



# Atrazine: Hero or Hero to Heroine?

Presented to:

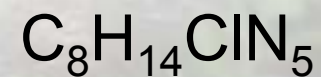
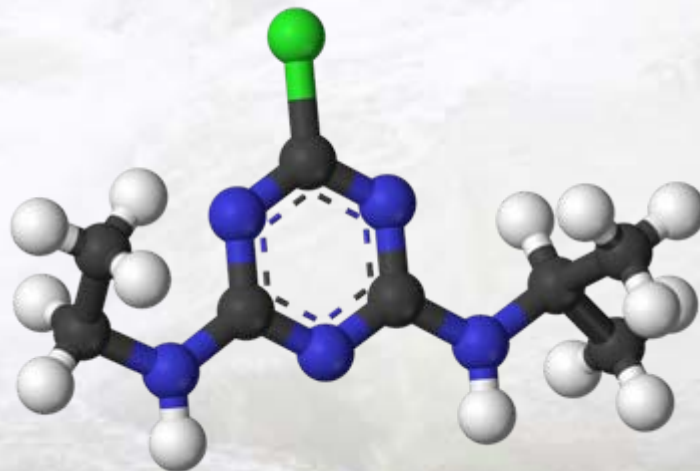


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Development Review Department

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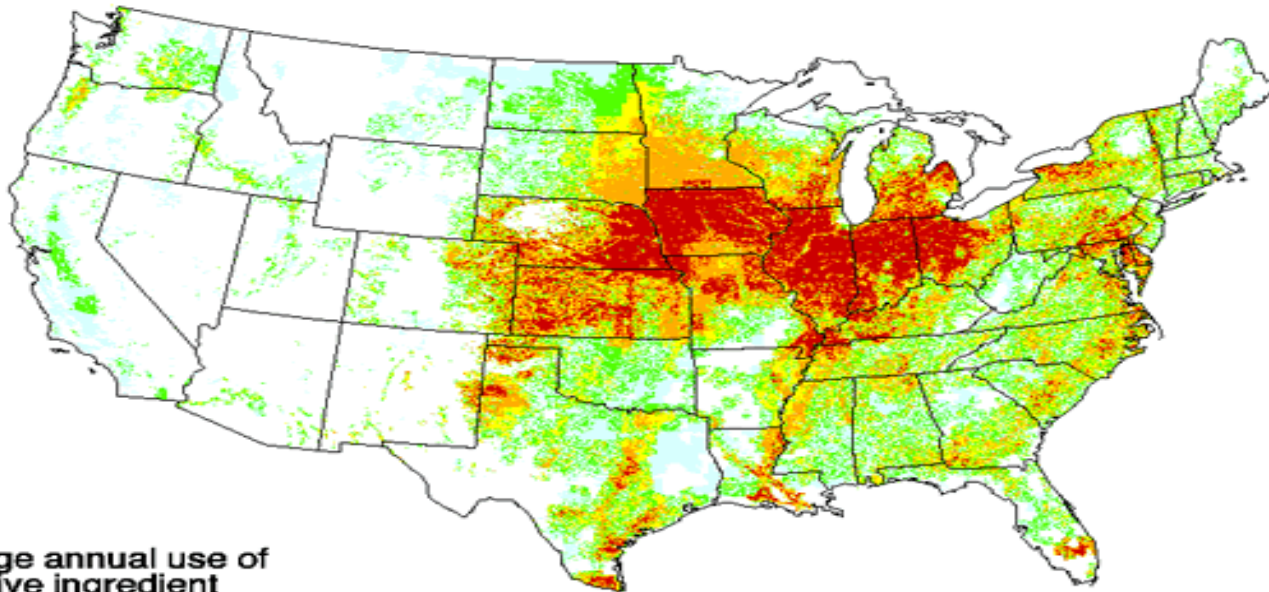
# Atrazine

