Finding the Needle in the Haystack. It's Time.

Pesticide Library for Agilent 6890
Gas Chromatograph GC Systems

Agilent Technologies

Pesticide identification:
it takes a detective

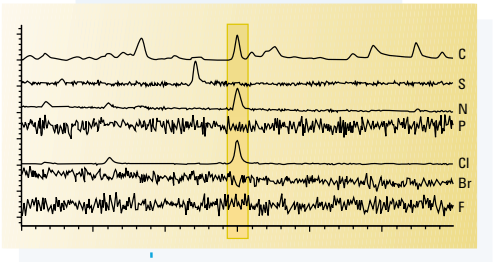
Making sure that there are no prohibited pesticides in food or environmental samples, or that legal pesticides are within allowed limits, can require the skills of a master detective. Over 700 pesticide compounds are regulated worldwide, but typical pesticide screening programs search for only 100 or fewer.

Furthermore, when you find a pesticide, you may not be able to identify it because it is not on your list of targeted pesticides.

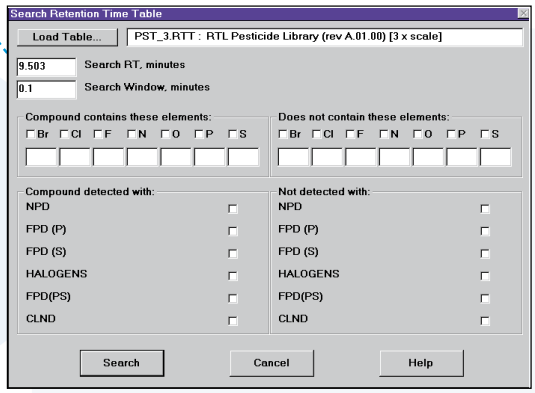
Often samples need to be run on two or more gas chromatographs (GC) with element-selective detectors and a GC/mass spectrometer (MS) system for tentative identification and confirmation. To complicate this process, retention times may vary from GC to GC, even when using the same method. And there is even more variation between GC/selective detector and GC/MS retention times. Because the chromatograms do not look alike, confirming selective peaks by GC/MS is difficult and time-consuming.

Until Agilent Technologies invented retention time locking and retention time library searching.

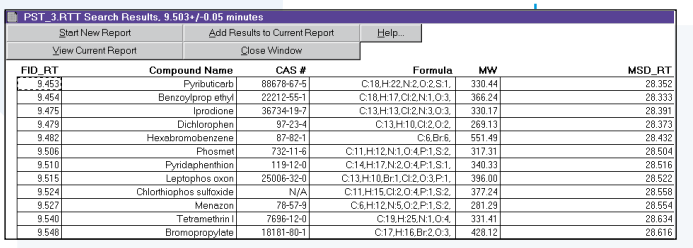
1 **An unknown peak appears at 9.503 minutes in the locked chromatogram (run three times faster than conventional speed).**



2 **You can search the Agilent pesticide library for peaks within ± 0.05 minutes of the unknown peak's retention time.**



3 **This narrows your search from hundreds to only 12 possibilities.**



PST_3.RTT Search Results, 9.503+/-0.05 minutes

Start New Report | Add Results to Current Report | Help...
View Current Report | Close Window

FID_RT	Compound Name	CAS #	Formula	MW	MSD_RT
9.453	Pyributicarb	88678-67-5	C18,H22,N2,O2,S1,	330.44	28.352
9.454	Benzoylprop ethyl	22212-55-1	C18,H17,Cl2,N1,O3,	366.24	28.333
9.475	Iprodione	36734-19-7	C13,H13,Cl2,N3,O3,	330.17	28.391
9.479	Dichlorophen	97-23-4	C13,H10,Cl2,O2,	269.13	28.373
9.482	Hexabromobenzene	87-82-1	C6,Br6,	551.49	28.432
9.506	Phosmet	732-11-6	C11,H12,N1,O4,P1,S2,	317.31	28.504
9.510	Pyridaphenthion	119-12-0	C14,H17,N2,O4,P1,S1,	340.33	28.516
9.515	Leptophos oxon	25006-32-0	C13,H10,Br1,Cl2,O3,P1,	396.00	28.522
9.524	Chlorthiophos sulfoxide	N/A	C11,H15,Cl2,O4,P1,S2,	377.24	28.558
9.527	Menazon	78-57-9	C6,H12,N5,O2,P1,S2,	281.29	28.554
9.540	Tetramethrin I	7696-12-0	C19,H25,N1,O4,	331.41	28.634
9.548	Bromopropylate	18181-80-1	C17,H16,Br2,O3,	428.12	28.616

The ideal
pesticide screening tool

Agilent's pesticide library contains the locked retention times of more than 560 pesticides (including suspected endocrine disrupters). These pesticides—from the U.S., Europe, Japan, and elsewhere—are the prominent pesticides used in various parts of the world.

