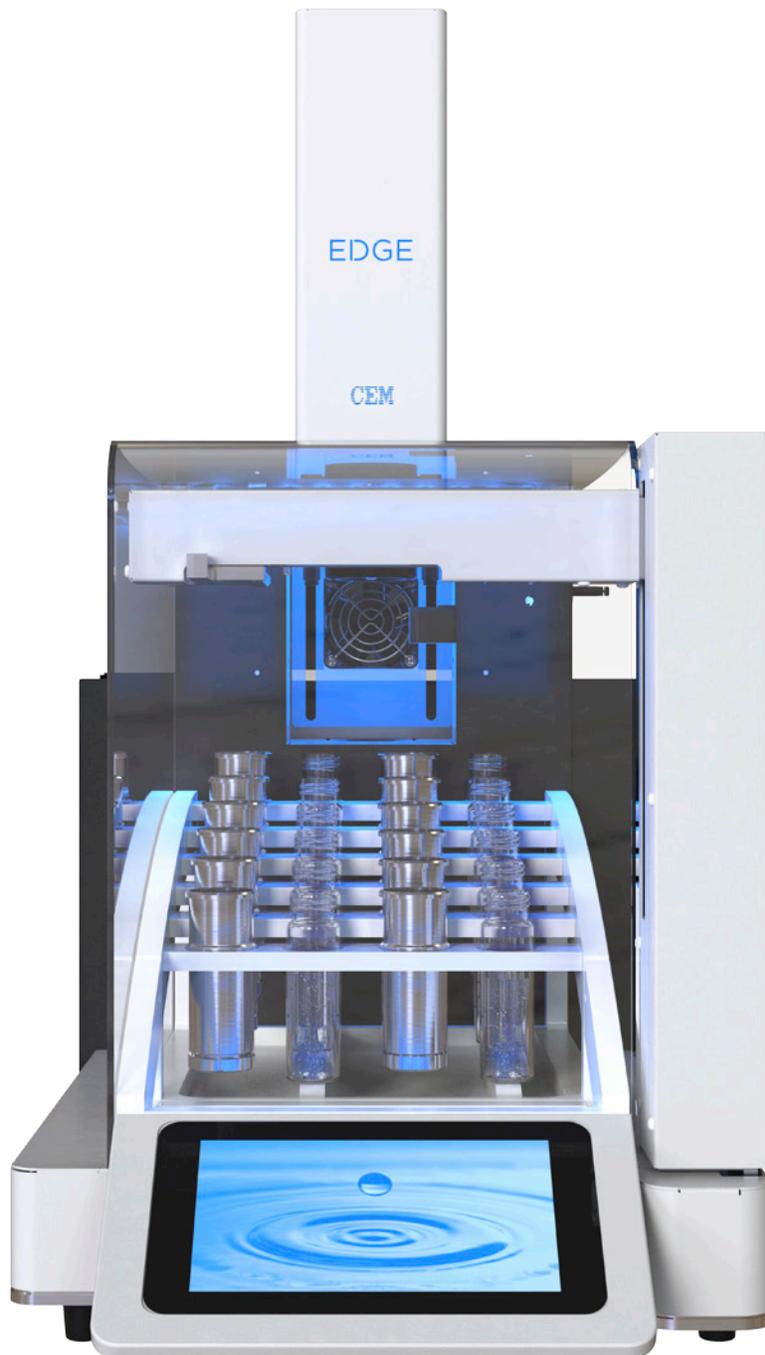
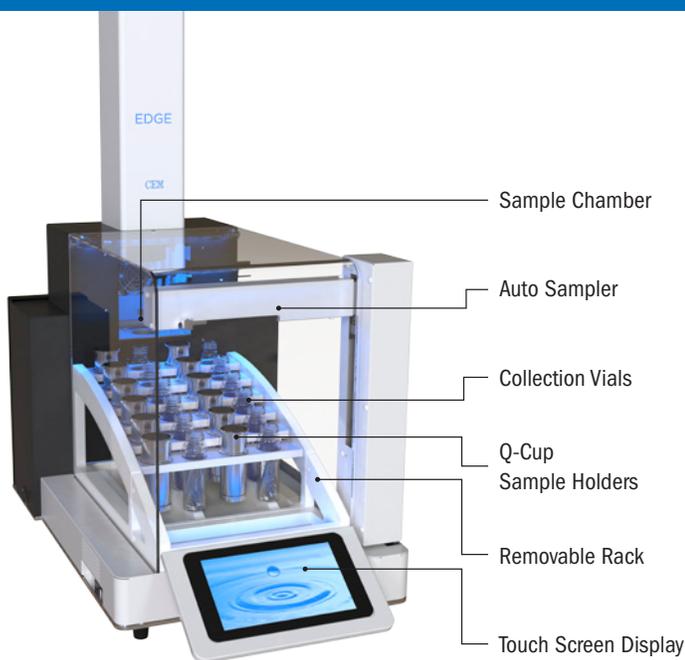


EDGE  
Energized Dispersive Guided Extraction





## The new leading EDGE of sample preparation.

The EDGE™ has revolutionized the extraction process for sample preparation. Extract up to 30 grams in only five minutes, including the filtering and cooling process; 6 times faster than other pressurized fluid extractors.