- Triazine herbicide
- Inhibits electron transport
- Homeowner and farmer use



# Usage

## ATRAZINE - herbicide 1997 estimated annual agricultural use



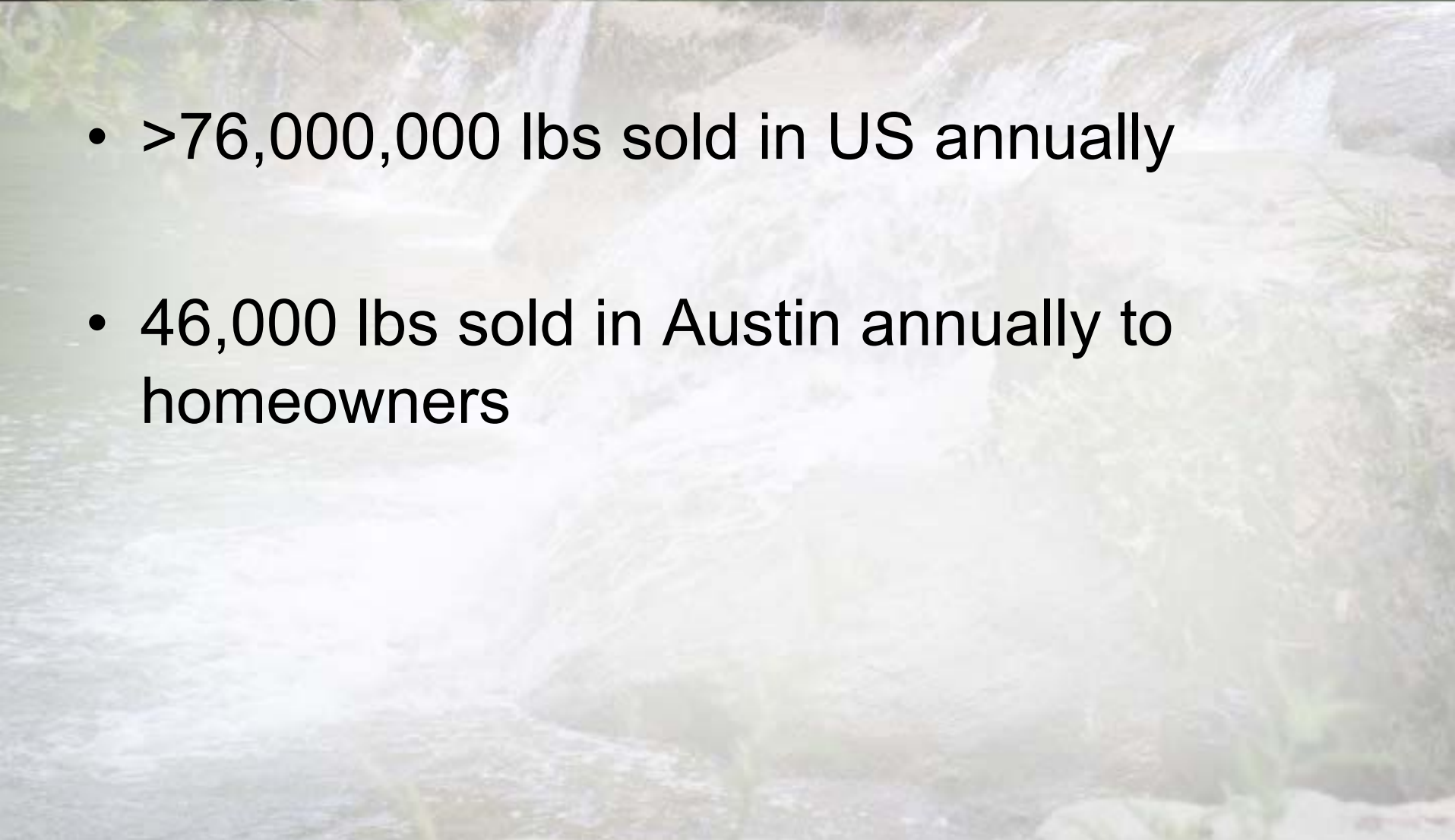
Average annual use of  
active ingredient  
(pounds per square mile of agricultural  
land in county)

- no estimated use
- 0.001 to 0.358
- 0.359 to 2.151
- 2.152 to 9.855
- 9.856 to 32.77
- $\geq 32.771$

Crops	Total pounds applied	Percent national use
corn	62,381,038	84.00
sorghum	6,750,038	9.09
summer fallow	2,539,169	3.42
sugarcane	2,203,421	2.97
sweet corn	340,452	0.46
sod harvested	30,214	0.04
other hay	13,224	0.02
seed crops	5,833	0.01



# Usage

- >76,000,000 lbs sold in US annually
  - 46,000 lbs sold in Austin annually to homeowners
- 

# Atrazine in the Press

Can hemp help the  
Everglades?  
Salame  
effects of  
herbicide

tery

The background of the slide is a composite image. The top portion shows a river with two people swimming in the water, surrounded by lush green trees. The bottom portion shows a close-up of a waterfall cascading over rocks.

# Persistence

- Microbial/chemical degradation
- Medium to high mobility ( $K_{oc} \approx 100 \mu\text{g/g}$ )
- Short half-life in soil (60 days)
- Long half-life in water (>6 months)

The background of the slide is a composite image. The top portion shows a river with two people swimming in the water, surrounded by lush green trees and foliage. The bottom portion shows a close-up of a waterfall cascading over rocks, with white water and some green plants in the foreground.

# Human Health

- EPA Drinking water MCLG = 3  $\mu\text{g}/\text{L}$
- California public health goal = 0.15  $\mu\text{g}/\text{L}$
- Low bioconcentration potential
- Low exposure potential

The background of the slide is a composite image. The top portion shows a river with two people swimming in the water, surrounded by lush green trees and foliage. The bottom portion shows a close-up of a waterfall cascading over rocks, with water splashing and creating white foam.

# Aquatic Life

- Low toxicity to fish and benthic macroinvertebrates
- Synergistic effects increase toxicity

