



Agilent 5975T LTM GC/MSD

# PERFORM CONFIDENT, LAB-QUALITY ANALYSIS IN THE FIELD

The Measure of Confidence



**Agilent Technologies**

# Introducing the Agilent 5975T LTM GC/MSD

## Fast, reliable results for all of your out-of-lab analysis

You're looking at Agilent innovation on the move. The new **Agilent 5975T Low Thermal Mass (LTM) GC/MSD** is the first commercial transportable GC/MS system that delivers the same reliability, high performance and quality results as our high-end 5975 Series GC/MSD system. Yet it is much smaller – more than one-third smaller than the 5975 Series GC/MSD. Now you have a lab-quality GC/MS system that allows you to go into the field with confidence, knowing that you'll get the best performance, and the best results – anywhere – to help you make quick and accurate decisions.



### Take high-performance into the field with the most full-featured transportable GC/MS system available:

- Designed for quick response in the field
- 1.8 to 1050  $\mu$  mass range
- Gold true hyperbolic quartz quadrupole provides unsurpassed performance and reliability
- Rapid heating (up to 1200  $^{\circ}$ C/min) and cooling for faster analysis
- Support a variety of Agilent and 3rd party samplers to make sample preparation quick and easy

*The Agilent 5975T LTM GC/MSD is the industry's first high-performance, laboratory-quality GC/MS capable of field deployment anywhere in the world*

## Performance, speed, and reliability – all in one

The 5975T takes the outstanding performance and advanced design elements of the Agilent 5975 Series GC/MSD and seamlessly integrates them with our proprietary **Low Thermal Mass GC Technology (LTM)**. The result is a compact, high-performance, highly reliable GC/MS system for rapid analysis in the field. The 5975T incorporates an anti-vibration base for safer transport and was designed for easy installation or exchange of columns while on-site. Power consumption is only 50% of our bench top GC/MSD, making it ideal for mobile lab use.

## Faster analysis on-site

The 5975T uses Agilent's proprietary LTM technology to allow for faster GC analysis and higher sample throughput. By providing dramatically faster temperature ramp rates, LTM technology shortens GC cycle times, and makes it easier to deal with the varied and sometimes difficult analytical challenges you may face in the field. In addition, the 5975T leverages **DRS (Deconvolution Reporting Software)** and the **RTL (Retention Time Locking)** database to allow for faster screening and rapid analysis of compounds in the field.

## One system for both lab and field use

The 5975T is not only a powerful on-site monitoring GC/MSD system for rapid analysis in the field – it can also be applied to daily routine analysis in the lab. The 5975T supports a variety of samplers and was designed according to the same high performance standards we apply to any Agilent bench top GC/MSD, including a 1.8 to 1050  $\mu$  MS for the greatest range of applications, along with classical EI spectra and inert ion source. You can count on reliable, reproducible results – every time, everywhere, in the lab or in the field.

## Innovative technologies put speed, sensitivity, and powerful data mining tools within your lab's reach



### Transportable and highly reliable for quick response in the field.

Ideal for out-of-lab applications including Homeland Security, Environmental Monitoring, Food Safety and Forensic Science. **Page 8**



### Proprietary LTM technology.

Allows for direct, rapid heating and cooling for faster analysis and more productive GC and GC/MS. **Page 6**



### Flexible sampling.

7693A Automatic Liquid Sampler, CTC Sample Injector, Thermal Desorption, Headspace, Purge and Trap. **Page 11**



### Anti-vibration base.

The 5975T was quality tested for anti-vibration to meet the U.S. military MIL-STD 810 standard for ruggedness and transportability.



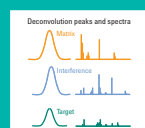
### Inert ion source.

Now programmable up to 350 °C – delivers enhanced response for active compounds and late eluters. **Page 6**



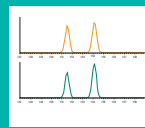
### Proprietary hyperbolic quadrupole.

