

PFAS and MULTI-CHEMICAL REAL TIME DETECTION ULTRA FAST GAS CHROMATOGRAPH

Model Series ~ PFAS-TA

LABORATORY ~ PFAS-TA-LW (Lab - Water) ~ PFAS-TA-LA (Lab - Air)

PFAS-TA-LWS (Lab - Water & Solids)

~~~~~

**FIELD ~ PFAS-TA-FW (Field - Water) ~ PFAS-TA-FA (Field - Air)**

**PFAS-TA-FWS (Field - Water & Solids)**

### FEATURES:

#### PFAS-TA SERIES

- DETECTS PFAS AND OTHER HYDROCARBONS - C4 TO C25
- WATER, AIR, OR SOLIDS
- **PFAS-TA identifies vapors as low as 1 PPT (parts-per-trillion) in just 5-60 seconds.**
- BENCHTOP OR PORTABLE
- QUANTITATIVE; QUALITATIVE ANALYSIS
- EXCEPTIONAL SENSITIVITY
- FAST VAPOR ANALYSIS IN 5 - 60 SECONDS
- INTERNAL SAMPLE PUMP; DC POWER WITH CHARGER

#### PFAS-TA-L (Laboratory Model)

**PFAS-TA-LW (WATER)    PFAS-TA-LA (AIR) ~**

**PFAS-TA-LWS (WATER & SOLIDS)**

- DATA OUTPUT - BLUETOOTH OR RS-232 USER SETTABLE
- DISPLAY ON INCLUDED LAPTOP

#### PFAS-TA-F (Field Use Model)

**PFAS-TA-FW (WATER) ~ ~ PFAS-TA-FA (AIR)**

**PFAS-TA-FWS (WATER & SOLIDS)**

- SELF CONTAINED: INTEGRATED COMPUTER/DISPLAY
- DATA STORAGE & ARCHIVE; COMPUTER INTERFACE, USB



**PFAS-TA-L  
(Laboratory Use)  
WATER & AIR & SOIL**



**PFAS-TA-F  
(Field Use)  
WATER & AIR & SOIL**

### APPLICATION:

The PFAS-TA Series Vapor detectors and analyzer is a field ready fully integrated system for air, solids, or water. With an internal sampler pump and integrated compute. Model series **PFAS-TA identifies vapors as low as 1 PPT (parts-per-trillion) in just 5-60 seconds.**

**EPA's proposed regulation limit for PFOA and PFOS is 4 ppt.** The PFAS-TA provides immediate measurement of PFOA and PFOS. Typical laboratory analysis is expensive and may take a week or more for results.

Rapid, on-the-spot PFAS contamination testing below the EPA's limit and can be configured for either water or air samples.

Multi-Chemical analysis provides immense application diversity for the PFAS-TA model series of detectors for many industries.

A proprietary Surface Acoustic Wave (SAW) detector results in a system with previously unattainable sensitivity in a portable low-cost package.

### SIX MODELS – SIX APPLICATIONS

Sketches detail the six model's systems flow.

#### FIELD USE MODELS:

1. PFAS-TA-FW – FIELD/WATER
2. PFAS-TA-FWS – FIELD/WATER & SOLIDS
3. PFAS-TA-FA – FIELD/AIR

#### LABORATORY USE MODELS:

4. PFAS-TA-LW – LAB/WATER
5. PFAS-TA-LA – LAB/AIR
6. PFAS-TA-LWS – LAB/WATER & SOLIDS



**TECHNICAL ASSOCIATES**

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INDUSTRY APPLICATIONS:

PUBLIC HEALTH & ENVIRONMENT	HOMELAND SECURITY
Drinking Water & Waste Water Quality	Explosives in Soil & Water
Air Quality	Port & Cargo Security
Plastics	Airport Security
Bacteria & Mold	Building Security
Beverages	
Packaged Food	
Animals	
ENERGY	AGRICULTURE
BEAUTY	MEDICAL
ZOOLOGY	

DESCRIPTION:

- Carrier Gas: Helium, Typical 300 tests per day per charge
- Analysis Time: 5 – 60 Seconds
- Display: Windows any version

Utilizing a trap and helium carrier gas, the PFAS-TA models inject samples into a heated column and separation takes place. Materials sequentially exit the column and are deposited on the SAW detector. The deposit results in a change in the oscillating frequency of the resonator directly proportional to the mass.

