

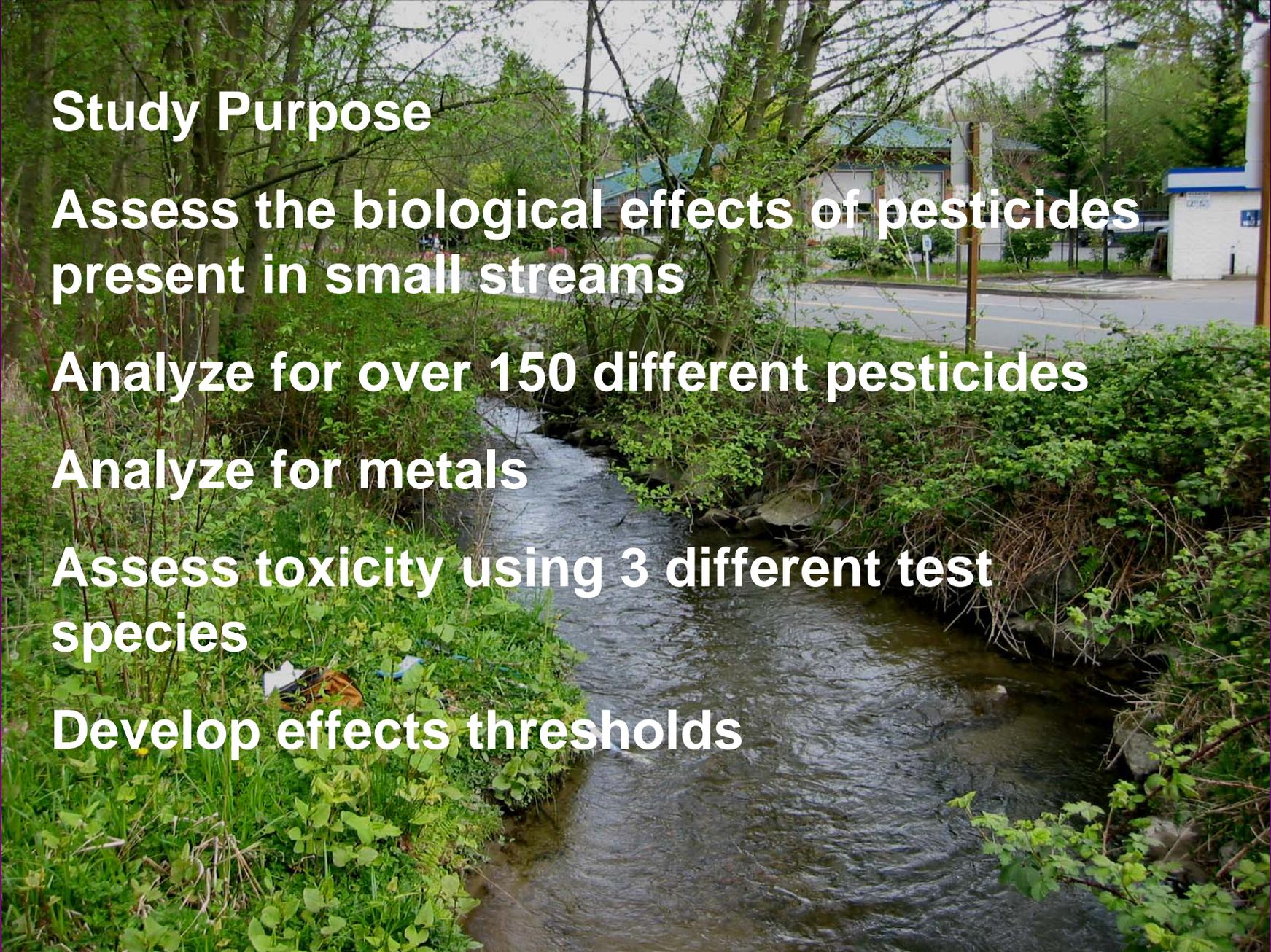
Biological Implications of Pesticides in Small Urban Streams

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Water and Land Resources Division

