2023 Agrichemicals Groundwater WI Statewide Survey

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INTRODUCTION

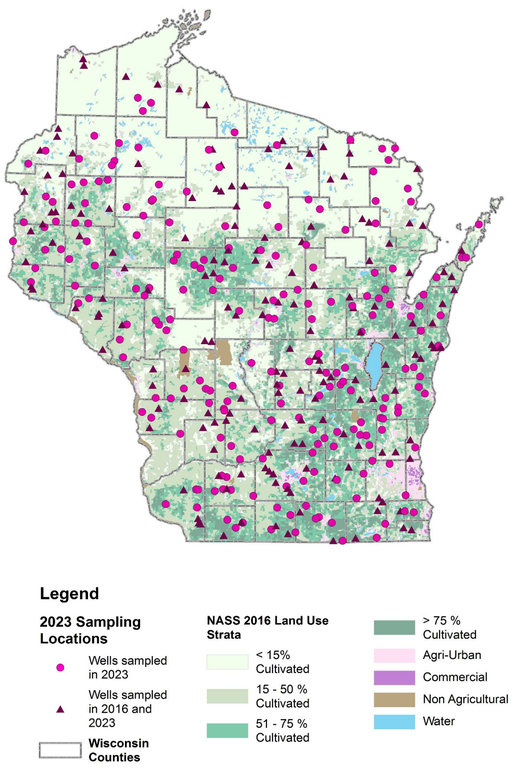
Every five to 10 years, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) collaborates with the United States Department of Agriculture - National Agricultural Statistics Service (NASS) for a comprehensive agrichemicals statewide survey of Wisconsin groundwater. To date, DATCP has completed six statewide surveys in 1994, 1996, 2001, 2007, 2016, and 2023.

GOALS & METHODS

Objectives: Gain an updated understanding of pesticides and their breakdown products in groundwater, and analyze trends over time.

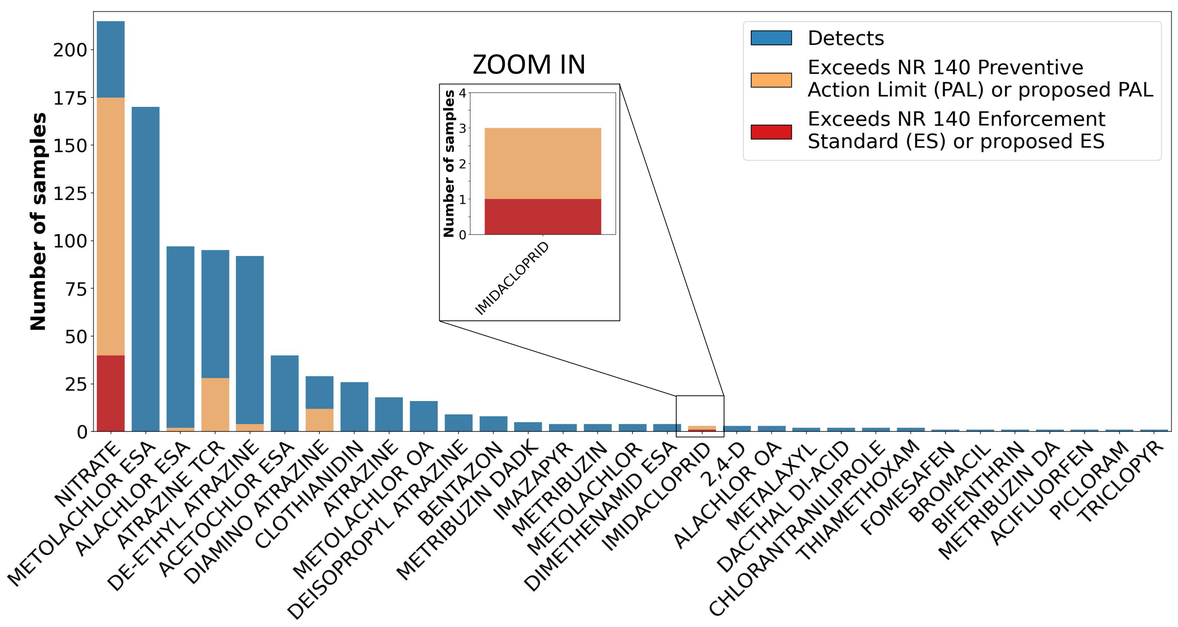
Sampling location and timing: From March to August 2023, we sampled 380 private potable wells.