Combined in a single system with an Agilent 6890 GC and an atomic emission detector (AED), this powerful tool lets you narrow your choices to three or fewer. And in many cases, to only one. In addition, the system can give you element ratios for even more confidence in your results.

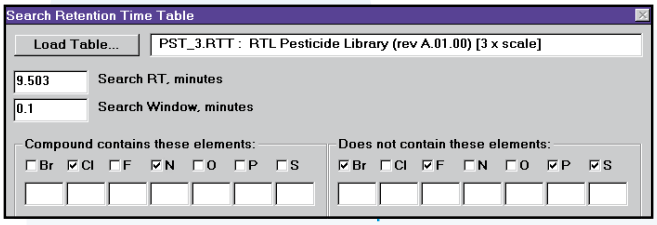
Even using multiple 6890 GC systems with various element-selective detectors, such as flame photometric or nitrogen phosphorus detectors, can restrict the number of possibilities from hundreds to a handful.

Either way, GC/MS confirmation is faster, easier, and more accurate because retention time locking keeps the retention time of unknown peaks exactly the same from instrument to instrument. And exactly the same as in the pesticide library.

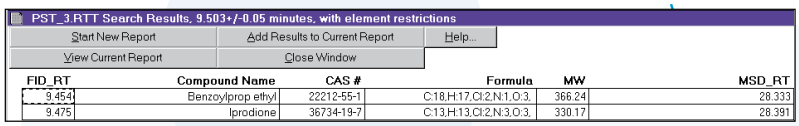
Using the comprehensive pesticide library with retention time locking, you can realize:

- Safer foods and food products
- Increased compliance by greatly improving your likelihood of detecting and identifying regulated pesticides and suspected endocrine disrupters
- Faster sample turnaround times by providing faster analyses and more confidence in results.

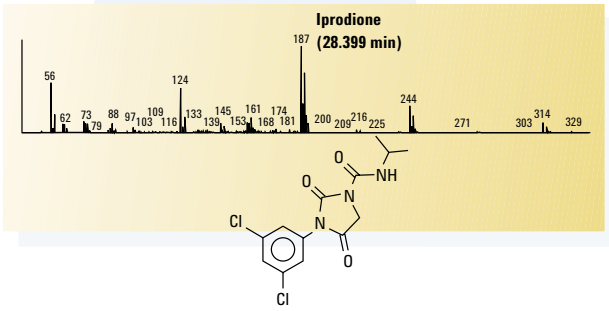
4 **You can narrow the search even further using information from an AED or other element-specific detectors.**



5 **You are now down to only two possibilities.**



6 **GC/MS run at conventional speed tells you that the unknown peak is Iprodione.**



Flexibility to
customize your library

The pesticide library allows you to add your own information. You can include your own internal numbering system, for example, or list characteristic mass spectral data or append comments, if you like.

You can add new compounds to the library to increase its effectiveness in identifying your samples.

You can even add common interferences to enhance the accuracy of identifications.

Agilent Columns and Supplies—The Perfect Fit

Agilent columns are ideal for retention time locking because of their excellent reproducibility, stability, and quality.

For greater confidence in all of your GC results, you can optimize your total system with quality Agilent columns and supplies—the perfect fit for your Agilent instrument. A wide range of GC columns, supplies, kits, and accessories is designed, manufactured, and tested to rigorous Agilent specifications, under a quality system registered to ISO 9001. Why risk compromising your analytical results with anything less than genuine Agilent consumables?

What is Retention Time Locking?

The Agilent 6890 GC system with EPC offers unrivaled temperature and pressure control, which makes retention time locking possible.

Once a method is developed, you select one compound—which becomes the locking compound—in your usual standard to establish the pressure versus retention time relationship using our retention time locking software. Once developed, this information can be used to lock the method on any Agilent 6890 GC system with electronic pneumatics control.

Agilent has developed locked pesticide methods using a 30 m x 0.25 mm x 0.25 µm HP-5MS column. One method is for the Agilent GC/mass selective detector (MSD); two others offer faster analysis for GC screening. All the methods and the column are included with the pesticide library.

Once you re-lock the Agilent method on your 6890 GC system, you can search the pesticide library for retention time windows as small as tenths or sometimes hundredths of a minute.

Retention time locking lets you:

- Reproduce retention times exactly from day to day.
- Set up different GCs and get the same retention times with the same method.
- Match GC, GC/AED, and GC/MSD retention times.

For More Information

For more information about the Agilent pesticide library or Agilent retention time locking, call toll-free: 1-800-227-9770 in the U.S. and Canada. In other countries, please call your local Agilent analytical sales office or authorized Agilent distributor.

Or visit our World Wide Web site at: http://www.agilent.com

The Agilent 6890 GC system software has been designed and manufactured under a quality system that has been registered to ISO 9001.

Information, descriptions, and specifications in this publication are subject to change without notice.

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