



# Protecting Drinking Water via Pesticide Registration in New York

Lake Intakes Pilot

for DEC Bureau of Pest Management

Cooperating with FOLA members and

DEC Division of Water

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Cornell University  
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Geneva Lake,  
Littleton Colorado

# Outline

Brief background about pesticide use and control

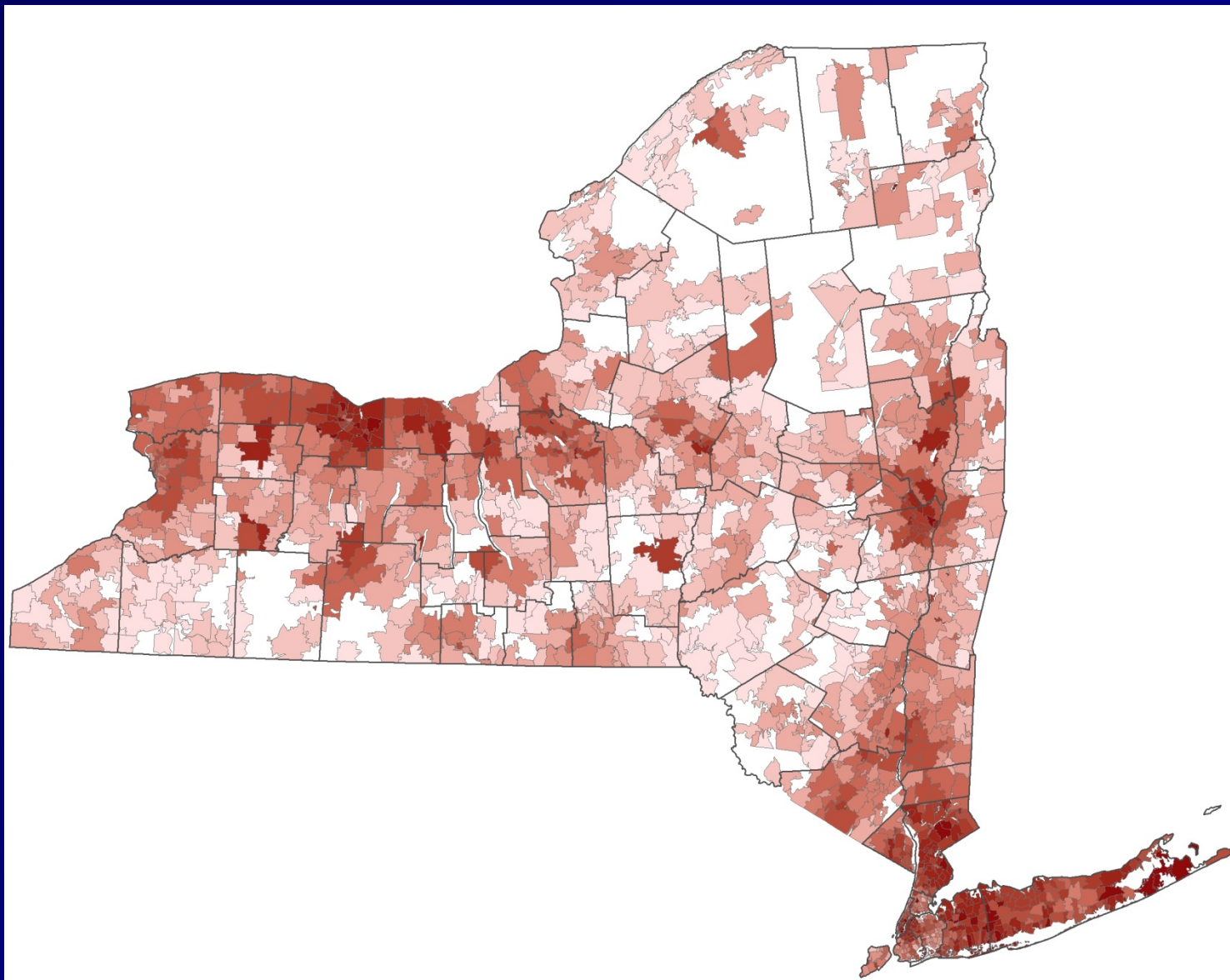
Four-lake pilot test

Pesticides tested for

Results

Premature interpretations

Pesticides used broadly, intensely in places



# Control of pesticide use

## PESTICIDE LABEL EXCERPTS RELATED TO GROUND WATER: PLEASE HEED LABEL WARNINGS

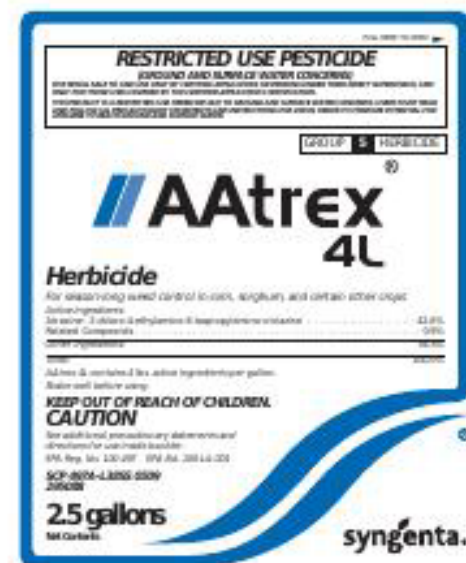
### Environmental Hazards

Atrazine can travel (seep or leach) through soil and can enter ground water which may be used as drinking water. Atrazine has been found in ground water. Users are advised not to apply atrazine to sand and loamy sand soils where the water table (ground water) is close to the surface and where these soils are very permeable, i.e., well-drained. Your local agricultural agencies can provide further information on the type of soil in your area and the location of ground water.