EPA acute = 1,500  $\mu\text{g/L}$

Canadian guideline = 1.8  $\mu\text{g/L}$

Lowest amphibian effect = 0.10  $\mu\text{g/L}$



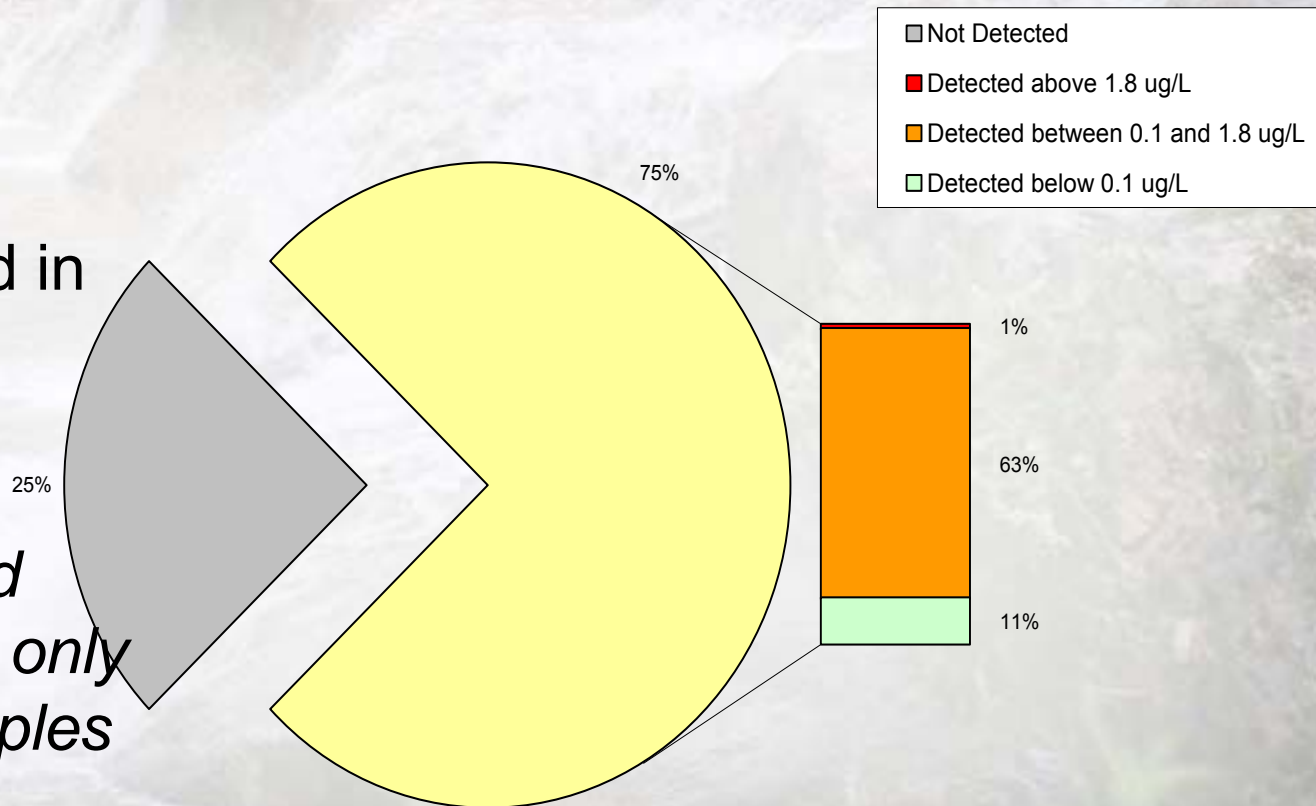
# Austin Groundwater

- Atrazine detected in 75% of spring samples

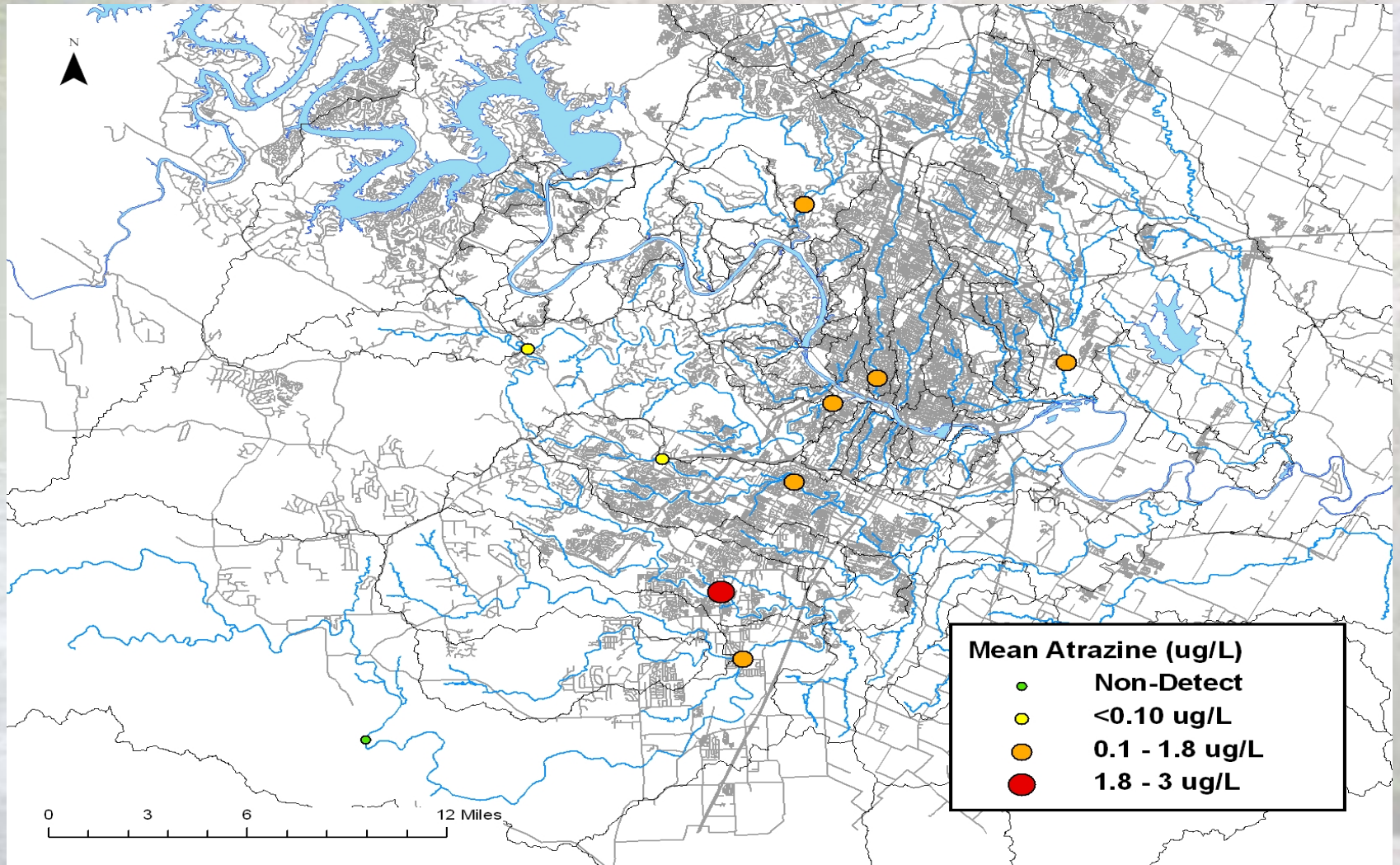
- Atrazine detected in Barton Springs in 83% of samples