UNIQUE DETECTION:

- Recognizes full chemical signature
- Provides a complete chemical profile
- Has an expandable library of 700+ chemical signatures
- Ultra-high-speed chromatography
- Same time pattern recognition and trace detection
- Adapts and learns to recognize threat signatures



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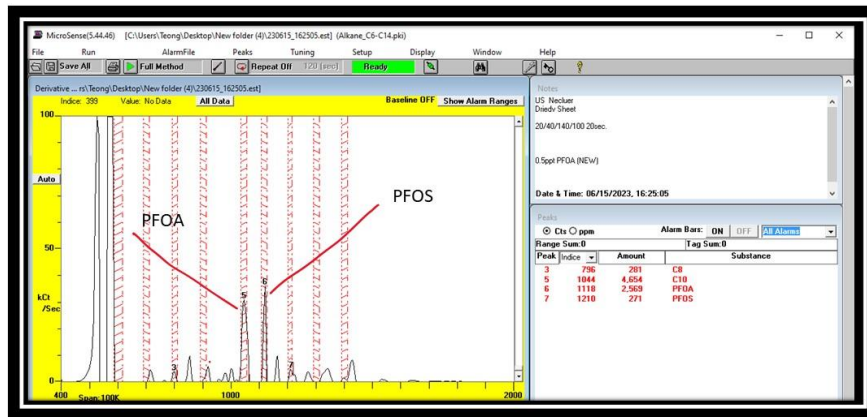
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THE PFAS AND MULTI-CHEMICAL DETECTION SYSTEM EXPLAINED

Sheet of AEM membrane  
(20.40.140.100 Pump 10sec) Weight 364mg slice



## EXAMPLE

Weight is AEM Membrane: 364mg slice  
Heated to 32° C (89.6° F)

The graphic shows that there is PFOA and PFOS present

## HOW IT WORKS

- The Q surface acoustic wave (SAW) interferometer is the key component.
- Individual analyte peak half-width is measured in seconds.
- Every picogram of material is collected on the surface of the temperature-controlled quartz crystal.
- An image of the chemical pattern is obtained from the frequency of the SAW resonator.
- The SAW interferometer produces a resonance frequency proportional to the amount of column effluent deposited on the quartz surface.
- A complex ambient environment is viewed and electronically recognized via its image.



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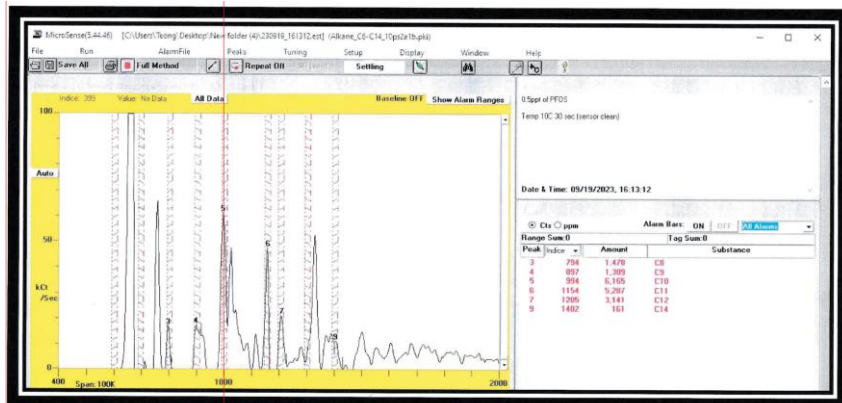
PFAS-TA-FWS (Field - Water & Solids)

PFOS TEST RESULTS

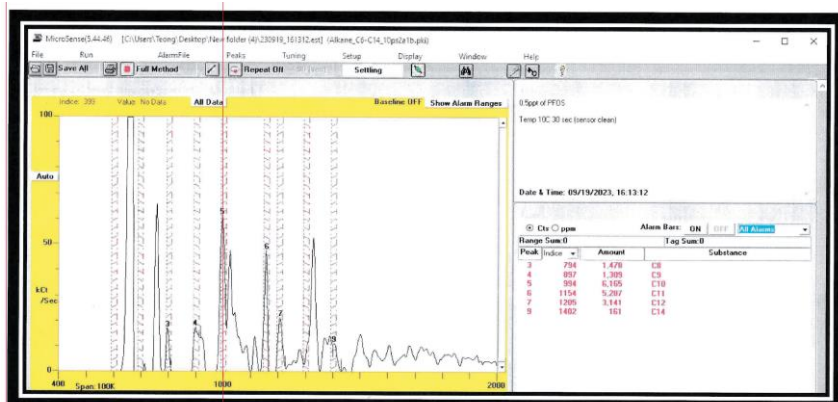
0.1 ppt (10C/30s)



0.5 ppt (10C/30s)



1 ppt (10C/30s)



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PFAS-TA-FWS (Field - Water & Solids)

This unique method and function is a rapid and accurate process for PFAS and other chemical detection. The benchtop model **PFAS-L** for laboratory use and the field model **PFAS-F** provides researchers with a process that stands out from other market methods.

### **SPECIFICATIONS:**

|                                 |                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DETECTOR:</b>                | Surface Acoustic Wave (SAW) Quartz microbalance                                                                                                                                         |
| <b>Dynamic Range:</b>           | $2 \times 10^5$                                                                                                                                                                         |
| <b>Temperature:</b>             | 32° F to 302° F (0° C to 150° C) programmable                                                                                                                                           |
| <b>Detects:</b>                 | PFAS and C4 to C25                                                                                                                                                                      |
| <b>Sensitivity:</b>             | PFAS-L - 1 part per trillion in 5-60 seconds. For many compounds in 10 seconds<br>Sensitivity will vary by compound sampling time, matrix, interferences & detector temperature ranges. |
| <b>Accuracy:</b>                | <2% standard deviation                                                                                                                                                                  |
| <b>Dynamic Range:</b>           | $10^6 \pm 10\%$                                                                                                                                                                         |
| <b>Recycle Time:</b>            | 30 sec minimum                                                                                                                                                                          |