Enhances performance; the unique stability of the quartz monolith allows the analyzer to be heated to 200 °C to eliminate contamination commonly seen at lower temperatures. **Page 6**



### Trace Ion Detection and second-generation Deconvolution Reporting Software (DRS).

Accurately identify and quantify trace components that coelute with other analytes or matrix peaks. **Page 7**



### Synchronous SIM/Scan mode.

Lets you selectively monitor for ions of interest with high sensitivity SIM while simultaneously acquiring library-searchable scan data. **Page 6**



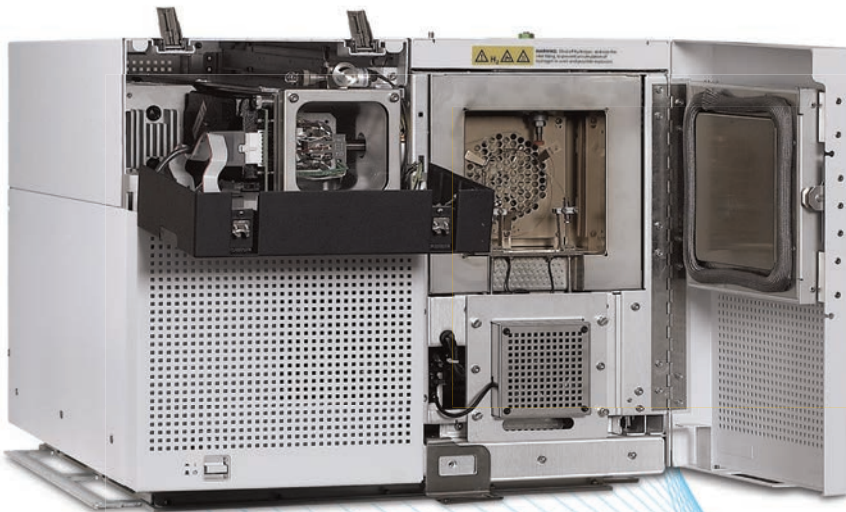
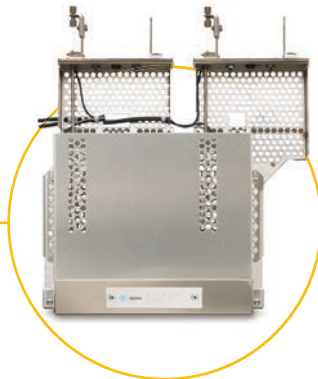
# Built on a history of superior Agilent performance to give you total reliability

In designing the industry's first commercial transportable GC/MS, we started with a foundation of high performance and total reliability.

Take the **Agilent 5975C**, the industry's leading MSD as shown by the greatest number of customer recommendations over the last 30 years.

Integrate Agilent's new patented, low power, high efficiency **Low Thermal Mass (LTM)** column technology, reducing the power requirement 46%, shrinking the footprint 38%, and reducing the weight 35%.

Include the familiar, easy-to-use **MSD ChemStation**, a software platform that has been proven with over 10 years of use by Agilent customers.

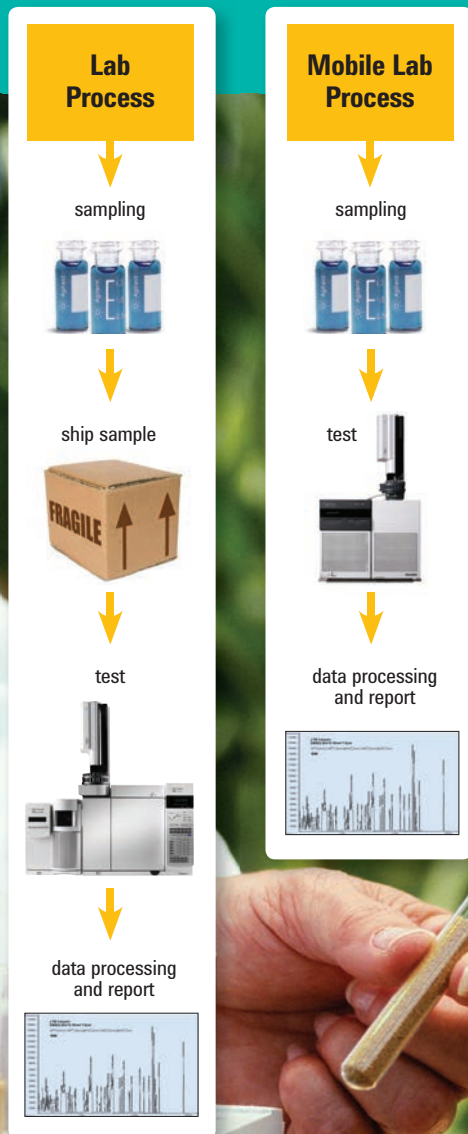


## Agilent 5975T LTM GC/MSD

The *industry's first* high performing, laboratory quality GC/MS capable of field deployment anywhere in the world.