- Atrazine detected above 1.8  $\mu\text{g}/\text{L}$  in only 1% of spring samples*

Atrazine in Austin Springs (2000-2006)

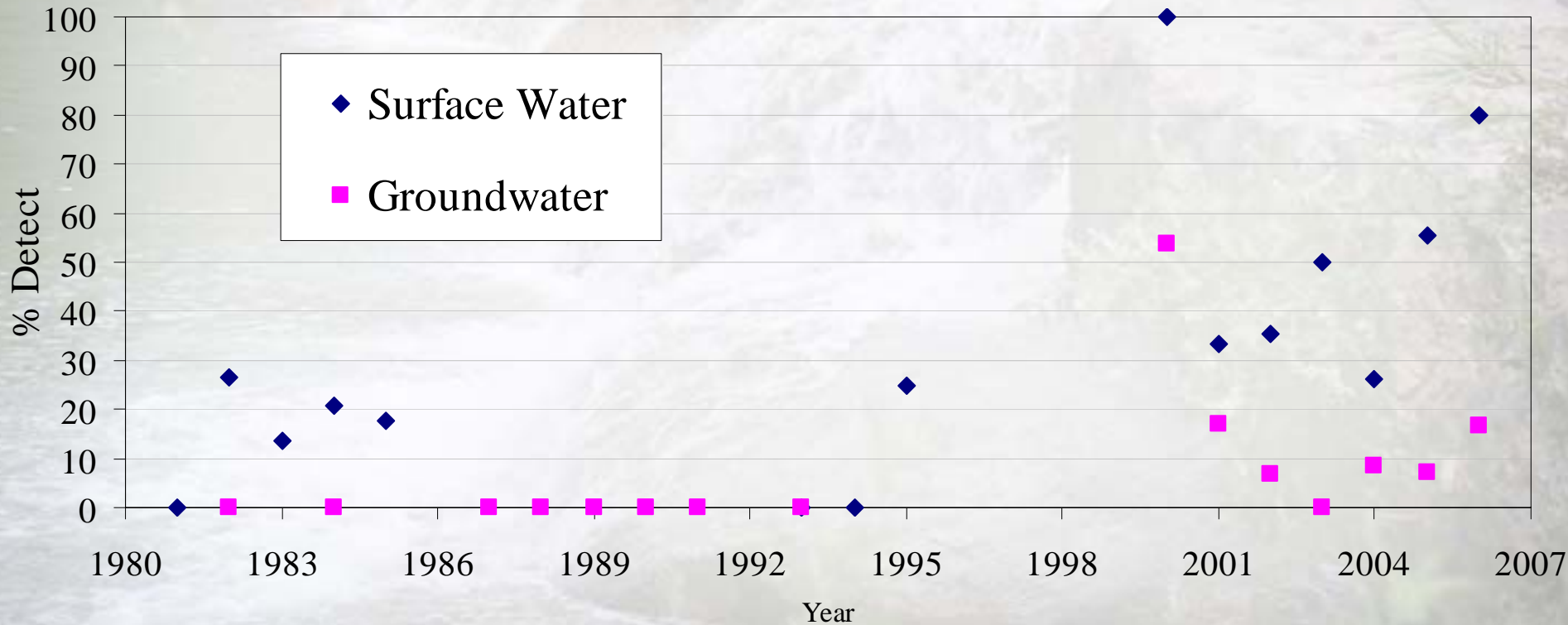


# Austin Surface Water



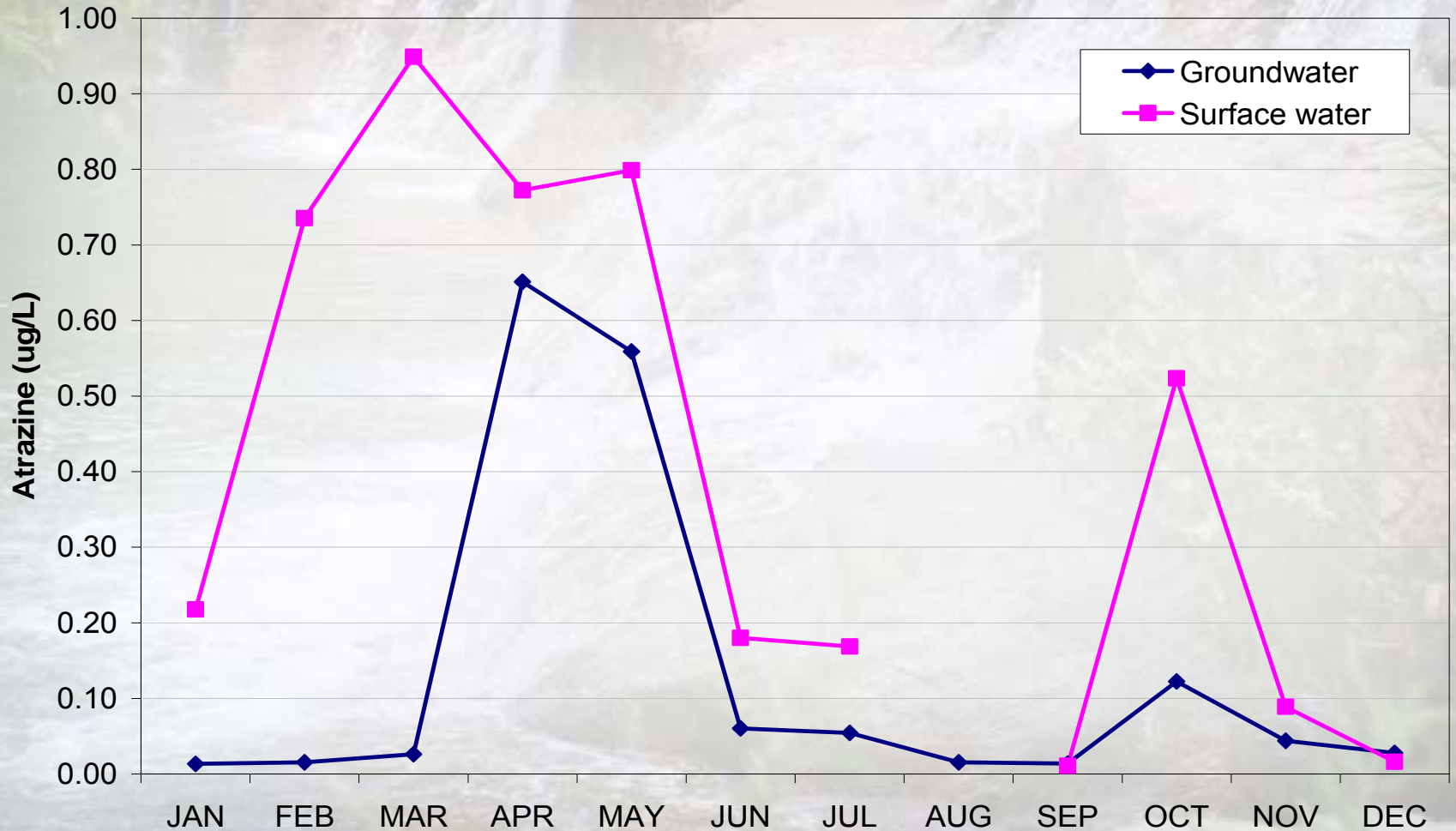
# Getting Worse?

Atrazine frequency of detection (USGS data)