| <b>SAMPLING:</b>                |                                                                                                                                                                                         |
| <b>Sample Pump:</b>             | Internal                                                                                                                                                                                |
| <b>Sample Introduction:</b>     | ~.5 ml/sec                                                                                                                                                                              |
| <b>Sample Time:</b>             | 1-300 seconds, User Settable                                                                                                                                                            |
| <b>Carrier Gas:</b>             | Helium, (Min 99.999% purity, #6)<br>Replaceable Cylinder 95cc at 17.6MPz (2560 psi)<br>Typical use is 200 - 300 tests per day on one helium charge                                      |
| <b>Compound Identification:</b> | Automatic with user calibration                                                                                                                                                         |
| <b>COLUMN:</b>                  |                                                                                                                                                                                         |
| <b>Limits:</b>                  | 95° F to 437° F (35°C to 225°C) -depending on column                                                                                                                                    |
| <b>Ramping:</b>                 | 1 – 18° C/sec                                                                                                                                                                           |
| <b>ENVIRONMENT:</b>             |                                                                                                                                                                                         |
| <b>Operating Temperature:</b>   | 32°F to 105° F (0°C to 40°C)                                                                                                                                                            |
| <b>Relative Humidity:</b>       | 0 – 95% non-condensing                                                                                                                                                                  |
| <b>POWER:</b>                   | Battery Pack: 28V DC, 16 AHr Lithium Ion (5hr typical)                                                                                                                                  |
| <b>Charger Power:</b>           | 100 – 127 VAC at 3 amps – 50/60 Hz;<br>200 - 240 VAC at 1.5 amps – 50/50 Hz                                                                                                             |



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PFAS-TA-FWS (Field - Water & Solids)

INLET CONNECTION / TEMPERATURE:

Inlet Port: Stainless steel LUER
Temperature: 50°C to 200°C

SYSTEM CONTROLLER SOFTWARE and LAPTOP INCLUDED:

WEIGHT & DIMENSIONS:

HEAD:

Weight: 5.7 lbs (2.6 kg)
Length: 12.5 in (31.8 cm)
Width: 4.3 in (10.9 cm)
Height: 6.8 in (17.3 cm)

SUPPORT:

Weight: 18.7 lbs (8.5 kg)
Length: 12.5 in (31.8 cm)
Width: 9.7 in (26.4 cm)
Height: 5.8 in (14.5 cm)

CHARGER:

Weight: 7.7 lbs (3.5 kg)
Length: 13.5 in (34.25 cm)
Width: 9.7 in (14 cm)
Height: 3.7 in (9.5 cm)

SIX MODELS – SIX APPLICATIONS

Sketches detail the six model's systems flow.