## Advanced mobile technology allows for faster, more accurate results

The on-site capability of the Agilent 5975T significantly reduces the amount of time it takes to get results. The need to ship samples is eliminated. Decisions can be made in a shorter time. Because samples are processed on-site, they are not subject to sample degradation or contamination that may occur during shipping or storage.



## Reduce equipment expenses by using one system for both in-lab and mobile analysis

The versatility of the Agilent 5975 LTM GC/MSD is a major benefit for any lab that must balance equipment needs with budget concerns. For example, your lab may want the ability to provide rapid in-field analysis when needed. However, the majority of your analysis is still done in the lab.

Thanks to the 5975T, there is no need to choose between a bench top and a mobile GC/MSD. That's because high performance standards make the 5975T equally suitable for field analysis or routine analysis in the lab. You get more use – and more value – from one reliable GC/MSD, backed by Agilent's reputation for high performance and superior quality.



### Less start up time allows rapid field response

Vacuum-keeping technology is used to keep the 5975T system in a vacuum state even after the system is turned off. This allows the instrument to be up and running in less time, saving you at least 1 hour when compared to conventional systems.



### The 5975T features energy-efficient, "green" technology

Labs today are focused on energy-efficient instrumentation and environmentally friendly practices.

Agilent has responded with advanced instrumentation like the 5975T, with 46% less power consumption, 38% smaller footprint, and 35% less weight.

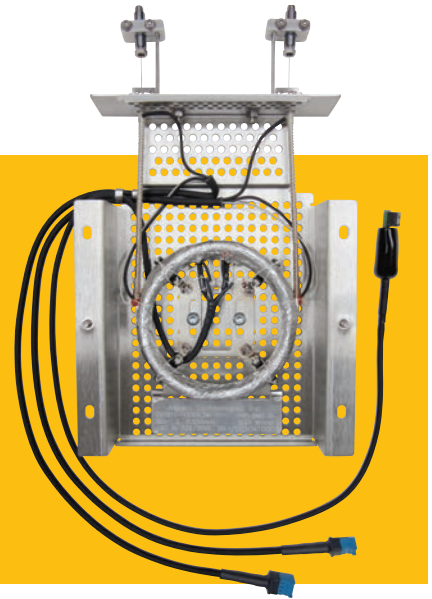
To learn more about the Agilent 5975T LTM GC/MSD, visit [www.agilent.com/chem/5975T](http://www.agilent.com/chem/5975T)

# Advanced technology allows for faster analysis with total reliability

## Agilent's patented LTM technology allows for faster analytical cycle times

The 5975T takes advantage of Agilent's proprietary LTM technology, which eliminates the conventional GC oven by wrapping the GC column with a heating element and temperature sensor. These columns provide rapid heating (the maximum ramp rate can reach 1200 °C/min) and fast cooling of the column for higher throughput.

In addition, the LTM GC/MSD system requires less power compared with a conventional GC, reducing the required power supply from the mobile lab.



## Solid inert ion source up to 350 °C for optimal system performance

Agilent's proprietary inert source is now programmable up to 350 °C to provide enhanced response for active compounds and late-eluters – including pesticides. It delivers exceptional impact ionization, and lets you run sample after sample with complete confidence. The inert source eliminates surface activity reactions, for more reliable library matches, and requires less cleaning.



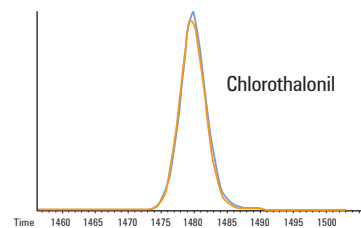
## Proprietary hyperbolic quadrupole for maximum reliability in the field

The true hyperbolic quartz structure offers extremely low thermal expansion and exhibits excellent dimensional stability. The unique design results in lower field errors versus round quadrupoles, as well as excellent resolution and mass axis stability, regardless of temperature fluctuations. The submicron-layered gold hyperbolic electrode surfaces give maximum transmission while maintaining resolution across the full mass range, up to 1050  $\mu$ .