This product must not be mixed/loaded, or used within 50 feet of all wells, including abandoned wells, drainage wells, and sink holes. Operations that involve mixing, loading, rinsing, or washing of this product into or from pesticide handling or application equipment or containers within 50 feet of any well are prohibited, unless conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be positioned on or moved across the pad. Such a pad shall be designed and maintained to contain any product spills or equipment leaks, container or equipment rinse or wash water, and rain water that may fall on the pad. Surface water shall not be allowed to either flow over or from the pad, which means the pad must be self-contained. The pad shall be sloped to facilitate material removal. An unroofed pad shall be of sufficient capacity to contain at a minimum 110% of the capacity of the largest pesticide container or application equipment on the pad. A pad that is covered by a roof of sufficient size to completely exclude precipitation from contact with the pad shall have a minimum containment capacity of 100% of the capacity of the largest pesticide container or application equipment on the pad. Containment capacities as described above shall be maintained at all times. The above-specified minimum containment capacities do not apply to vehicles when delivering pesticide shipments to the mixing/loading sites.

Additional State imposed requirements regarding well-head setbacks and operational area containment must be observed.

This product must not be mixed or loaded within 50 feet of intermittent streams and rivers, natural or impounded lakes and reservoirs. This product may not be applied aerially or by ground within 66 feet of the points where field surface water runoff enters perennial or intermittent streams and rivers or within 200 feet around natural or impounded lakes and reservoirs. If this product is applied to highly erodible land, the 66 foot buffer or setback from runoff entry points must be planted to crop, seeded with grass or other suitable crop.