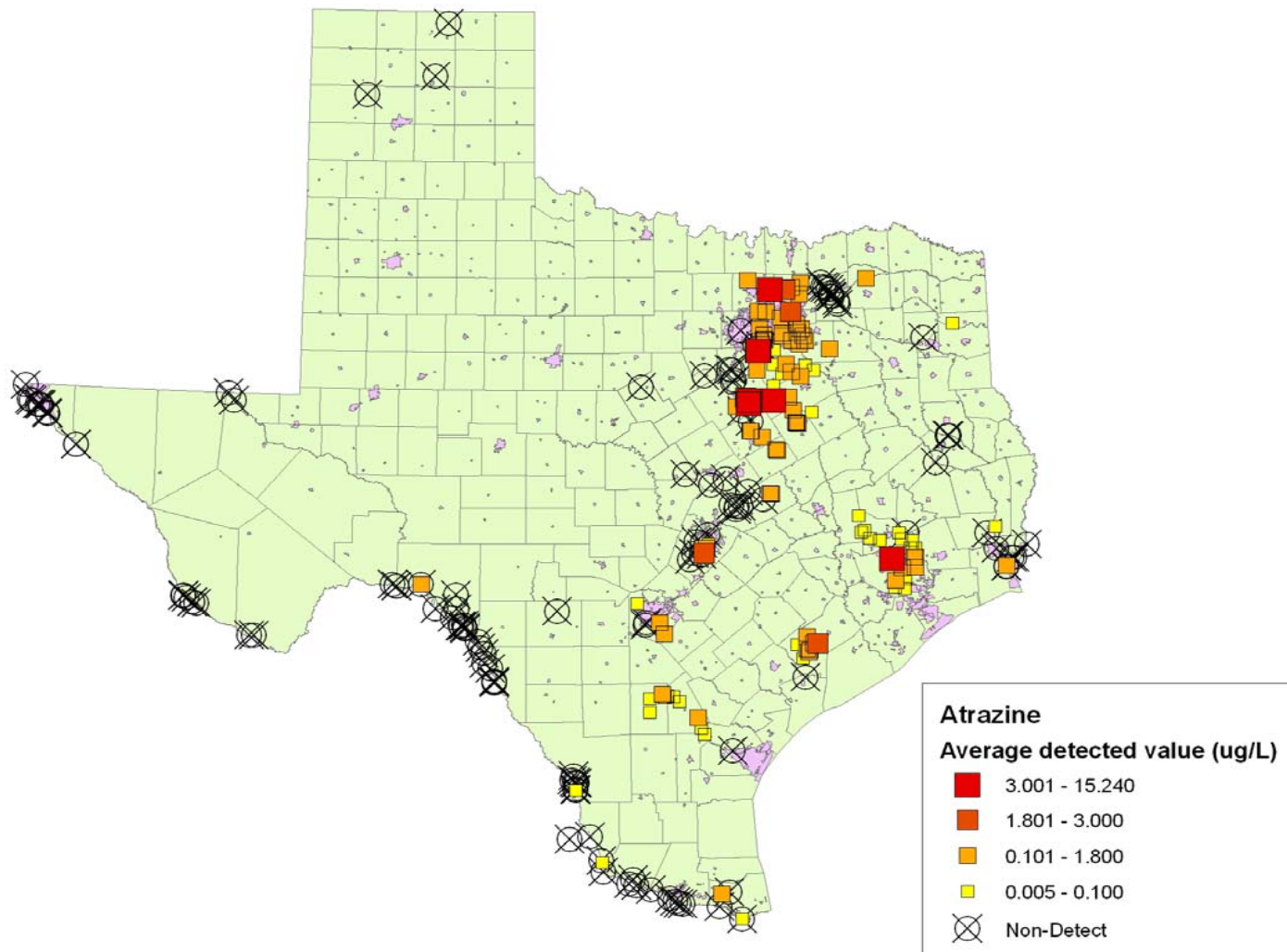
# Seasonal Component

Average atrazine in Austin surface water sites and springs



# Statewide Problem

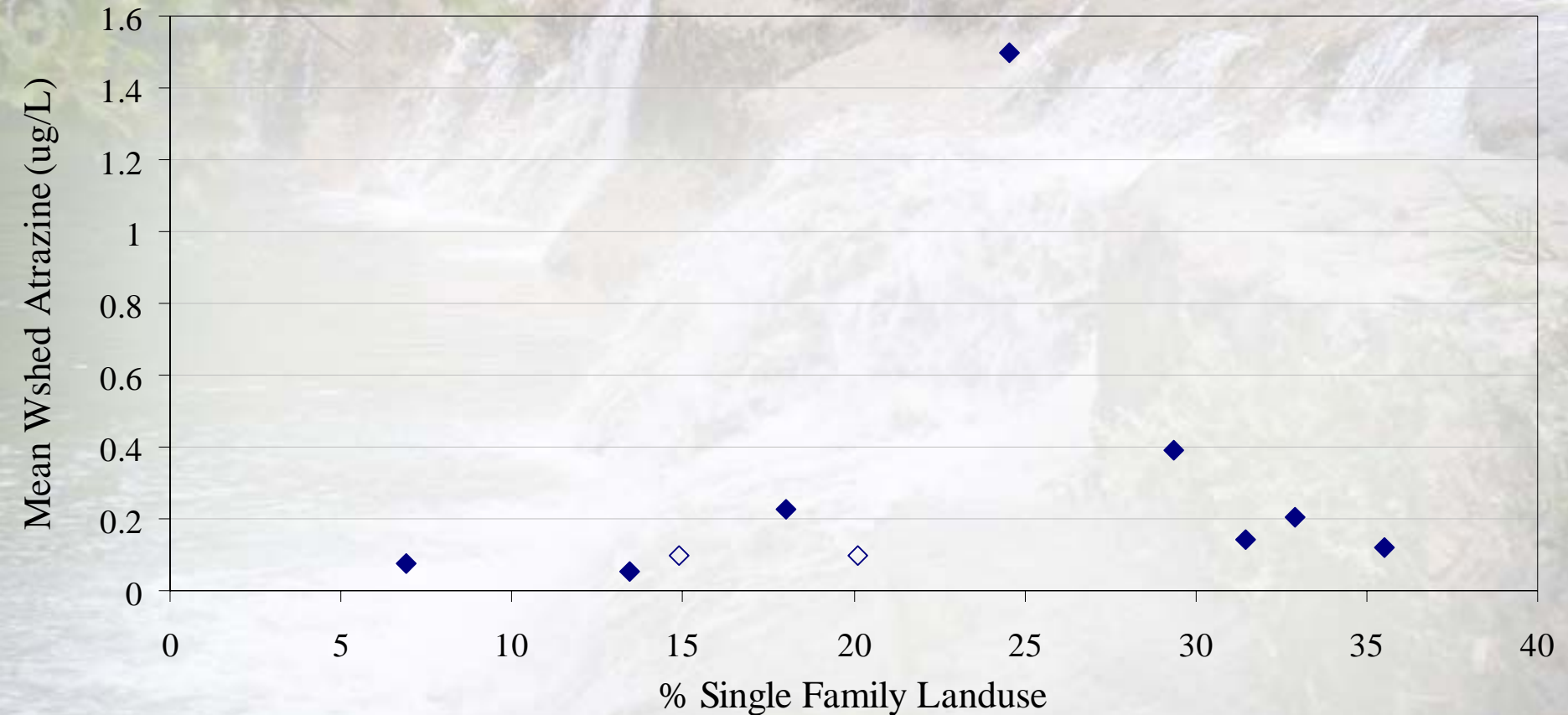
Atrazine in Texas (Source: TCEQ Database)