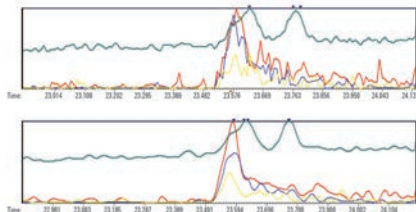


## Synchronous SIM/Scan function allows for better sensitivity and faster matching

Now you can capture SIM data and full-scan data in the same acquisition. You get the improved sensitivity of SIM mode and – thanks to Agilent's AutoSIM software – this data is automatically converted into SIM or SIM/Scan parameters so that you can easily search against commercially available spectral libraries for faster match confirmation. This is especially important in out-of-lab situations where fast analysis is critical. SIM dwell times can be set in 1 msec increments from over 100 sec to as low as 1 msec dwell time.



**No sensitivity loss in SIM.** The overlay above compares SIM-only acquisition (blue) to the SIM signal from a synchronous SIM/Scan acquisition (gold)



**Analysis of Fenamiphos.** Without Trace Ion Detection enabled (top) the compound of interest was missed. Trace Ion Detection is activated (bottom) revealing a clear hit for Fenamiphos

## Trace Ion Detection for reliable analysis of complex matrices

Innovative Trace Ion Detection technology lets you lower Method Detection Limit (MDL), as well as your Limit of Quantitation (LOQ). This reduces false negatives and ensures more reproducible baselines. The technology dramatically reduces the number of manual interventions during peak integration. You get better spectral fidelity for faster results when doing library matching.

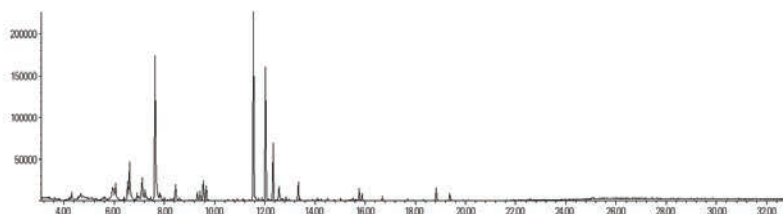
## Deconvolution Reporting Software (DRS) reduces data review time from hours to minutes

Save hours of analysis time and review. Agilent's simple, easy-to-use DRS works with Agilent MSD ChemStation software to quickly find compounds that traditional analysis packages might miss. In fact, it reduces hours of tedious work to minutes of unattended computer analysis.

DRS automates:

- Quantitation by target compound analysis software
- Spectral Deconvolution, or "cleaning" of full-scan spectra
- Library searching of cleaned spectra

### Agilent Bond Elut QuEChERS extract of soil sample using DRS Report



R.T.	Cas #	Compound Name	Amount (ng)		AMDIS		NIST	
			ChemStation	AMDIS	Match	R.T. Diff sec.	Reverse Match	Hit Num.
25.088	205992	Benzo[b]fluoranthene	0.03		99	-4.56	85	5
25.163	207089	Benzo[k]fluoranthene	0.02		99	-0.6	85	5
25.810	50328	Benzo[a]pyrene	0.01		98	-5.9	93	6
28.9685	193395	Indeno[1,2,3-cd]pyrene			87	-2.6	87	1
29.124	53703	Dibenz[a,h]anthracene	0.01		99	-2.2	85	5
29.8481	191242	Benzo[ghi]perylene	0.03		95	-2.1	87	2

Using the Bond Elut extraction QuEChERS kit as sample pretreatment technique for PAHs analysis in soil reduced preparation time to only 20 minutes, with a DRS report generated in 30 seconds

## Ensure rapid identification with Agilent's Retention Time Locking (RTL) database

After finding a compound with DRS, you can use RTL for fast identification. Agilent's RTL databases include spectra and retention time for a wide range of compounds across many applications, including:

- PAHs
- Flavors
- VOCs
- PCBs
- FAMES
- Semi-VOCs
- Pesticides and Endocrine Disruptors
- Hazardous Chemicals
- Japanese Positive List Pesticides



To learn more about the Agilent 5975T LTM GC/MSD, visit [www.agilent.com/chem/5975T](http://www.agilent.com/chem/5975T)



# The Agilent 5975T delivers rapid, reliable results across a wide range of applications

The 5975T offers high reliability and fast analysis even under challenging on-site conditions, making it the ideal GC/MSD system for fast response in the field.