FIELD USE MODELS:

7. PFAS-TA-FW – FIELD/WATER
8. PFAS-TA-FWS – FIELD/WATER & SOLIDS
9. PFAS-TA-FA – FIELD/AIR

LABORATORY USE MODELS:

10. PFAS-TA-LW – LAB/WATER
11. PFAS-TA-LA – LAB/AIR
12. PFAS-TA-LWS – LAB/WATER & SOLIDS



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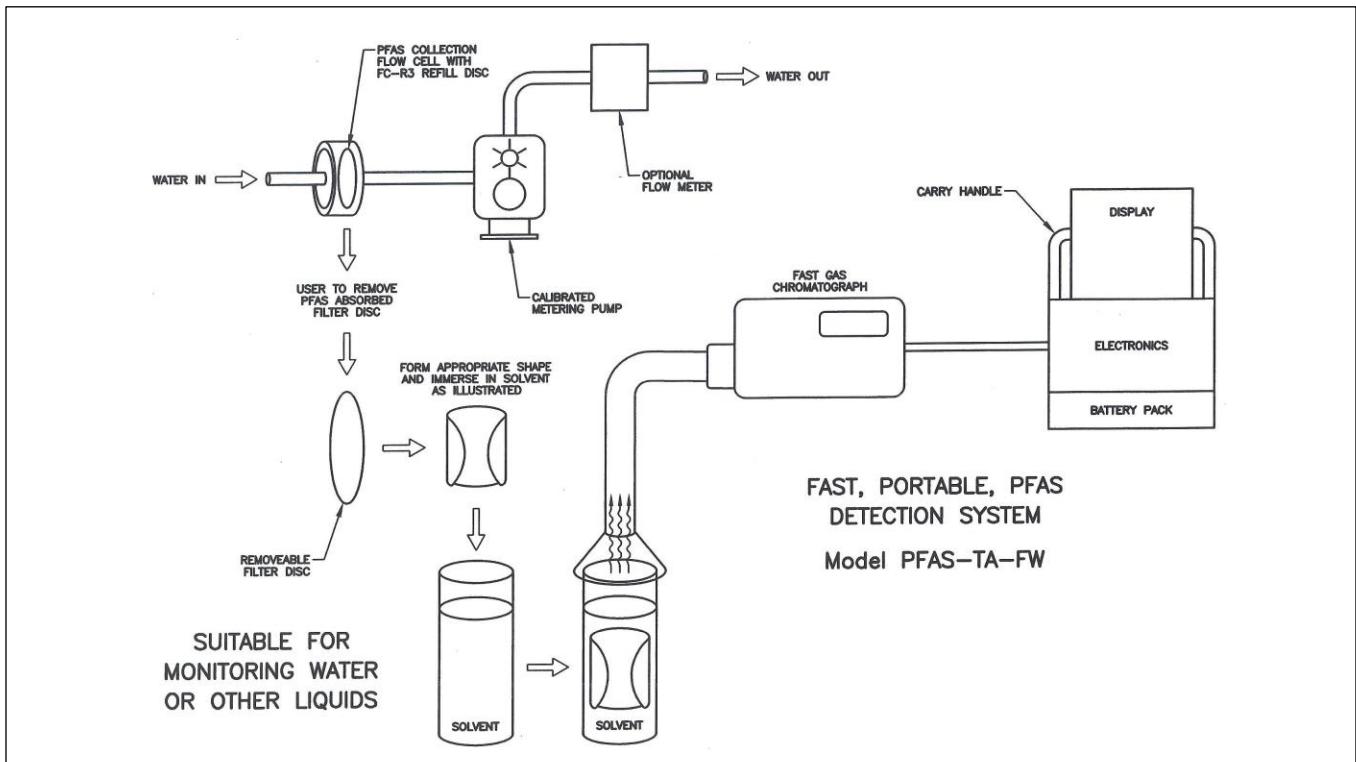
