



Bisphenol A Analysis in Water by GC/MS
Using an ENVIRO-CLEAN[®]
200 mg C18 Extraction Cartridge
Part Number: EEC1812Z

1. Prepare Sample

- a) Using 100 mL of sample water, adjust the pH to 7 or less using 100mM acetic acid
- b) Add internal standard to water sample

Note: bisphenol A has a pKa value of approximately 9.5

2. Condition ENVIRO-CLEAN[®] Extraction Cartridge

- a) Place a cartridge(s) on a multistation vacuum manifold or automated extraction system
- b) Condition the cartridge by adding 3 mL of methanol
- c) Partially draw the methanol through until the surface of the liquid reaches the top of the cartridge frit
- d) Wait 1 minute then add 3 mL of DI water to the cartridge.
- e) Add 1 mL of 100 mM acetic acid
- f) Draw liquid through until it touches the top of the frit
- g) Cartridge is now ready for sample extraction

Note: Do not allow the sorbent to completely dry out after the addition of methanol, otherwise repeat procedure.

3. Apply Sample

- a) Add sample to cartridge at a rate of approximately 5 mL/minute by adjusting vacuum

4. Wash Cartridge

- a) Wash by drawing through 5 mL of deionized water
- b) Dry sorbent (5 minutes at > 10 inches Hg)

5. Elute

- a) Insert a collection vial in the vacuum manifold
- b) Rinse sample bottle with 3 mL of methanol
- c) Add the methanol to the cartridge
- d) Elute at 5 mL per minute
- e) Add 3 mL of methanol to the cartridge
- f) Elute at 5 mL per minute

6. Evaporate

- a) Evaporate methanol eluate using gentle N₂ (< 40°C) to dryness
- b) Add 50 µL of ethyl acetate to dissolve
- c) Add 50 µL of reagent MTBSTFA* or BSTFA** to derivatize. Vortex
- d) Heat mixture for 20-30 minutes @ 70°C
- e) Cool. Sample is now ready for GC injection

*MTBSTFA-- N-(t-butyltrimethylsilyl)-N-methyltrifluoroacetamide

**BSTFA-- N,O-Bis(trimethylsilyl)trifluoroacetamide

7. Instrument Conditions

- **Column:** Rtx-5MS, 30m, 0.25 mm ID, 0.50 µm df (5% diphenyl/95% dimethyl polysiloxane)
- **Injector Temperature:** 250°C
- **Detector Temperature:** 250°C
- **Oven Program:** Initial 70°C, ramp @ 20°C/minute to 320°C, hold 3.0 min
- **Purge Flow:** Initially Off. On at 0.75 minutes
- **Split Flow:** 30 ml/minute
- **Inject:** 2 µL

8. Quantitate

MS in EI (+) mode:

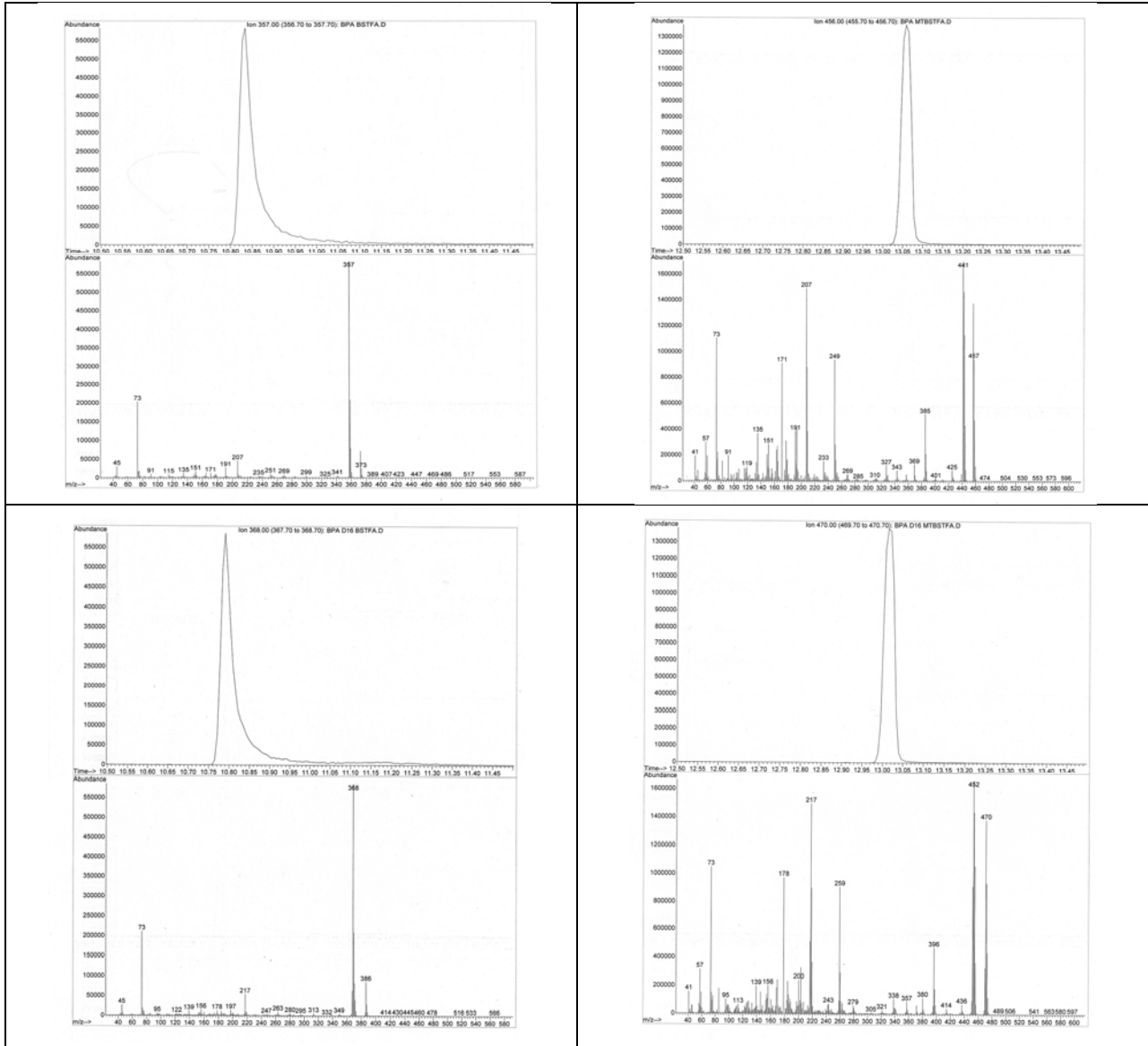
BSTFA

	<u>Primary ion</u>	<u>Secondary ion</u>	<u>Tertiary ion</u>
BPA	357	373	207
BPA-D16	368	386	217

MTBSTFA

BPA	441	457	207
BPA-D16	452	470	217

Chromatogram Showing Retention Time for bisphenol A in Water



Spike Concentration: 0.15 µg/L
Calc Concentration: 0.157 µg/L
Recovery: 105%

DCN-905020-132