**Homeland Security** – fast and highly accurate results for chemical warfare analysis (CWA), explosive, or toxic industrial chemicals for first-responders or military and homeland security officials.

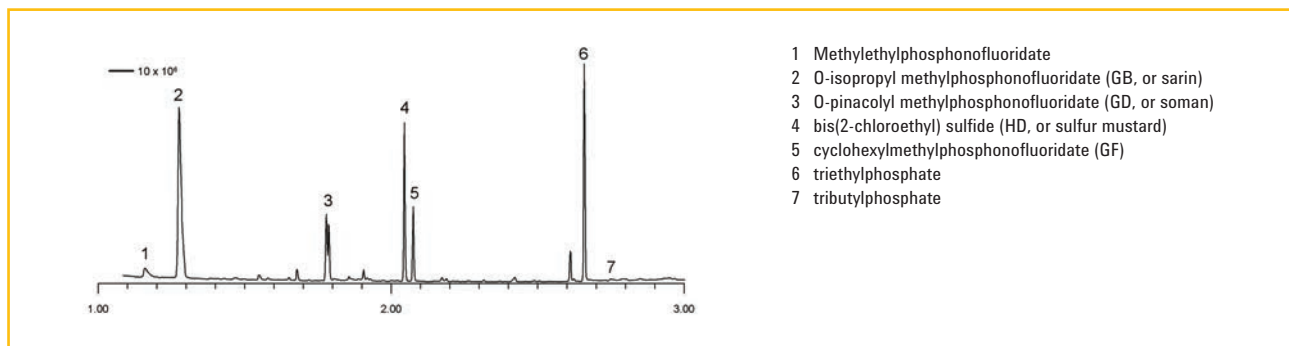
**Environmental monitoring** – analysis of VOCs in the air; VOCs and semi-VOCs in drinking water, source water or other surface water; emergency environmental pollution accident monitoring.

**Food Safety** – pesticide screening of crops in the field, food quality testing.



## Detection of chemical warfare agents by transportable GC/MS

The ability to quickly and accurately identify extremely dangerous chemicals is important for protection of the general public, first responder personnel, and deployed military forces. As shown below, the 5975T system is capable of rapidly separating a mixture containing O-isopropyl methylphosphonofluoridate (GB, or sarin), O-pinacolyl methylphosphonofluoridate (GD, or soman), bis(2-chloroethyl) sulfide (HD, or sulfur mustard), cyclohexyl methylphosphonofluoridate (GF), and O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothiolate (VX).



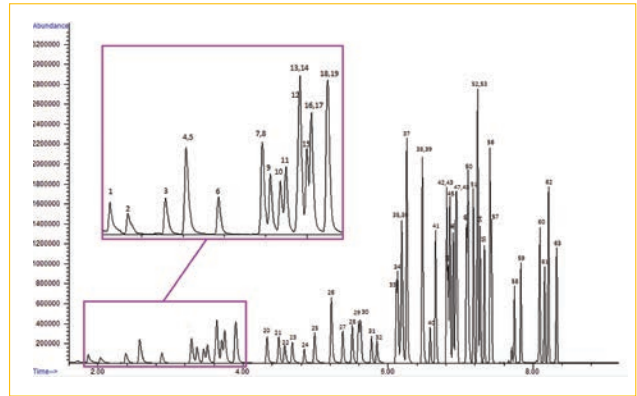
Liquid injection (about 10 ng for each CWA) analysis results show a chromatogram without matrix peaks related to the carpet material and SPME fiber coating