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Study Purpose

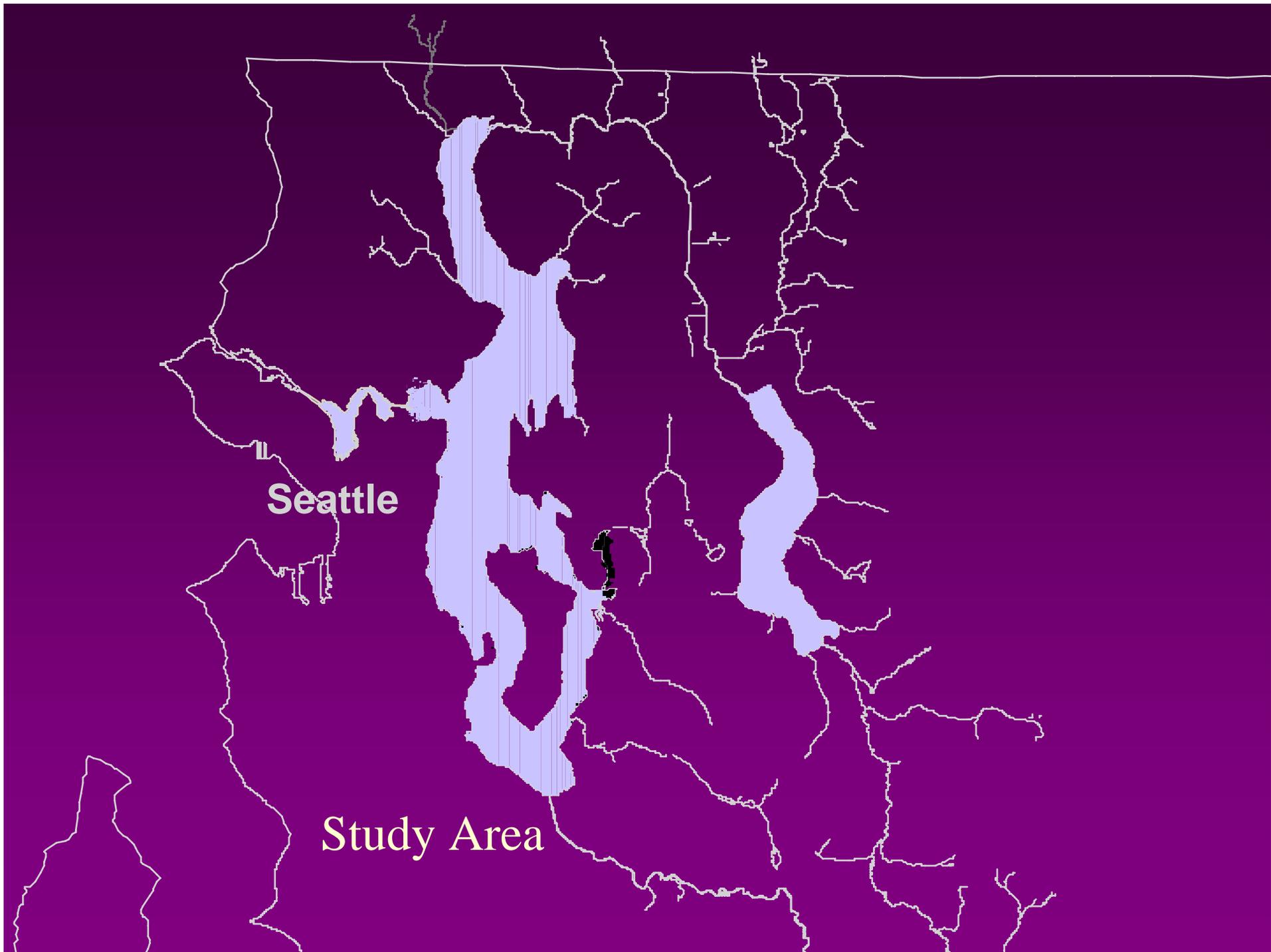
Assess the biological effects of pesticides present in small streams