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## PFAS WATER FLOW CHART FIELD USE – PFAS-TA-FW



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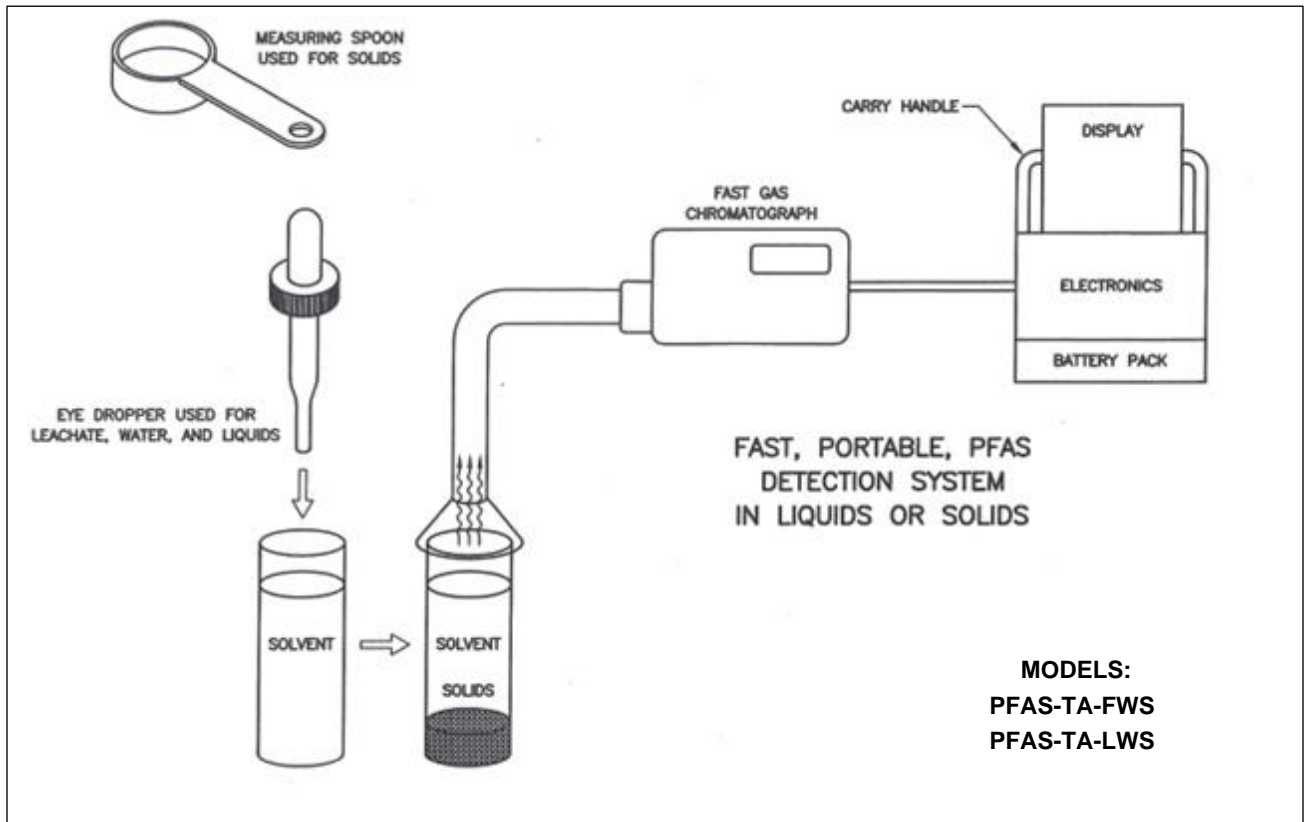
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PFAS-TA-FWS (Field - Water & Solids)