# Lakes as sentinels: Canaries, welcome to the coal mine



# Near-Shore Lake Sampling

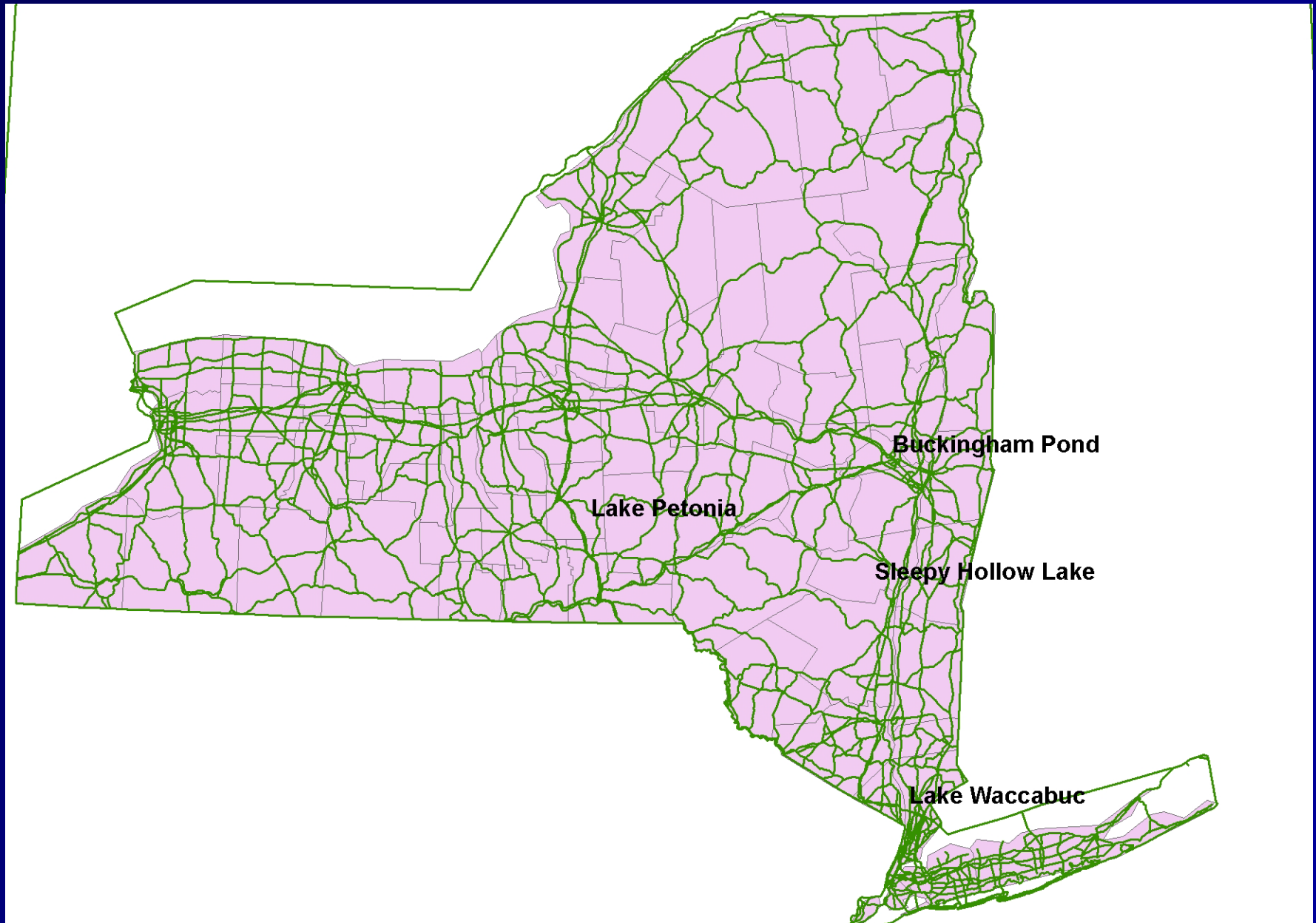
## Objective

*Measure potential pesticide exposure of private lakeshore residential water systems that use lake intakes*

## Piloting

Sampling near-shore shallow areas (representing intake areas) in four lakes via FOLA volunteers. No intakes these lakes.

# Lakes in the Pilot Test







# 38\* thanks to 2013 samplers

Laurel Mann, Sleepy Hollow Lake (Greene Co)

Jan Andersen, Lake Waccabuc (Westchester)

Harry Ermides, Buckingham Pond (Albany)

Bruce & Judi Myers, Lake Petonia (Chenango)

\* One per sample



# Pesticides tested for at DEC lab

- 1) 38 pesticides including herbicides. Some agricultural, some urban.
- 2) 13 compounds that are created when microbes and chemistry digest the originals (“metabolites”)

Glyphosate, atrazine, metolachlor, 2,4-D, some of the most popular in NY and world.



# Results: About concentrations

Parts per billion (micrograms per liter) are 1000x smaller than your familiar milligrams per liter (parts per million).

Some labs getting so precise that they can find a few parts per trillion (nanograms per liter).

Some pesticides can have human or ecological effects at the low parts per billion level.

# Results: About detection limits

Concentration in parts per billion (ppb)



Quantified detection. Number provided.

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**Quantification limit**

Trace level. Not reliably quantifiable  
But good confidence a specific chemical is there

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**Detection limit**

Not detected, lost in the noise  
or actually nothing there

zero

# 2013 Results: Synopsis

Not detected to a detection limit around 0.1 parts per billion for most original chemicals in all lakes. A few detection exceptions.

No concentration of *known* health significance.

GOOD. But beware of DOH warning about pathogens in unfiltered surface supplies.





# Results exception 1: Tebuconazole at Waccabuc

Fungicide used on turfgrass. Golf course?

Somewhat mobile and persistent in environment.

Tiny trace amounts, between 0.01 ppb and 0.1 ppb.



# Results exception 2: 2,4-D at Buckingham

Weed killer sold over the counter. Very widely used.

Small amounts 0.1-0.2 ppb.

Very surprised that there were not more chemicals detected given the urban setting.

# Atrazine and metolachlor at Sleepy Hollow Lake 1

Agricultural herbicides, restricted, heavy use.

Atrazine drinking water standard is 3 ppb.

Concern about cancer, endocrine disruption.

Metolachlor much less concern.



# Atrazine and metolachlor at Sleepy Hollow Lake 2

Atrazine in the 0.2-0.5 range many samples.  
Metolachlor up to 0.2 in fewer samples.

Agricultural watershed.

Also found in wells other upstate areas. Half  
of 40 private wells we tested in Cortland  
county contained atrazine traces.

# Atrazine and metolachlor at Sleepy Hollow Lake 3

Environmental breakdown products of  
atrazine and metolachlor in more samples  
than original chemicals at levels 0.025-0.1.

Again they had to torture the lab machines  
to get better sensitivity than usual 0.1.

This is also extremely common upstate.





# Recap of results

Unsurprisingly clean Petonia.

Surprisingly clean urban Buckingham.

Waccabuc also quite clean, just one chemical of slight interest.

Sleepy Hollow agricultural residues at typical levels, well below drinking water standards.



# Next

- 1) Interim report for review by volunteers and two DEC divisions.
- 2) Another round? Same lakes?
- 3) Different chemical list, more modern, more customized to a lake.

# Questions?



# Thanks to, besides samplers thanked earlier

- Funding NYS DEC

- DEC Division of Water: Scott Kishbaugh

- Laboratory Analysis: DEC Division of Air, Pete Furdyna and Christine VanPatten

- Cornell project leads: Tammo Steenhuis and Brian Richards.

- DEC Pest Management Bureau Staff: Luanne Whitbeck (retired), Jason Pelton, Scott Menrath

- Dean Long who I think is behind this.

# Thank You!







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- Scott Kishbaugh

[http://soilandwater.bee.cornell.edu/Research/  
pesticides/](http://soilandwater.bee.cornell.edu/Research/pesticides/)