Tested Compounds: Our analysis included 107 different compounds, covering herbicides, herbicide breakdown products (metabolites), insecticides, fungicides, and nitrate plus nitrite as nitrogen (N).



AGRICHEMICALS DETECTED & EXCEEDANCES

- A total of 29 pesticide compounds and nitrate were detected in Wisconsin groundwater
- **Imidacloprid**, a neonicotinoid insecticide, was the only pesticide compound detected in exceedance of a groundwater benchmark. Specifically, in one sample, imidacloprid concentration exceeded the DHS Health Advisory Level (or proposed ES) of 0.2 µg/l.
- Nitrate plus nitrite as N was the most detected compound. Nitrate concentrations exceeded the Enforcement Standard (ES) of 10 mg/l in 40 samples.
- **Metolachlor ESA, alachlor ESA, and atrazine Total Chlorinated Residue** (TCR) were the most detected pesticide compounds.
- Clothianidin, imidacloprid, and thiamethoxam - **neonicotinoid insecticides** - were detected in several samples.



INSIGHTS ABOUT THESE COMPOUNDS

Metolachlor ESA: breakdown product of metolachlor and s-metolachlor. These compounds are active ingredients of several herbicides widely used on corn.

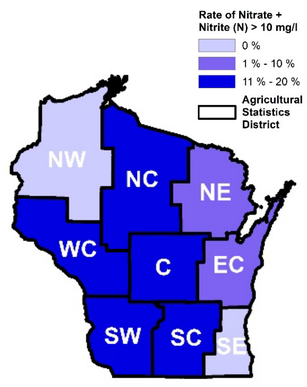
Alachlor ESA: breakdown product of the herbicide alachlor. Alachlor use was reduced since the early ’90s and alachlor products were cancelled in 2016.

Atrazine TCR: The sum of the herbicide atrazine and its metabolites (de-ethyl atrazine, diamino atrazine, and deisopropyl atrazine). Atrazine is currently registered as a restricted use pesticide. Atrazine use is currently prohibited within 101 designated areas known as prohibition areas. Outside of these areas, atrazine can be used in accordance with restricted use requirements.

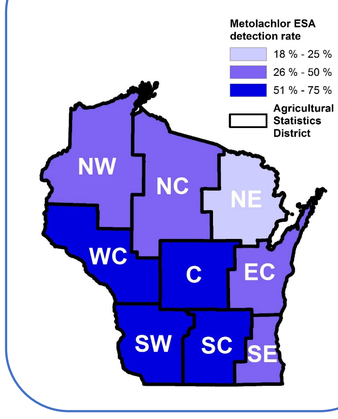
Neonicotinoids: class of insecticides commonly employed as seed treatments on various major crops such as corn, vegetables, and legumes.