Analyze for over 150 different pesticides

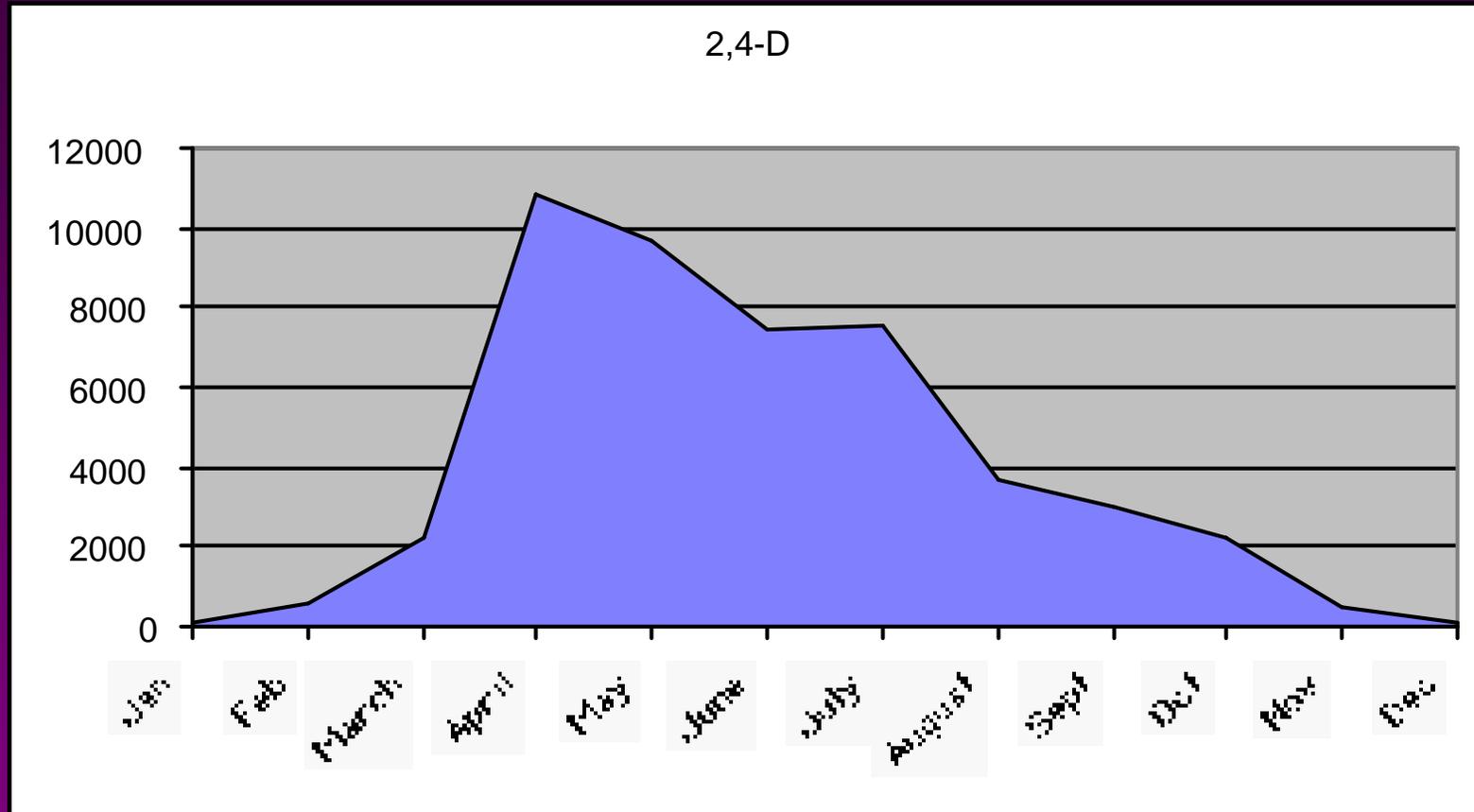
Analyze for metals

Assess toxicity using 3 different test species

Develop effects thresholds