# Statewide Problem

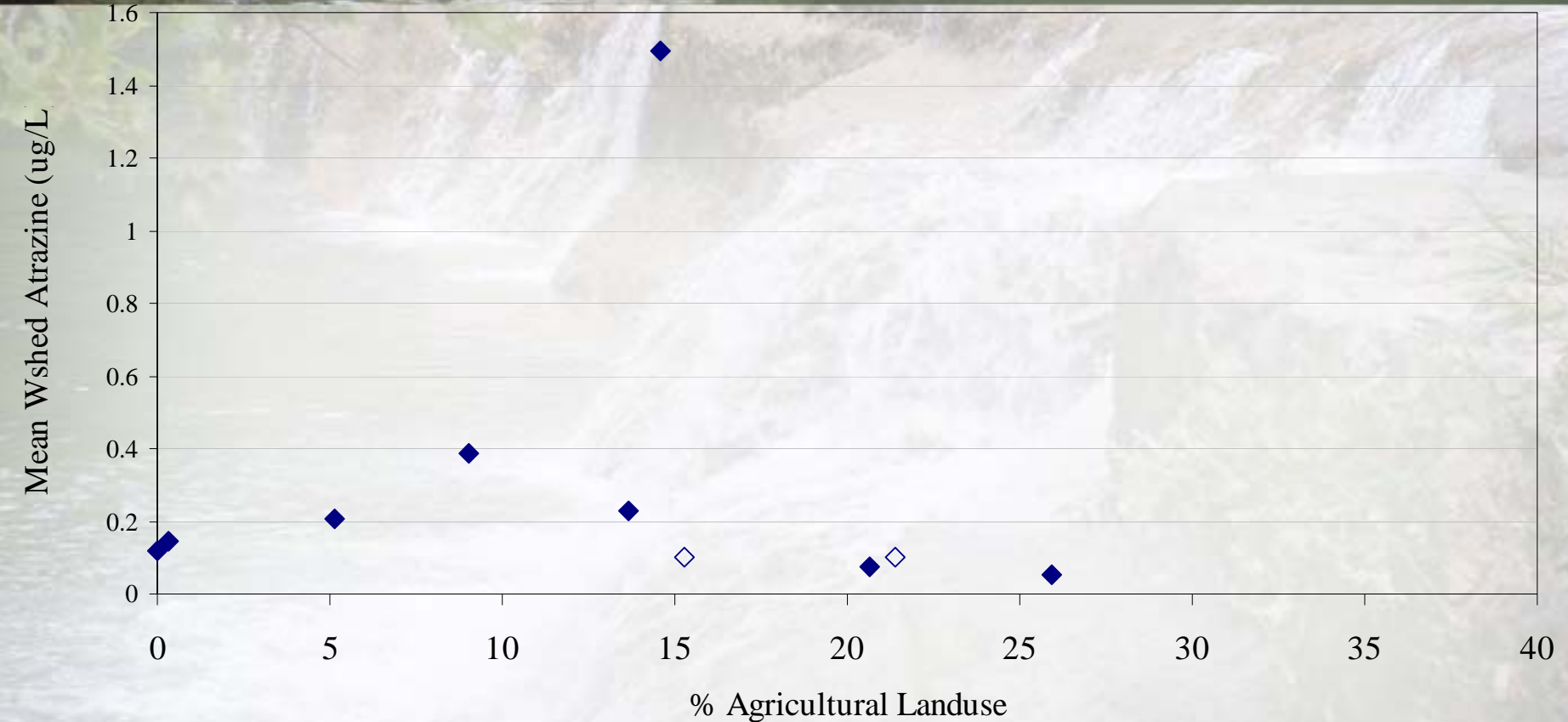
<b>County</b>	<b>2005 population estimate</b>	<b># samples</b>	<b># sites</b>	<b>% of <i>samples</i> with detected values</b>	<b>% of <i>sites</i> with detected values</b>
Harris	3,693,050	38	9	84.2	100.0
Dallas	2,305,454	175	13	94.9	92.3
Tarrant	1,620,479	14	5	57.1	60.0
Bexar	1,518,370	84	5	97.6	60.0
Travis	888,185	121	13	85.1	69.2
El Paso	721,598	105	8	0.0	0.0
Hidalgo	678,275	6	5	0.0	0.0
Collin	659,457	7	5	100.0	100.0
Denton	554,642	25	2	96.0	100.0
Cameron	378,311	66	4	95.5	50.0