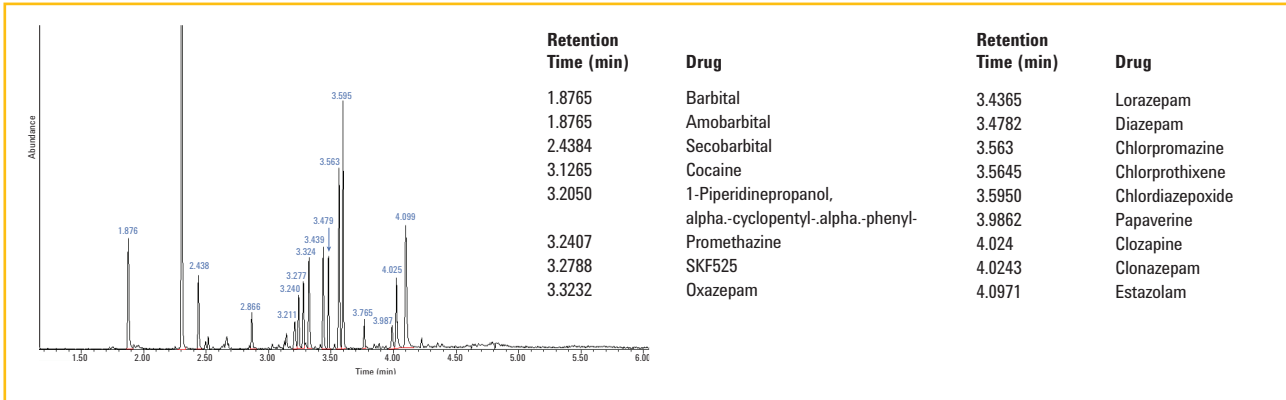




## Field analysis of VOCs in ambient air by Mini TD

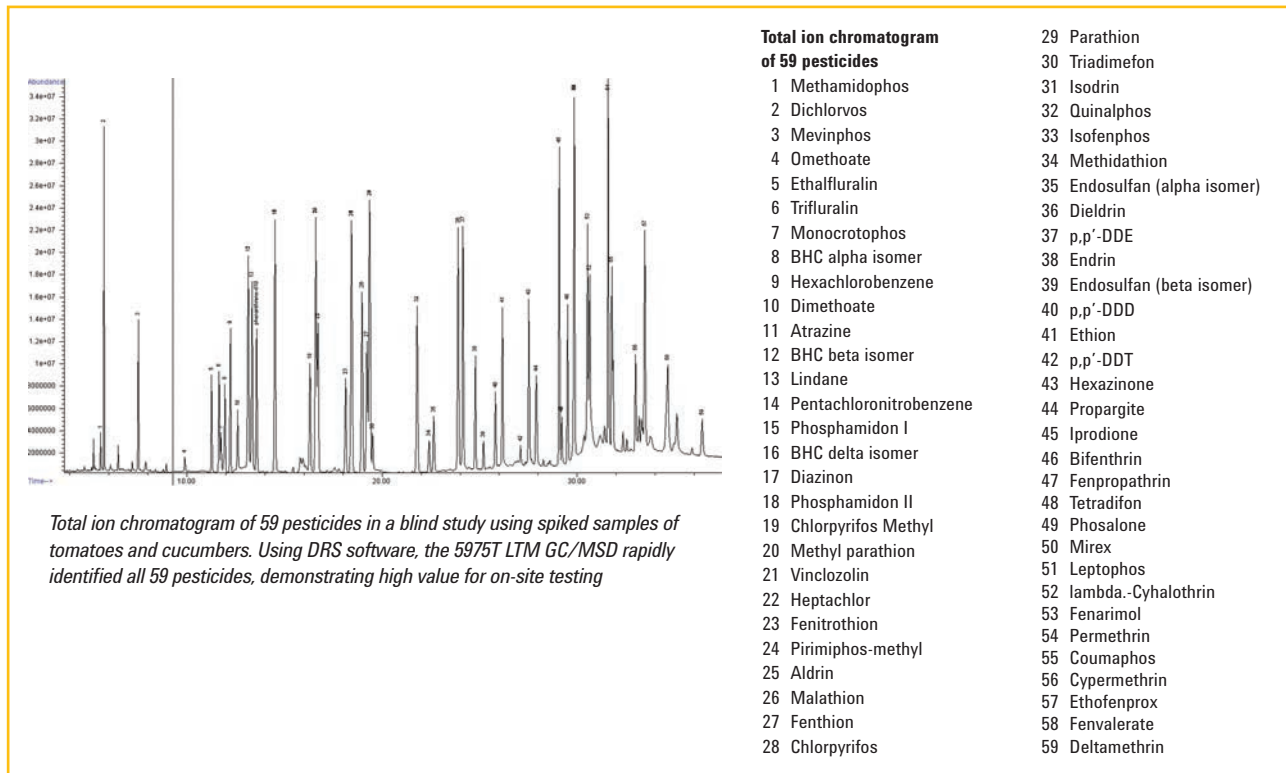
In our analysis, the 7667A Mini TD and 5975T detected more than 60 VOC compounds including CFCs (chlorofluorocarbon), hydrocarbons, and aromatics in one injection *with less than 15 minutes* of cycle time. Accurate and economical quantitative measurement solutions can be provided by liquid standard calibration. Automated on-line sampling makes on-site analysis faster and easier to operate.

