis.

## Atrazine Legal-Use Inspections

An atrazine legal-use inspection is completed on a field with agricultural crops to check on compliance with ATCP 30.31 and 32. The goal for 2019 was for each EES person (14 total) to complete one atrazine legal-use inspection within their territory. Ideally, the inspection would be completed during the growing season, on an existing field planted with corn. Records for the current season and the two prior years would be reviewed as part of the inspection.

## PROGRAM APPROACH AND SELECTION CRITERIA

The first step is to identify which agriculture field to inspect. This is determined by one of the following ways:

- The EQ Unit 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 indicate potential atrazine use on the agricultural fields at excessive application rates;
- Review by EES personnel of herbicide record sales indicate atrazine sales; or
- ESS personnel randomly select a field outside of a PA where corn is being grown and has not been inspected prior.

EES personnel 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 questions the rate of application and how it is determined (soil texture). EES personnel then complete a narrative form (ARM-ACM-535, rev 2016) with figures and appropriate documentation, and submit to their supervisors and EQ Unit Program Manager for memorialization.

If the inspected field has the infrastructure for an irrigation system, further questioning occurs to ensure compliance with ATCP 30.31 (3). No person may apply irrigation water to any field that has been treated with atrazine for a two-year period following the application, unless they follow an acceptable Irrigation Management Program. If applicable, EES personnel will discuss or review with the user their 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.

The illegal-use inspection locations are then identified on a layer on the DATCP Mapping Tool. Same layer as the illegal-use inspection locations. This tool aids EES and EQ Unit personnel to identify inspection field locations, future targets, and provides a quick view to get historical inspection information.

## LEGAL-USE INSPECTIONS AND VIOLATIONS

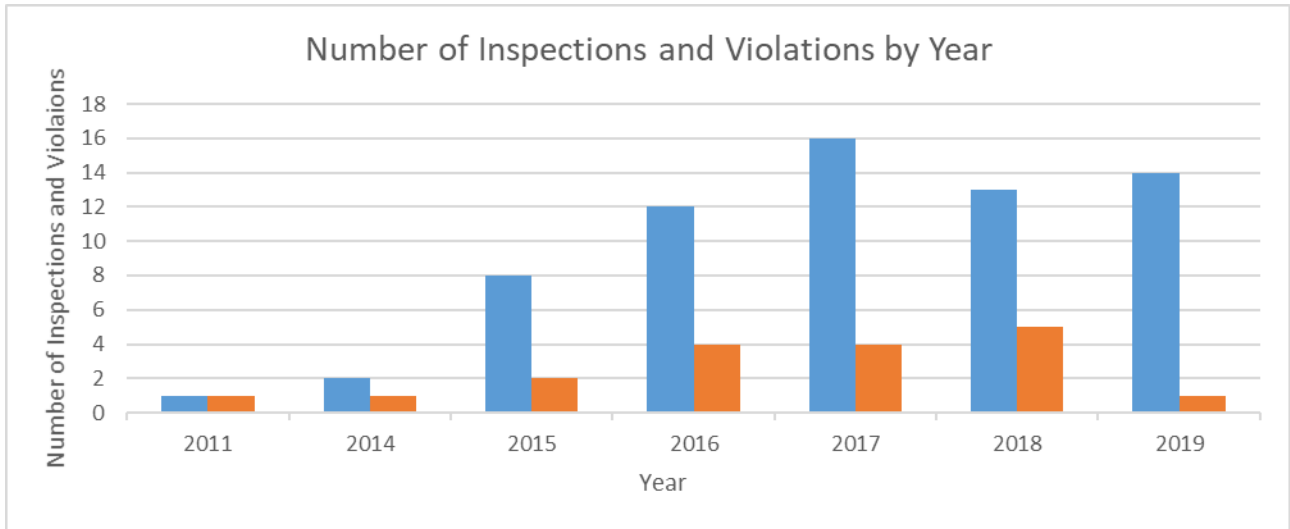
In 2019, 14 inspections were completed for atrazine legal-use outside PAs with only one violation recorded. The violation, performed by a self-applicator, was associated with improper recordkeeping as per ATCP 30.31 (5). Only a verbal warning was issued. There were no locations in 2019 inspected where irrigation was used.

Since 2014 there have been 66 inspections completed for legal use of atrazine, with a violation rate of 27.3% (18 locations). [Table 4](#) provides a summary of violations versus inspections over time. Of the 66 inspection locations, commercial applicators provided service to 33 (50%) of the fields with a violation rate of 18.2%. Self-applicators also accounted for 33 locations, but with a violation rate of 36.4%. This is the opposite with what had been observed with the atrazine illegal-use inspections, self-applicators having a greater violation rate. It could be due to the commercial applicators are exposed to the atrazine illegal-use rules and more aware of the requirements, while self-applicators do not get as much exposure to the atrazine regulations since they farm outside a PA. The recorded violations can be broken into three categories:

- 61% of the violations (11 fields) are due to incomplete or improper recordkeeping;
- 28% of the violations (5 of the fields) are due to atrazine over application (applying at rates for fine or medium soil texture on course soil fields); and
- 11% of the violations (2 fields) were for no or poorly developed/executed Irrigation Management Plans.