PFAS FIELD & LABORATORY: WATER & SOLIDS FLOW CHART

FIELD USE – PFAS-TA-FWS

LAB USE – PFAS-TA-LWS



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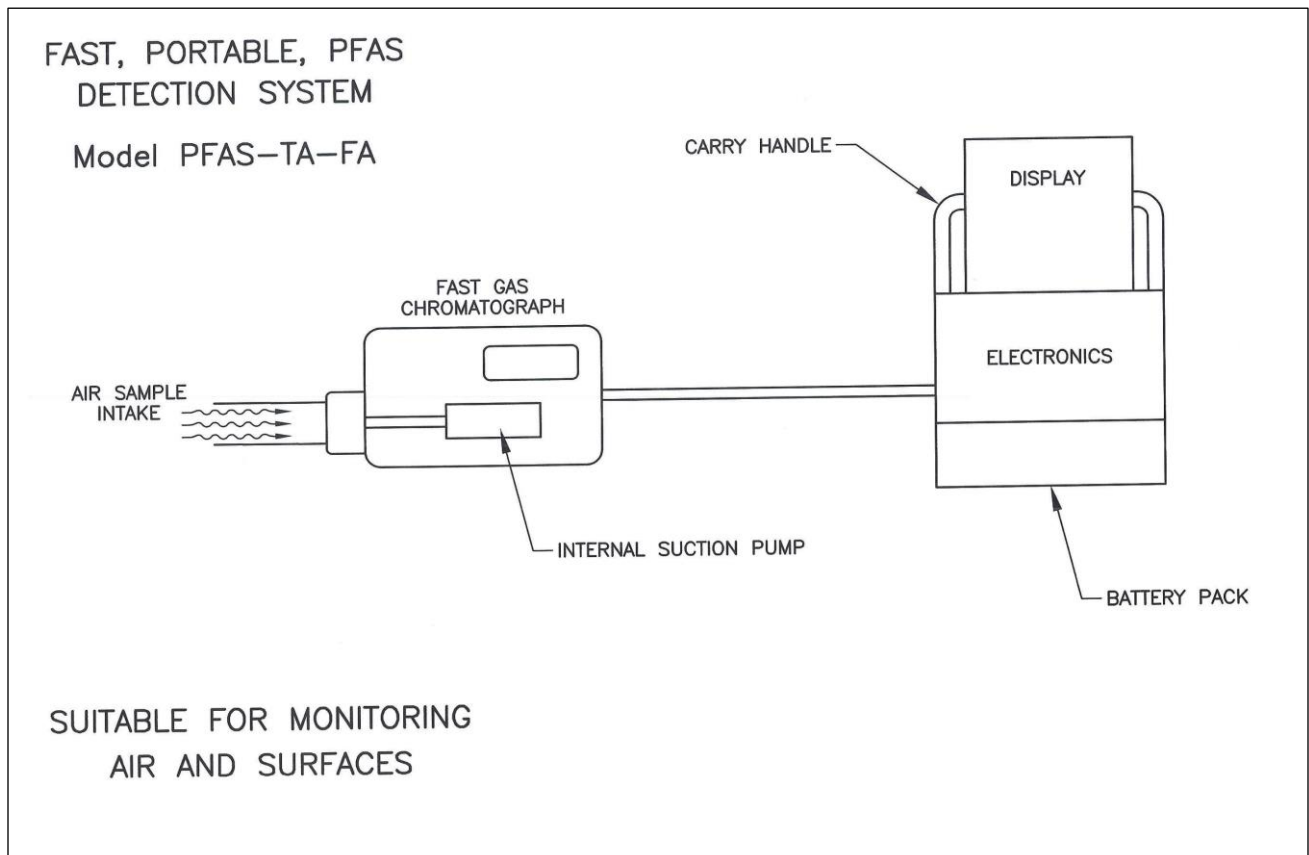
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## PFAS AIR FLOW CHART FIELD USE – PFAS-TA-FA