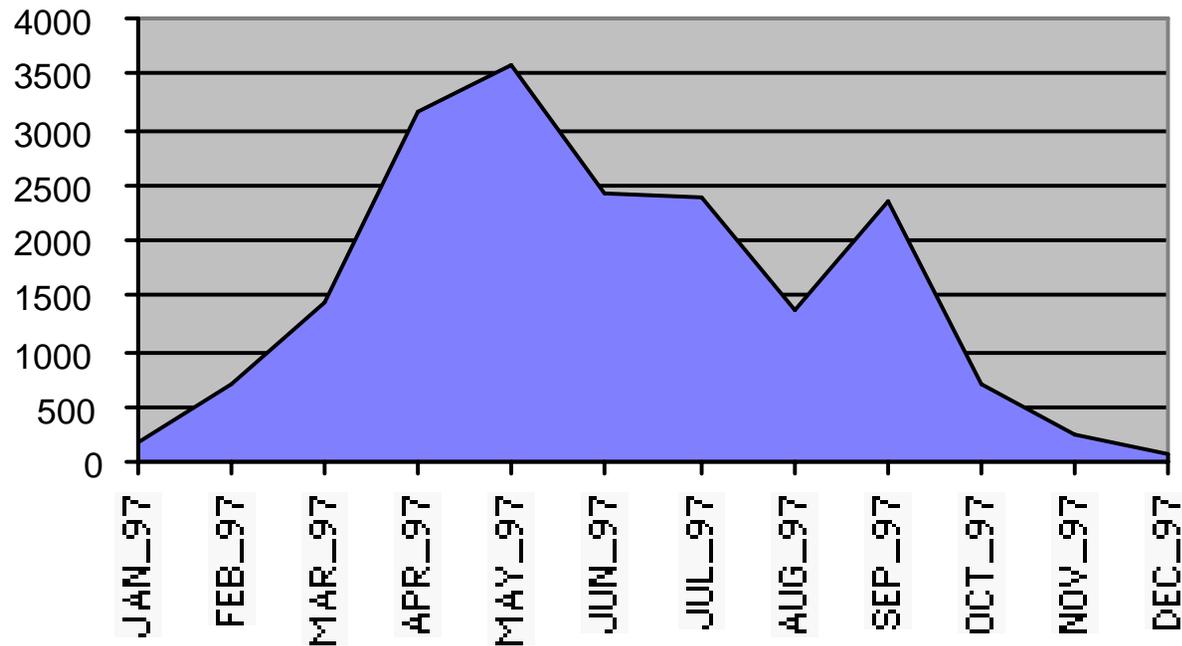


Study Design

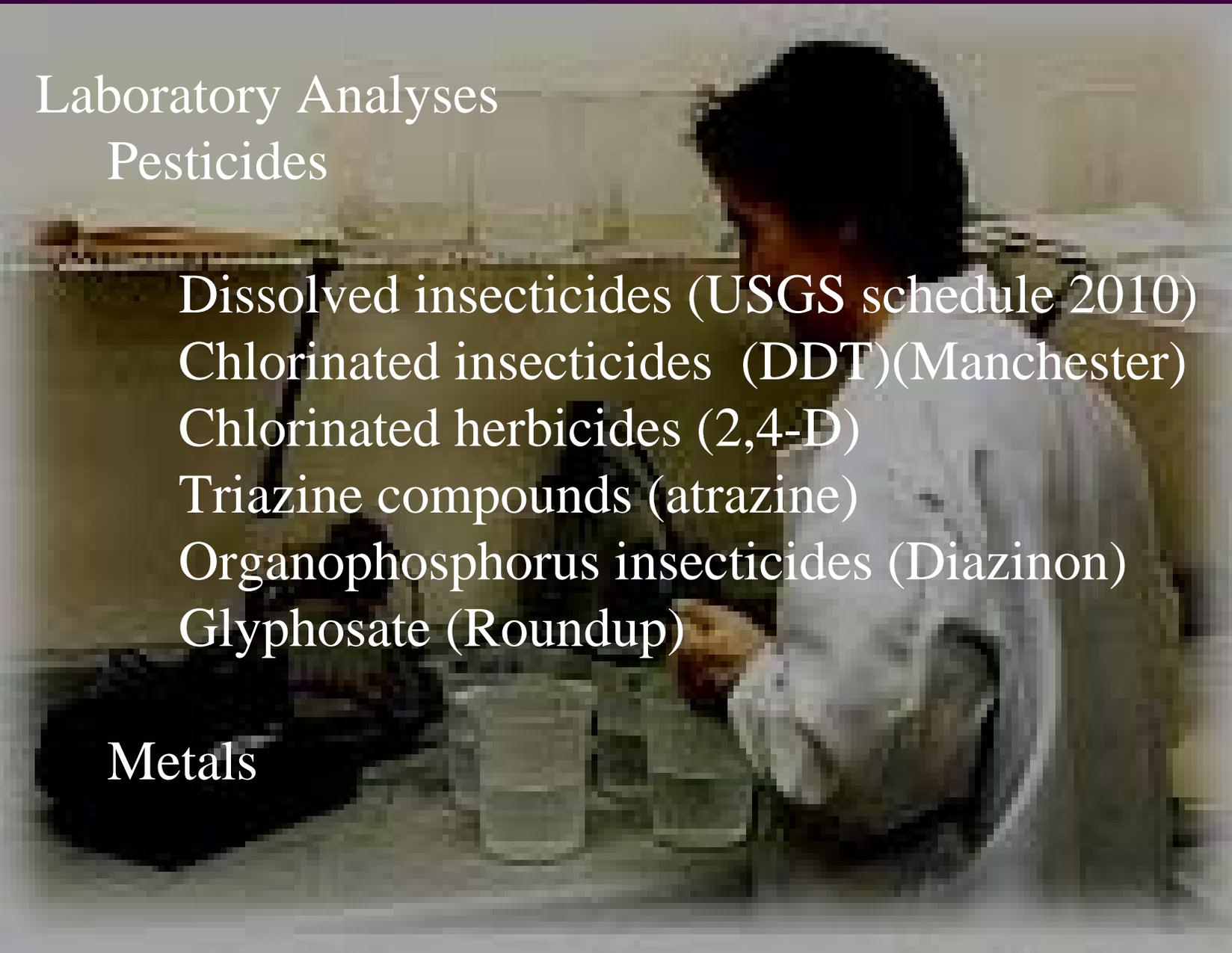


2,4-D

DIAZINON



Diazinon



Laboratory Analyses
Pesticides

Dissolved insecticides (USGS schedule 2010)
Chlorinated insecticides (DDT)(Manchester)
Chlorinated herbicides (2,4-D)
Triazine compounds (atrazine)
Organophosphorus insecticides (Diazinon)
Glyphosate (Roundup)

