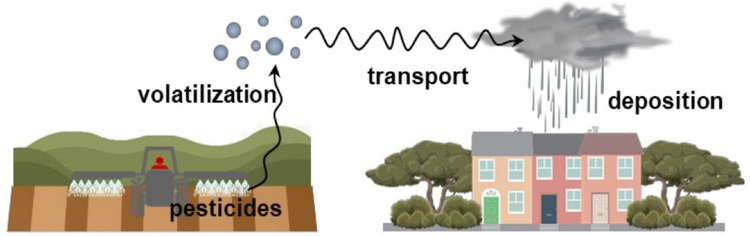
Optimizing Extraction Methods to Quantify Pesticides in Atmospheric Deposition

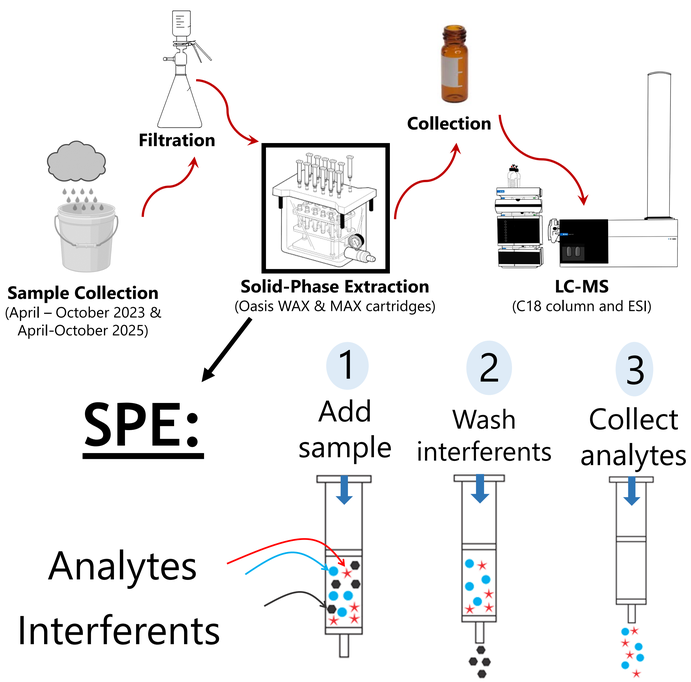
Cameron Ray, Rebekah Gray, Jennifer A. Faust
The College of Wooster, Department of Chemistry, Wooster OH

Motivation



- Pesticides cause lung and colon cancer and can decrease immune function
- Can also be found in foods like strawberries, blueberries, and apples and can be inhaled from bug and lawn spray.

Methods



Extraction Optimization

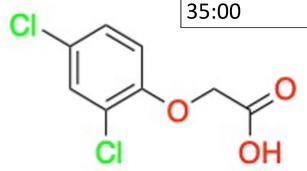
Mobile phase gradients for extraction test runs:

Method 1 Parameters		
Time (min)	A [%]	B [%]
0:00	95.0	5.0
3:00	95.0	5.0
20:00	0.0	100.0
25:00	0.0	100.0