- Fastest technique available (5 minute cycle time)
- 12 samples in an hour (includes washing, filtering, & cooling)
- Q-Cups (sample holders) are easily assembled and cleaned
- Small footprint (about the size of an analytical balance)
- One technology with unlimited applications (Q-Cup technology)

# 20 times faster than most current techniques.

Technique	Time (minutes)	Solvent Usage (mL)	Cost Effective
EDGE	5	20	\$
Microwave	15	30	\$ \$
QuEChERS	20	23	\$ \$
Pressurized Fluid Extraction	30	21	\$ \$ \$
Soxhlet	360	150	\$ \$
Automated Soxhlet	120	90	\$ \$ \$
Ultrasonic	60	300	\$ \$

## The Q-Cup is a simple solution to a complicated problem.

The Q-Cup™ sample holder consists of just three easy-to-assemble pieces. The unique open cell concept creates a dispersive effect which promotes rapid extraction and filtration. No additional steps are required, prior to analysis.

## Load your samples in seconds.

Just add a Q-Disc™, screw on the bottom, and add your sample; it's that simple.



Q-Cup Side View



**Q-Cup Cylinder**

- up to 30 g sample and 40 mL extract
- made of ultra-thin aluminum for efficient heating
- light-weight and easy to use



**Q-Disc**



**Threaded Bottom**

Q-Cup Bottom View



## Cleaning

The simple design lends itself to easy cleaning.  
A quick rinse is all you need.

Q-Disc



## Disposable

The Q-Discs are disposable, eliminating the need to clean.

## Energized Dispersive Extraction

With Q-Cup technology, Energized Dispersive Extraction is simple and fast for all applications. Extract semi-volatile organic compounds from soil, fat from food, phthalates from plastics, and many more applications with EDGE.



Environmental



Food



Plastic



Consumer Products

## Energized Dispersive SPE

With Q-Cup technology, Automated Dispersive Solid-Phase Extraction (dSPE) is possible. EDGE is an alternative to QuEChERS for the extraction of pesticides. This new technology offers a more effective extraction and cleanup for difficult matrices.



Food



Pharmaceutical



### Flexible

Get better results with one technique.

- Dispersive Solid Phase
- Supported Liquid
- Pressurized Fluid
- Liquid

No need for multiple techniques for different samples, EDGE is the answer for all extractions, made possible by Q-Cup technology. No matter your technique, you'll extract a clear solution, ready for analysis.

### Compact

Its small size is a big advantage.

- The EDGE is only 14.25" wide

You can extract 48 samples an hour with 4 EDGE systems, easily placed side-by-side on one bench top.