LOCATION OF DETECTS

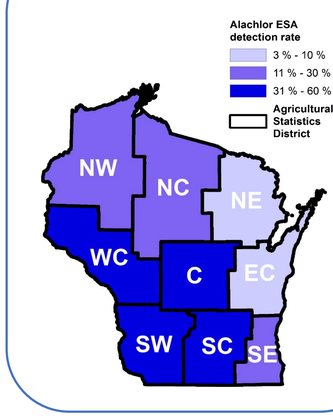
Nitrate



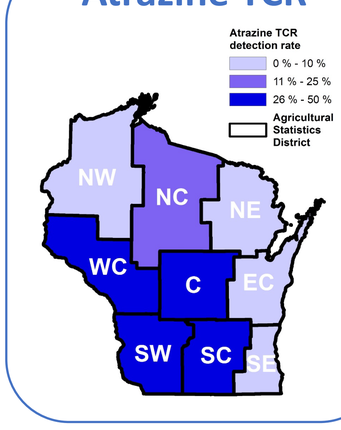
Metolachlor ESA



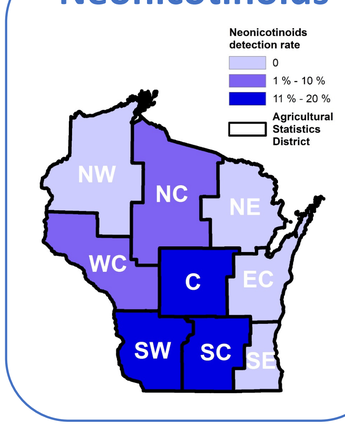
Alachlor ESA



Atrazine TCR



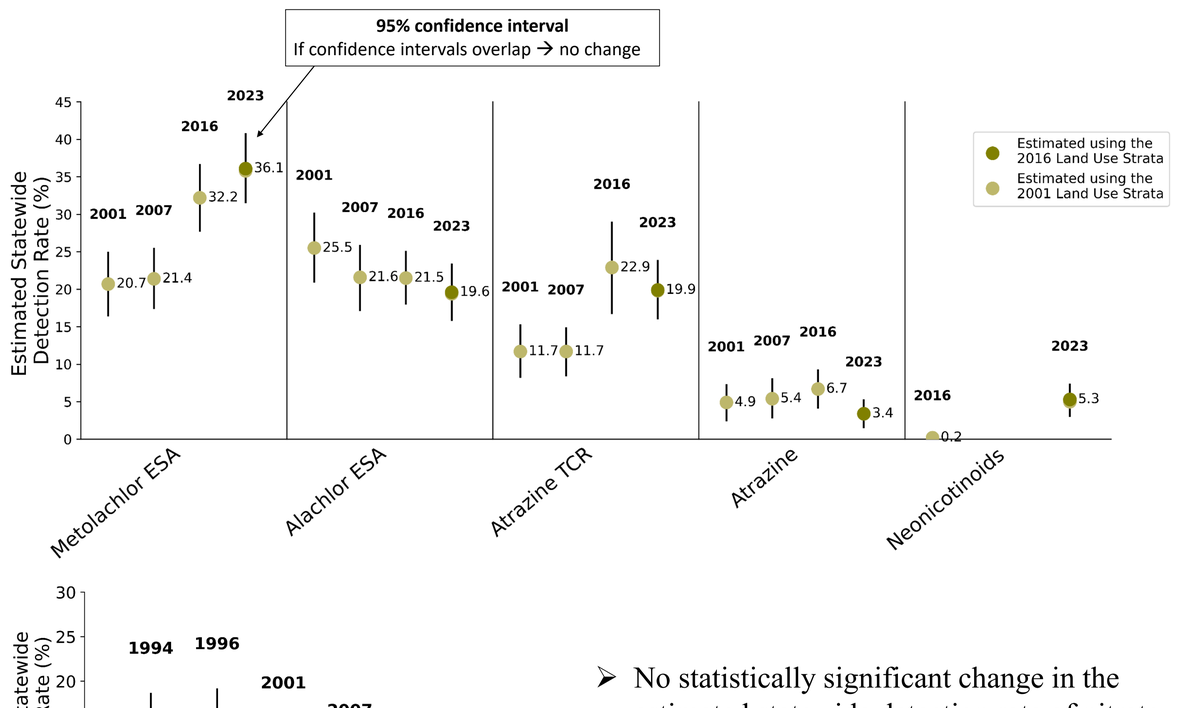
Neonicotinoids



TRENDS OVER TIME

We estimated the statewide detection rates for several compounds of interest.

- Metolachlor ESA and atrazine TCR estimated statewide detection rates increased between 2007 and 2016, but remained stable between 2016 and 2023.
- Alachlor ESA and atrazine estimated statewide detection rates showed no statistically significant change since 2001.
- Neonicotinoids estimated statewide detection rates increased since 2016.
- The increase in the estimated detection rates for metolachlor ESA, atrazine TCR, and neonicotinoids may be partially attributed to the reduction of laboratory reporting limits, initiated in 2016.



- No statistically significant change in the estimated statewide detection rate of nitrate over 10 mg/l since 1994.

DO YOU WANT TO KNOW MORE ABOUT THIS?

Contact:
DATCP Environmental Quality
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