A summary table of the atrazine legal use inspections over the years is provided in [Appendix B](#).

Table 4: Atrazine Legal-Use Inspections and Violations



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

We can interpret from the data that we continue to encounter violations in our atrazine legal-use inspection program, although only one site in 2019 was in violation. However, like the atrazine illegal-use results, we need to recognize that the EES personnel are searching for inspection locations with the greatest chance a violation may be occurring. We are using information that bias our field selection for inspections. A “more” random field selection approach would likely lower the number and percent of violations.

### IRRIGATION MANAGEMENT PLANS

Since EES personnel started conducting atrazine legal-use inspections, they have encountered ten fields that would have required an Irrigation Management Plan. In prior years, it was noted that the reviewed products were very inconsistent with varying levels of detail and little description of processes. Only two of the sites were issued warnings due to an absence of or a very poorly developed and executed plan. However, it was noted that 50% of the existing plans could use improvements.

## 2020 Program Goals and Objectives

In 2020, the atrazine illegal- and legal-use inspection program will continue. It is expected that:

- Each EES will conduct one atrazine illegal-use inspection inside a PA (except for Art Funk since he does not have a PA within his region);
- Each EES will conduct one atrazine legal-use inspection;
- Inspection documentation and data will be appropriately uploaded into the DATCP database and mapping tool for memorialization; and
- A 2020 Summary Report will be completed at the end of the inspection season.

The EQ Unit has provided a number of recommended fields for both atrazine illegal- and legal-use inspections for 2020. There will be a greater focus on fields within PAs where commercial applicators are being used and where irrigation is being used.

## ADDITION PROGRAM ACTIVITIES

In 2020, there will be some additional effort and focus beyond just the inspection-related work;

- Continuing to aid the Amish Community regarding atrazine use;
- Further defining an acceptable Irrigation Management Plan; and
- EES training regarding interpretation of soil information.

These activities were proposed in the 2020 Pesticide Product Restrictions (Atrazine) Program Work Plan.

There will be some continual effort to work within the Amish community in 2020 regarding the atrazine program. It was discovered during an atrazine illegal-use inspection in 2018 that an Amish farmer had illegally used atrazine on a field in a PA. He was not fully aware of the atrazine PA rules. However, he implicated a number of Amish neighbors of also using atrazine within the PA. Continuing in 2020, there will be some informational outreach activities within the Amish community and a focus on inspecting Amish farms for atrazine use, within and outside PAs. The intent is to educate and inform to achieve compliance.

An important component of atrazine use in irrigated fields is the Irrigation Management Plan. Based on EES inspections to date, the plans are not very consistent or are reliable that best management practices are or will be used. In 2020, the EQ Unit will look into developing better criteria around an acceptable Irrigation Management Plan. They will work with other DATCP personnel to develop some sort of outreach tool (flyer or presentation) that can be used to aid the customer in development of a better document and/or field implementation.



# APPENDIX A

## Table of Atrazine Illegal-Use Inspections

updated February 13, 2020

### 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. Pending case?
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. Unknown consequences. Atrazine detect in soil from 13418071901, PA 93-57-04, which was not further investigated. Note; this does not include the 7 United Coop locations where they self-identified in violation for atrazine application. Appears to be missing a site in Iowa and Portage County.
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. Unknown consequences. Atrazine detect in soil from 14716072102, 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 from 15418061601, PA 95-25-01, which was not further investigated. Atrazine detect in soil from 15706072201, PA 93-65-02, which was not further investigated.
2016	13	8	5	2	1	1	1	Atrazine detect in soil from 16418061001, 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 from 17731072002, PA 94-56-02, which was not further investigated. Atrazine illegally used in PA 93-62-01 in Trempealeau 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. Unknown consequences. 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 Coops Ic). 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 penalty imposed for two instances. Atrazine illegally used in PA 96-54-01 in Rock County (commercial applicator, Landmark Services Coop.). No soil detects. Financial penalty imposed for one instance. Atrazine illegally used in PA 98-37-01 in Marathon County (commercial applicator, Provision Partners). No soil detects. Financial penalty imposed for three instances. Atrazine illegally used in PA 93-09-02 in Chippewa County (self applicator). No soil detects. Financial penalty imposed for one instance.
	121	62	59	29	11	18	21	
		51.2%	48.8%	24.0%	17.7%	30.5%	17.4%	

# APPENDIX B

## Table of Atrazine Legal-Use Inspections

### Atrazine Legal Use Inspections

updated February 7, 2019

Year	Inspections			Violations			Inspection Notes	Irrigation	Method	In Compliance	Irrigation Notes
	Total	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)	2	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	the one violation is due to improper paperwork (Iowa County). Verbal warning issued.	0			
TOTALS	66	33	33	18	12	6		10		8	
		50.0%	50.0%	27.3%	36.4%	18.2%		15.2%		80.0%	