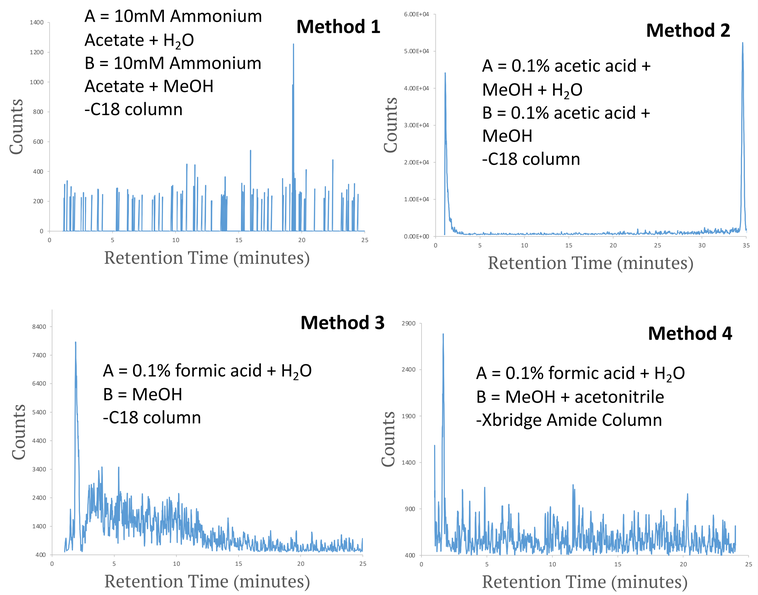
Method 2 Parameters		
Time (min)	A [%]	B [%]
0:00	100.0	0.0
3:00	50.0	50.0
30:00	0.0	100.0
36:00	100.0	0.0
45:00	100.0	0.0

Method 3 Parameters		
Time (min)	A [%]	B [%]
0:00	60.0	40.0
14:00	8.0	92.0
25:00	8.0	92.0

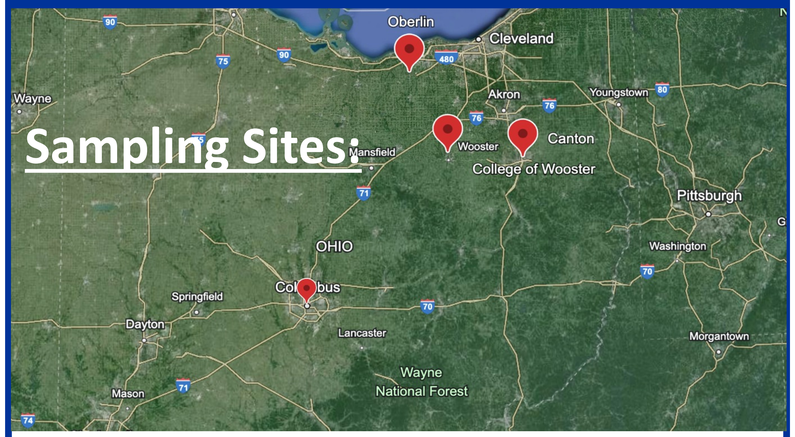
Method 4 Parameters		
Time (min)	A [%]	B [%]
0:00	95.0	5.0
4:00	60.0	40.0
16:00	99.0	1.0
24:00	99.0	1.0
26:00	95.0	5.0
35:00	95.0	5.0



2,4-D Chromatograms @ m/z ratio = 225.9898:

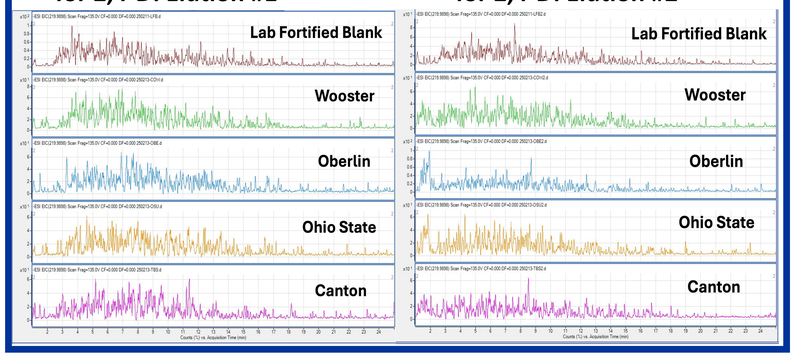


Rainwater Analysis



Extracted Ion Chromatogram for 2,4-D: Elution #1

Extracted Ion Chromatogram for 2,4-D: Elution #2



Conclusions

- Zero percent recoveries
- Continued chromatography optimization
- Future work: MS/MS acquisition for analysis of unknown features, and continued method optimization for negative mode chromatography
- This project was supported by the Copeland fund & NSF