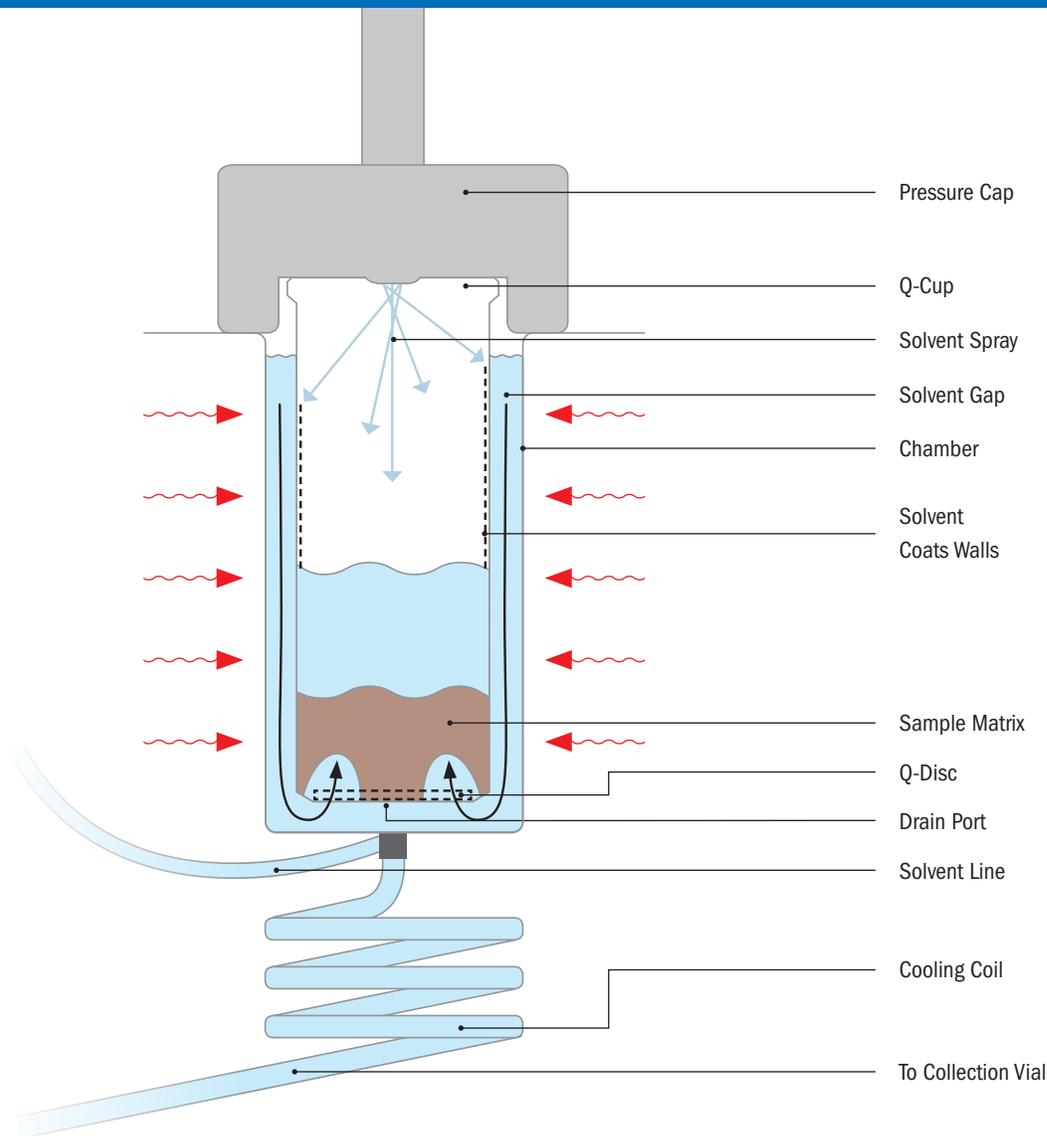




Just select a method  
and hit play.

Right on the home screen, you have access to the One Touch™ methods. These are the pre-installed methods that make programming the EDGE quick and simple.

# The EDGE Process



1

## Sample is Loaded

The Q-Cup is automatically loaded into the chamber by the auto sampler. The pressure cap then creates a pressurized seal on the top of the Q-Cup.

2

## Solvent is Extracted

Solvent is first added through the bottom to fill the gap between the chamber and Q-Cup, this aids in heat transfer. Then, solvent is added through the top of the Q-Cup to wet the sample.

As the chamber walls are heated, the pressure in the gap increases. This overcomes the pressure inside the Q-Cup, forcing the solvent to disperse into the sample.

3

## Extract is Collected

Once the sample reaches temperature, the solvent is dispensed through the Q-Disc, the cooling coil, and into a collection vial.

# EDGE Meets the Requirements of USEPA 3545

## Samples

- Soils
- Clays
- Sediments
- Sludges
- Waste Solids

## Contaminates

- Polychlorinated Dibenzo-p-Dioxins
- Semivolatile Organic Compounds
- Polychlorinated Dibenzofurans
- Organophosphorus Pesticides
- Organochlorine Pesticides
- Polychlorinated Biphenyls
- Chlorinated Herbicides
- Diesel Range Organics

## EDGE Data

Analyte	Sand	Clay	Loam
1,4 dichlorobenzene	94	98	93
hexachloroethane	91	94	88
4-methylphenol	82	91	85
nitrobenzene	86	101	95
hexachlorobutadiene	94	97	89
2,4,5-trichlorophenol	87	76	81
2,4,6-trichlorophenol	92	73	86
2,4-dinitrotoluene	85	85	86
hexachlorobenzene	86	84	82
pentachlorophenol	90	36	100

Recovery of difficult to extract semivolatile organic compounds from three different soil types.

% recovery based on soxhlet

## EDGE for Air Monitoring



PUF Plugs

The EDGE can extract absorbed polychlorinated biphenyls (PCBs) from polyurethane foam (PUF) plugs. Both large and small PUF plugs fit in the Q-Cup for easy extraction.

The EDGE can also easily clean PUF plugs quickly.



XAD Resin

The EDGE can extract priority pollutants from XAD resin. The dispersive ability of the Q-Cup is very effective with solid phase extraction materials.

EDGE makes the extraction and cleaning of the XAD resin easy and quick.