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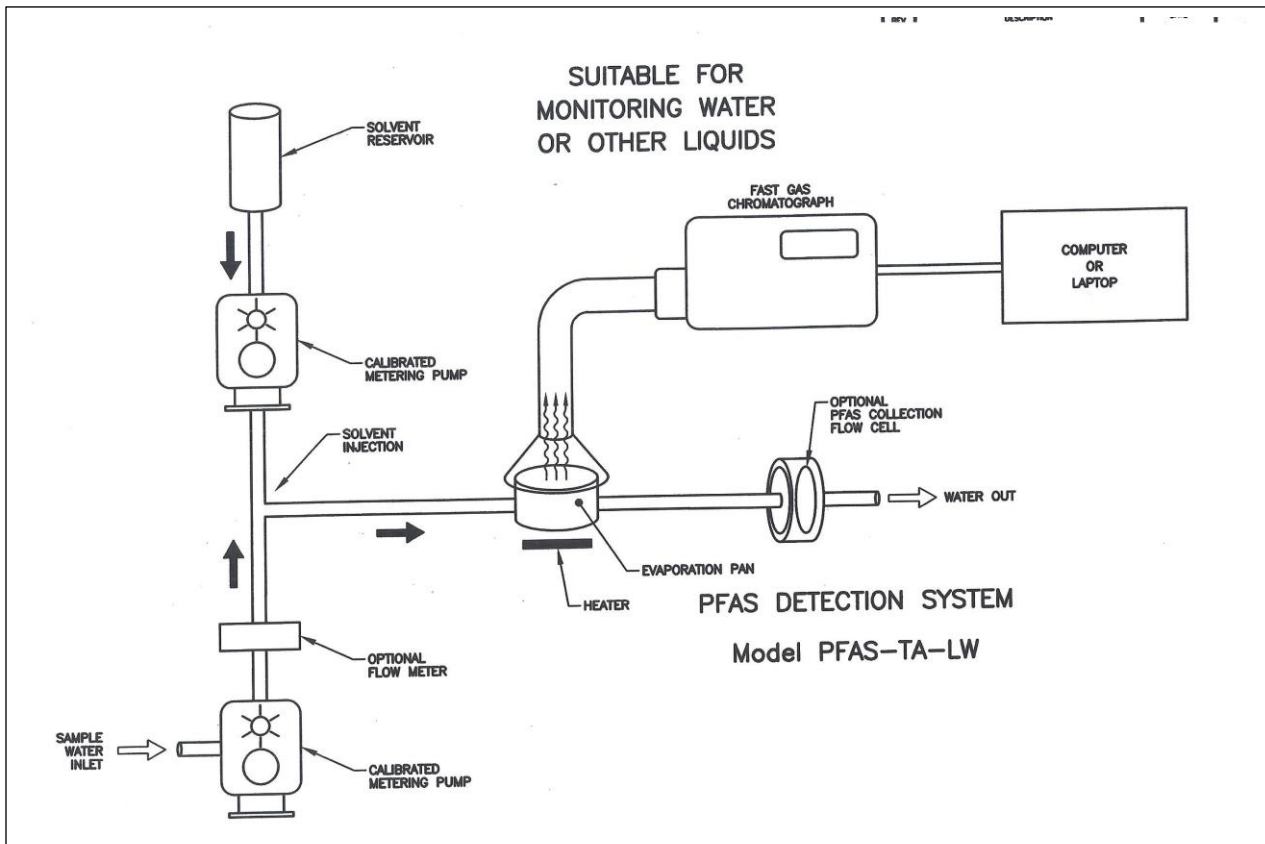
PFAS-TA-LWS (Lab - Water & Solids)

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FIELD ~ PFAS-TA-FW (Field - Water) ~ PFAS-TA-FA (Field - Air)

PFAS-TA-FWS (Field - Water & Solids)