# Agricultural Sources?



Atrazine correlated to single-family land use  
in Denton, Texas

# Agricultural Sources?

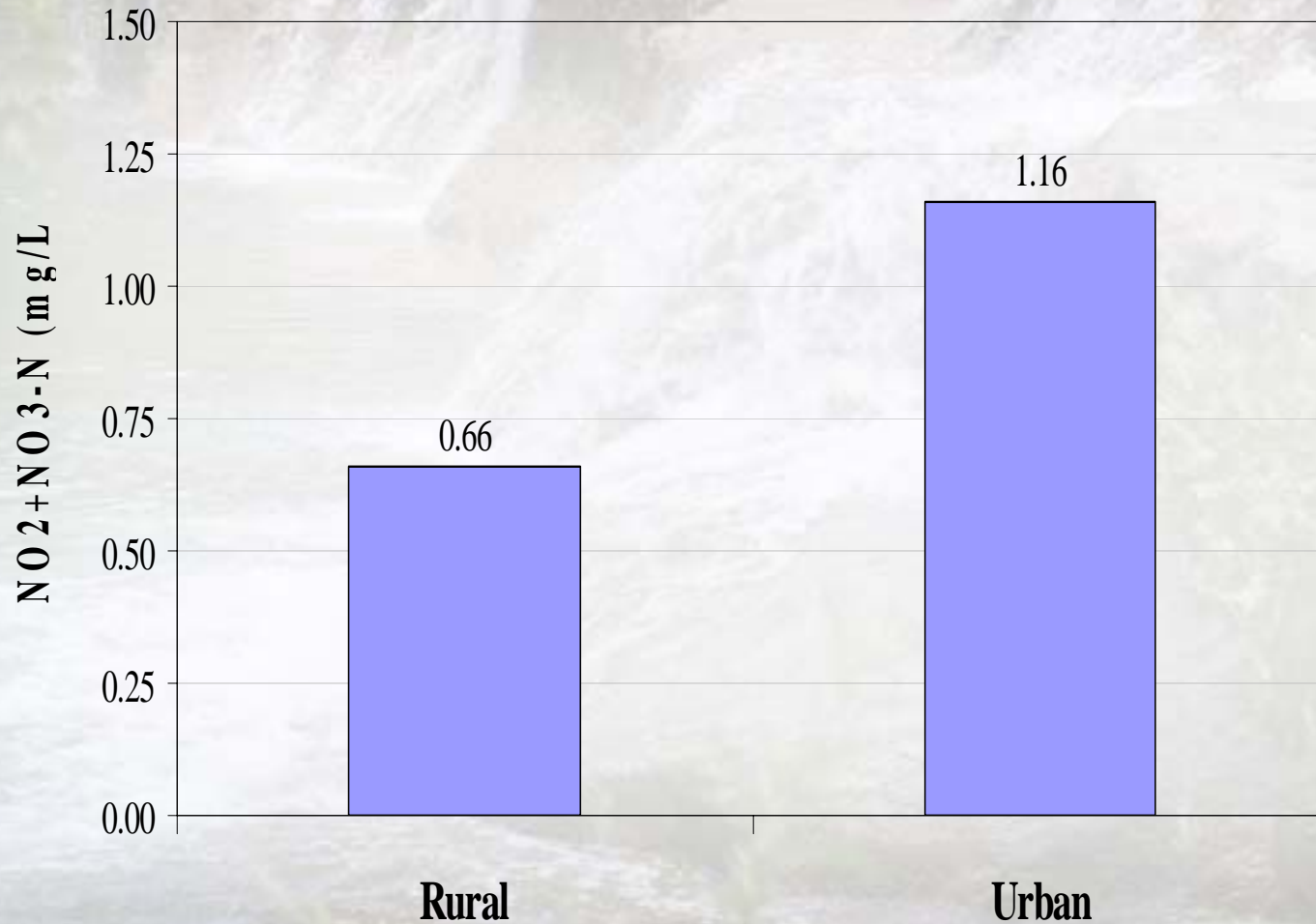


Detected in Austin's urban watersheds

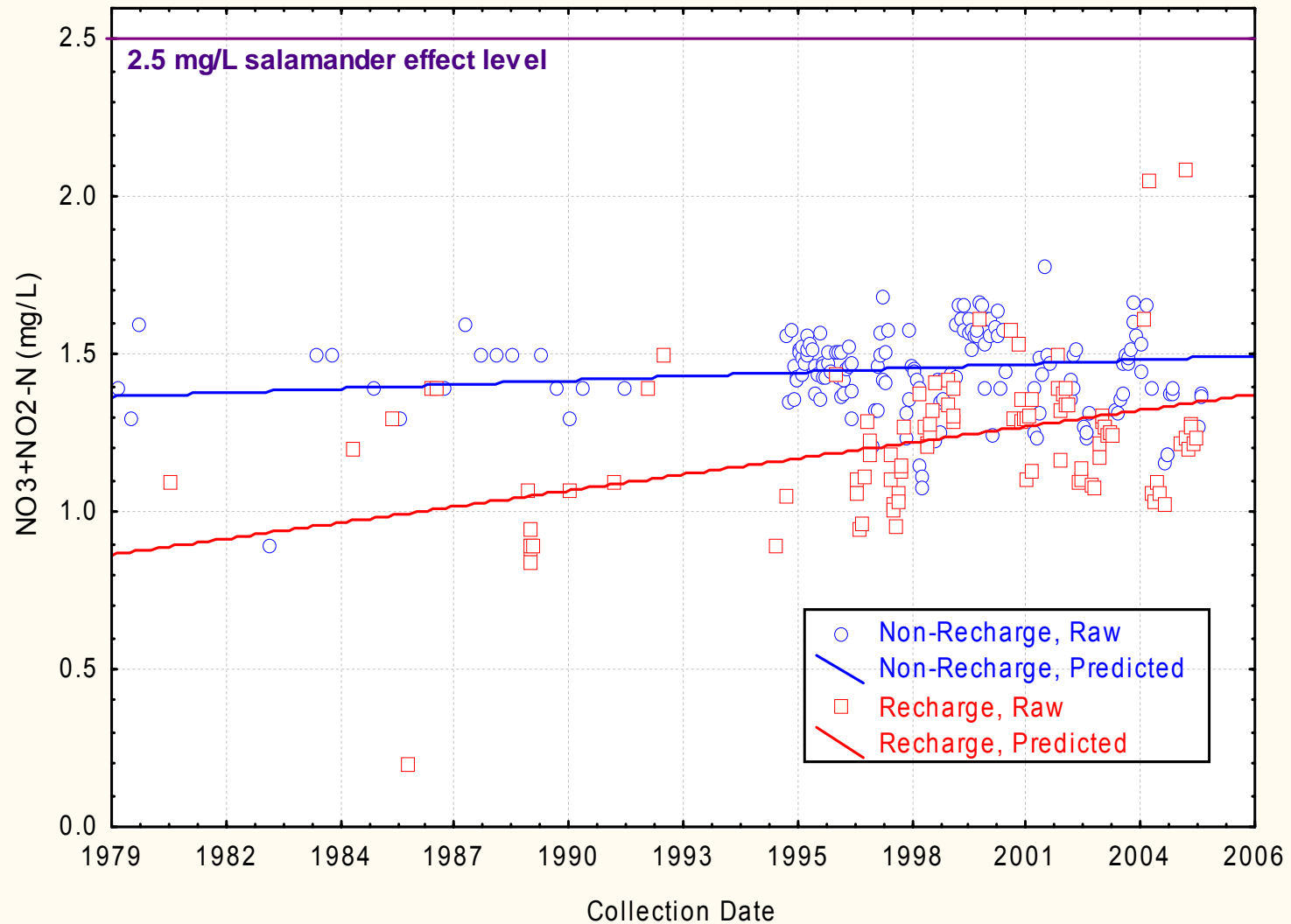


# What about the “Feed”?

Nitrate in surface water



# What about the "Feed"?



The background of the slide is a composite image. The top portion shows a river with two people swimming, surrounded by lush green trees. The bottom portion shows a waterfall cascading over rocks. The text 'Conclusions' is overlaid on the top portion in a large, white, sans-serif font.

# Conclusions

- Not an immediate health threat, but definitely a problem
- Homeowner use a probable source in urban areas
- Multiple water quality improvement opportunities
- Change demand, don't ban atrazine, but ban weed and feed?