Metals

Threshold Effects Levels

2,4-D

4-Nitrophenol

Carbaryl

Dicamba

Dichloroprop

Ethofumesate

MCPP

Metalaxyl

Pentachlorophenol

Simazine

Trifluralin

2,6 Dichlorobenzamide

Bromacil

Carbofuran

Dichlobenil

Diuron

MCPA

Metolachlor

Napropamid

Prometon

Tebuthiron

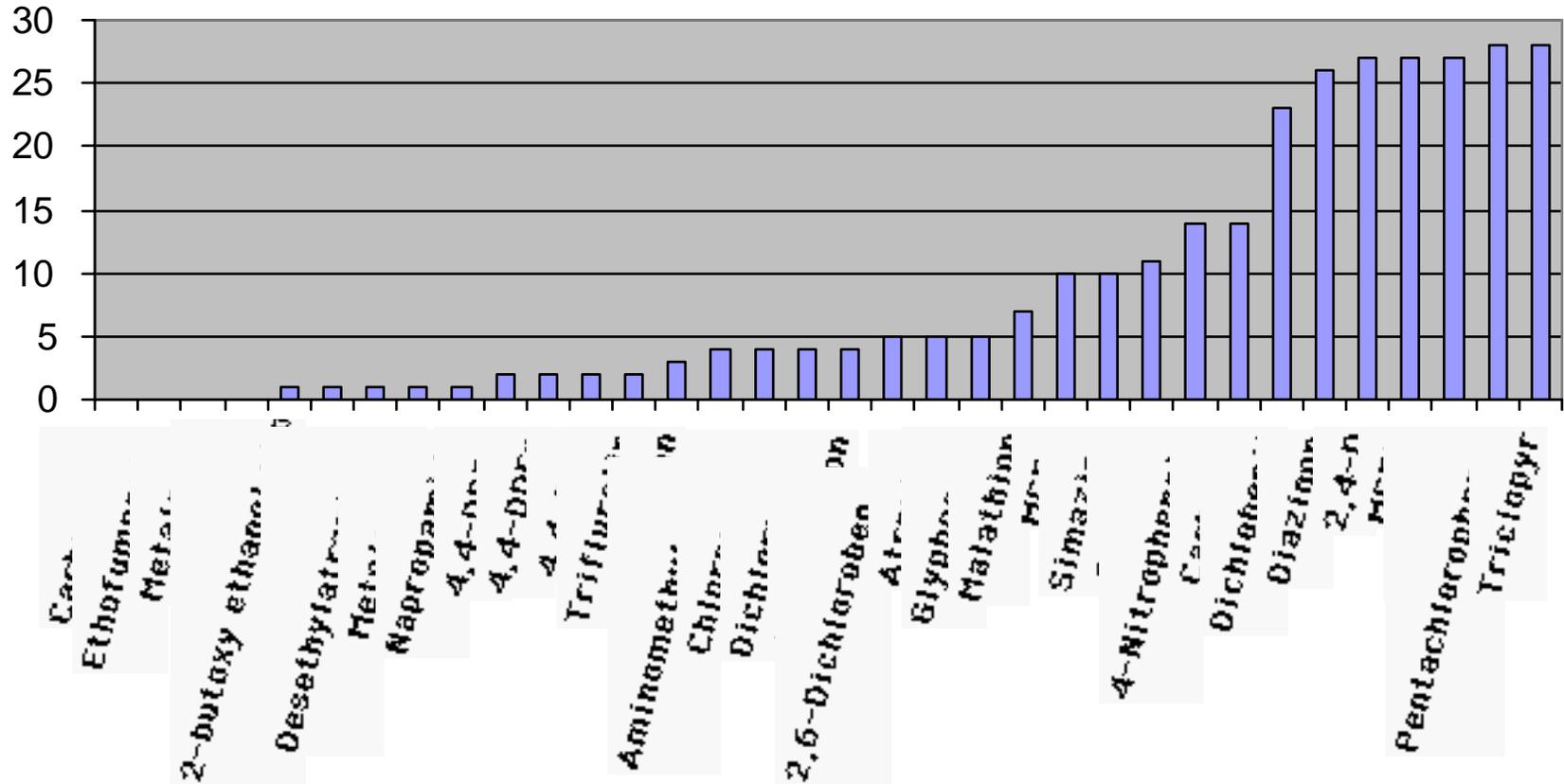
Toxicity

Green algae *Selenastrum capricornutum*

Duck weed *Lemna minor*

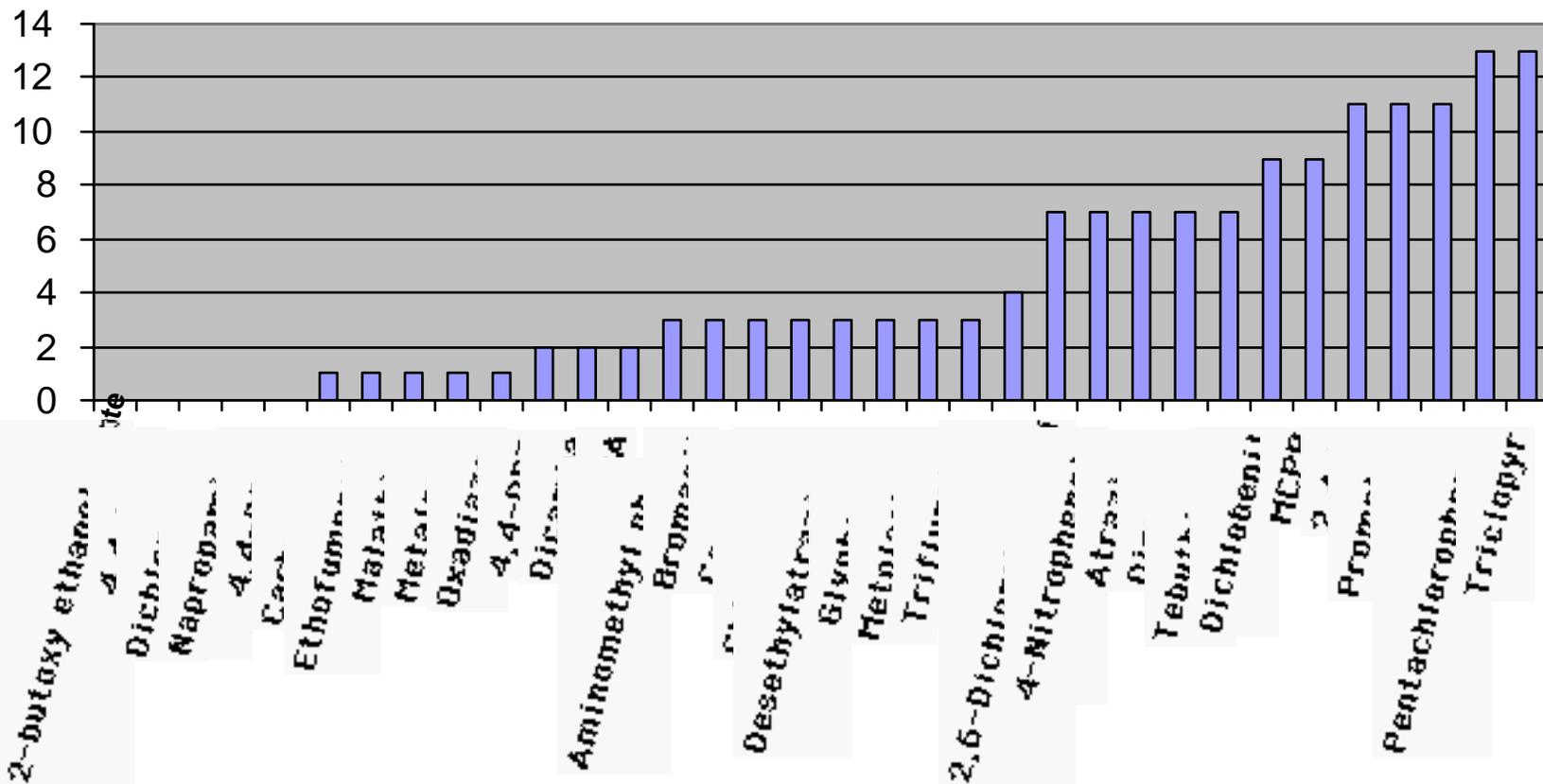
Water flea *Ceriodaphnia dubia*

Freq of Detection Storm



N = 32

Freq of Detection Baseflow



N = 21

Threshold Effects Levels Exceeded

Diazinon	7
Copper	3
Simazine	2
DDT	2
Lead	1
Malathion	1
Total	16



Observed Toxicity

47 % (25 times total)

59 % Storm (19)

29 % Baseflow (6)



What does it all mean?

Acute Toxicity was observed in 2 samples.

Toxicity was observed in 4 samples and thresholds were exceeded.

In an additional 4 samples no toxicity was observed, yet thresholds were exceeded.

Uncertainty

Toxicity was observed in 19 samples yet no thresholds were exceeded.

Chemicals not tested

- Other pesticides

- Surfactants

- Other chemicals

Other Issues

Mixtures

Test Durations

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[Http://dnr.metrokc.gov/wlr/waterres/streams/pestindex.htm](http://dnr.metrokc.gov/wlr/waterres/streams/pestindex.htm)

