

series	cap color	membrane	pore size	part #
standard	●	PTFE	0.2µm	34430

## Pesticide Analysis in Ground Water

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### Introduction

Groundwater is an important component in many industrial processes as well as irrigating our crops and recharging lakes, rivers and wetlands. Groundwater supplies drinking water for 51% of the total U.S. population and 99% of its rural population. Unfortunately, groundwater is susceptible to pollutants due to the widespread use of pesticides and fertilizers. Traditionally, syringe filtration or centrifugation have been used to remove particulates and reduce possible matrix interference prior to LC/MS analysis. However, these techniques are time consuming, adversely impact reproducibility and quantification. We investigated the potential for streamlining sample preparation method for the analysis of Prosulfuron and its metabolites in ground water using the Thomson StandardIFV compared to syringe filtration and centrifugation.

### Equipment

- Instrument Parameters:
  - HPLC: Agilent 1290 UPLC System
  - Analytical Column: Waters Acquity HSS T3, 2.1 x 150 mm, 1.8 µm
  - Column Temperature: 50 °C
  - Injection Volume: 20 µL
  - Mobile Phase A: 0.1% Formic Acid in HPLC Water
  - Mobile Phase B: 0.1% Formic Acid in CAN
  - Flow Rate: 0.6 mL/min

#### Gradient:

Time	Flow Rate	A(%)	B(%)	mL/min
0		0.6	99	1
0.5		0.6	99	1
2.4		0.6	40	60
4.25		0.6	35	65
4.26		0.6	0	100
5.25		0.6	0	100
5.26		0.6	99	1
5.75		0.6	99	1

- Mass Spectrometer: Agilent 6490 Triple Quad
- Interface: ElectroSpray Ionization (ESI)
- Gas Flow: 14 L/min
- Temperature: 200 °C

### Sample Prep Procedure

#### Step 1.

For recovery sample: fortify one control ground water sample at 0.1 ppb in a 10 mL volumetric flask.

Water sample with incurred residue follow directly the steps below:

#### Step 2.

Prepare experimental samples in triplicate:

##### Exp. 1) StandardIFV, 0.2µm PTFE Filtration Vials:

- Take 0.45 mL aliquots of the fortified control (step 1) and transfer into separate Thomson Filtration Vials.
- Filter the samples by depressing the plunger completely.

##### Exp. 2) 0.2 µm PTFE syringe filter attached to a syringe:

- Take 1.0mL aliquots of the fortified control and field sample (step 1) and transfer into separate syringe filters.
- Pass samples through the syringe filter and into autosampler vials.

##### Exp. 3) Centrifuging:

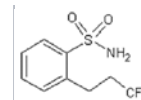
- Centrifuge remainder of the 2 samples @ 3200 rpm for 5 minutes.
- Transfer 400µL aliquots into autosampler vials.

#### Step 3.

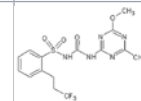
Samples ready for LCMS-MS analysis.

### Pesticides Analyzed

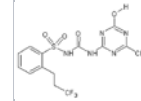
Prosulfuron (CGA152005) - 1-(4-methoxy-6-methyl-biazin-2-yl)-3-[2-(3,3,3-trifluoropropyl)-phenylsulfonyl]-urea, CAS #: 94125-34-5



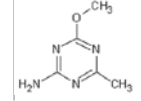
CGA300406 -1-(4-hydroxy-6-methyl-1,3,5-triazin-2-yl)-3-[2-(3,3,3-trifluoropropyl) phenylsulfonyl]-urea



CGA159902 -2-(3,3,3-trifluoropropyl) phenylsulfonylurea, CAS #: 94125-42-5



CGA150829 -2-amino-4-hydroxy-6-methyl-1,3,5-triazine, CAS #: 1668-54-8



### Results