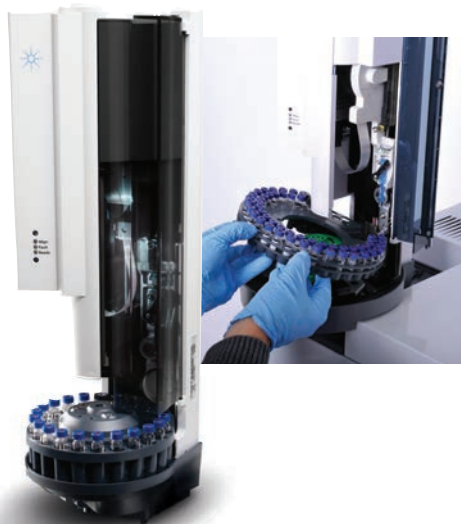




### A blind study of pesticides in vegetables

The 5975T represents a significant advantage for labs conducting food-safety analysis in the field. In the case shown below, the 5975T was used with Agilent's DRS software, RTL pesticides library and simple, low-cost QuEChERS sample preparation to allow for a fast identification of pesticides.





## Boost productivity even more with these 5975T accessories and options

The 5975T is compatible with a variety of Agilent and third-party samplers to allow for the fastest processing possible – depending on your requirements for field and lab application – such as, 7667A Mini TD, Thermal Separation Probe (TSP), Capillary Trap Sampler (CTS), Auto liquid samplers 7693A and 7650A, headspace, purge and trap, CTC, SPME, and more.

### Agilent's 7693 Series Automatic Liquid Sampler (ALS) delivers the fastest injection times of any GC autosampler

The Agilent 7693 Series ALS quickly installs on your 5975T, allowing for greater solvent capacity and multiple sampling options – all using certified autosampler vials.

### Agilent's 7667A Mini Thermal Desorber lets you perform fast, confident gas sample introduction in the field

With its small bench space and energy efficiency, Agilent's 7667A Mini TD is designed for mobility, making it ideal for routine screening or on-site crisis applications. Its on-tube heating rates of up to 1200 °C per minute reduce cycle time, while integrated software with OpenLAB ChemStation (or EzChrom and MassHunter) simplifies operation when time is short.

The Agilent 7667A Mini TD is also the first thermal desorber developed by Agilent, so it is based on decades of insight about out-of-lab analysis.



### TSP – A fast and easy alternative MS probe for analyzing solid, liquid, and slurry samples

The Agilent Thermal Separation Probe (TSP) puts quick sample analysis at your fingertips, with a simple and clean process:

- **Little or no sample preparation** is required
- **Eliminates the risk of contamination** problems associated with traditional direct sample probes



### Capillary Trap Gas Sampler (CTS) puts sampling at your fingertips – no matter where your analysis takes you

This portable sampler makes it simple to perform trace-level (ppb-ppm) gas sampling *in the field*, and offers these unique advantages:

- **Convenient handheld design** lets you take your CTS to any sampling spot.
- **Outstanding speed – only requires several seconds to minutes per sample.** Agilent's CTS is based on kinetic sampling that quickly concentrates trace-level airborne compounds and does not require lengthy equilibration.
- **Low system and operational costs** when you combine the CTS with a TSP to desorb trapped trace-level toxic compounds from your GC/MS system.



To learn more about the Agilent 5975T LTM GC/MSD, visit [www.agilent.com/chem/5975T](http://www.agilent.com/chem/5975T)



### GC/MS software to fit your application and your workflow

The Agilent MSD Productivity ChemStation makes it easy even for non-expert operators to take advantage of the advanced capabilities of the Agilent 5975T system. It's designed to help you make the most of every run – in the lab or in the field.



#### Agilent ranked #1 in compliance!

An independent 2007 LCGC magazine survey across Europe and North America ranked us No. 1. Agilent is the preferred choice in general Compliance Services, Instrument Qualification, and Software Validation.



Learn how the Agilent 5975T LTM GC/MSD can deliver the rapid, reliable results you need in the field or in the lab

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