PFAS WATER FLOW CHART LAB USE – PFAS-TA-LW



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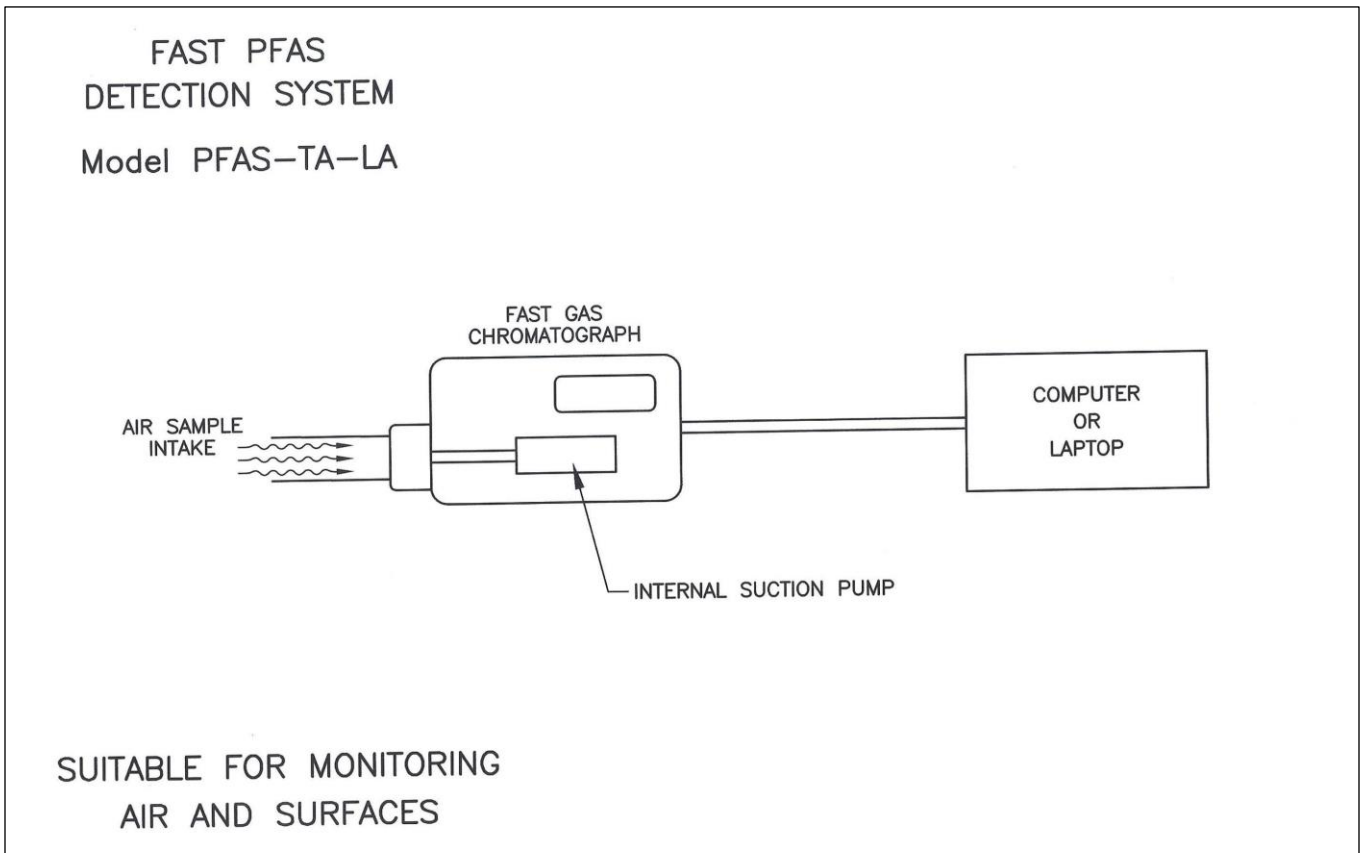
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## PFAS AIR FLOW CHART LAB USE – PFAS-TA-LA



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