# EDGE for Pesticide Residue Analysis

## Food Samples

- Fruit
- Vegetables
- Meat
- Milk
- Nutraceuticals

## Pesticides

- Insecticides
- Herbicides
- Rodenticides
- Bactericides
- Fungicides
- Larvicides

## EDGE Results

Pesticide	Rice	Avocado	Strawberries
Tokuthion	87	86	93
Guthion	90	85	90
Dichlorvos	88	116	120
Methyl Parathion	95	107	107
Dursban	89	93	100
Ronnel	90	97	102
Disulfoton	92	89	92
Mocap	94	93	103

Percent recovery of spiked pesticides in rice, avocado, and strawberries.

# EDGE for Fat Analysis



The EDGE makes it simple to extract fat from food samples. A major advantage provided by its patented Q-Cup, is preservation of the sample for further processing. Additional methods, such as FAMES analysis or determining total fat in the sample are made possible.



### EDGE Rack

EDGE rack holds 12 Q-Cups and 12 collection vials. Includes 12 collection vials.



### Q-Cup

The Q-Cup sample holder consists of three easy-to-assemble pieces for use in the EDGE.



### Q-Disc

The Q-Discs are disposable, eliminating the need to clean. Various types of discs are available for different applications.



## Support for EDGE

You get more than an instrument.

Whenever you have a CEM instrument, you have access to a whole team of scientists and engineers that are ready to support you. We are here to make sure you succeed.

## Application Notes

Go to [cem.com/edge/app-notes](http://cem.com/edge/app-notes) to download EDGE application notes.

cem.com/edge/app-notes

**CEM** Application Note Extraction of Semi-Volatile Organic Compounds from Soil in Accordance with EPA 3545 Page 1 of 3  
ap0107

### Extraction of Semi-Volatile Organic Compounds from Soil in Accordance with EPA 3545



Major supplier of scientific instruments

Approximately \$100 Million in revenue

9 subsidiaries

300 associates

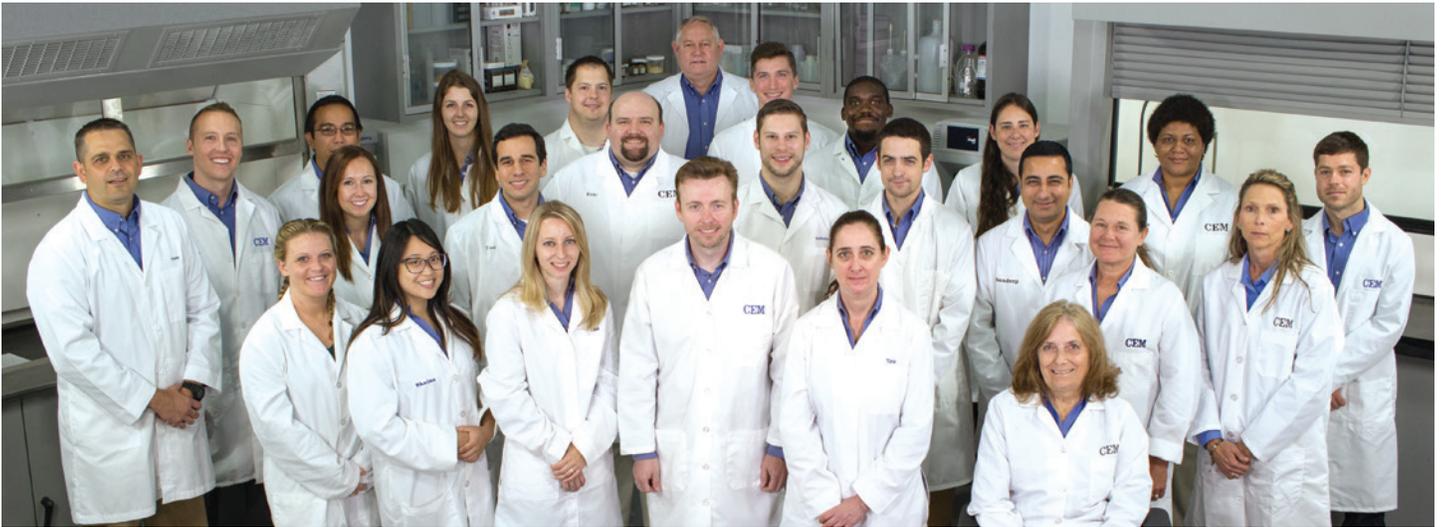
Over 50,000 systems sold worldwide



The #1 seller of microwave acid digestion systems; the MARS 6



CEM invests 11% of annual revenue in R&D, the result...  
11 R&D 100 awards  
and 300 patents



“Our passion is to disrupt markets with new solutions that provide speed and simplicity.”

**Michael J. Collins, PhD**  
President and CEO



[cem.com](http://cem.com)

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