

GC Analysis of US EPA Method 619 Triazine Herbicides Using the Rtx[®]-CLPesticides and Rtx[®]-CLPesticides2 Columns

Triazine herbicides have risen in usage due to their lower toxicity and less persistence in the environment as compared to the chlorophenoxy herbicides (US Environmental Protection Agency Method 8151). The US EPA Method 619 is a test commonly performed by environmental laboratories for the analysis of triazine herbicides in wastewater. Although this method was written for use with packed columns, capillary columns have all but replaced them in modern laboratories performing this method.

Even when using capillary columns, separation of the 11 target compounds listed in Method 619 can be difficult due to their similar structures. Most common capillary column stationary phases do not have adequate selectivity to resolve these compounds, and a confirmation column of different selectivity can be difficult to find.

Restek specifically designed the Rtx[®]-CLPesticides and Rtx[®]-CLPesticides2 columns for the analysis of the organochlorine pesticides. These stationary phases are highly selective for compounds that contain electronegative substituents and, correspondingly, work well for the analysis of chlorophenoxy herbicides, PCBs, and the analytes listed in US EPA Method 619 (Table 1).

Figure 1 shows the analyses of Method 619 target compounds on the Rtx[®]-CLPesticides and Rtx[®]-CLPesticides2 columns, connected in parallel in the same GC oven using a 'Y' Press-Tight[®] connector. This configuration is beneficial because both the primary and confirmation analysis is performed under the same conditions, at the same time, using a single injection port. The combination of the Rtx[®]-CLPesticides and Rtx[®]-CLPesticides2 columns resolves all target compounds in less than 24 minutes. These stationary phases are thermally stable to

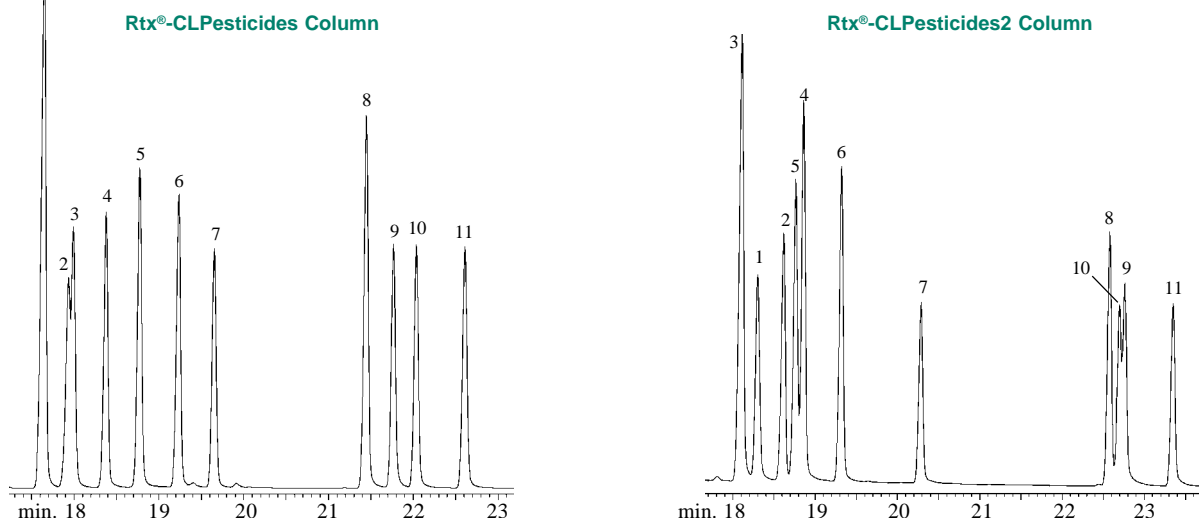
Table 1

Compounds Determined by US EPA Method 619

Peak	Compound	CAS No.
1	prometon	1610-18-0
2	simazine	122-34-9
3	atraton	1610-17-9
4	propazine	139-40-2
5	atrazine	1912-24-9
6	terbuthylazine	5915-41-3
7	secbumeton	26259-45-0
8	simetryn	1014-70-6
9	ametryn	834-12-8
10	prometryn	7287-19-6
11	terbutryn	86-50-0

Figure 1

The Rtx[®]-CLPesticides and Rtx[®]-CLPesticides2 columns, connected in parallel, resolve all EPA Method 619 target compounds in less than 24 minutes with a single injection.



30m, 0.32mm ID, 0.50 μ m Rtx[®]-CLPesticides (cat.# 11139) and 30m, 0.32mm ID, 0.25 μ m Rtx[®]-CLPesticides2 (cat.# 11324) with a 5m, 0.32mm ID guard column (cat.# 10044) and a 'Y' Press-Tight[®] connector (cat.# 20403). Direct injection using a Uniliner[®] sleeve (cat.#21303) and adaptor for an HP 5890 (cat.# 20964). **On-column concentration:** 50pg each compound. **Oven temp.:** 100°C to 250°C @ 4°C/min. (hold 5 min.);

Inj./det. temp.: 250°C/NPD @275°C; **Carrier gas:** hydrogen, 9.65psi constant pressure; **GC:** HP 6890 with purged packed injection port.

330°C, allowing for “bake-out” of any high-boiling contaminants, which extends column lifetime and minimizes baseline instability.

Restek’s Rtx®-CLPesticides and Rtx®-CLPesticides2 columns provide the complete solution to analyze chlorinated pesticides,

herbicides, PCBs, and now US EPA Method 619 compounds. If your laboratory is analyzing samples using these methods, and would like more information, please contact Restek’s Technical Service Team at 800-356-1688 or 814-353-1300, ext 4.

Product Listing

Rtx®-CLPesticides Columns

ID	df (µm)	Stable to	15m	30m
0.25mm	0.25	340°C	11120	11123
0.32mm	0.50	340°C	11136	11139
0.53mm	0.50	340°C	11137	11140

ID	df (µm)	Stable to	10m	20m
0.18mm	0.18	340°C	42101	42102

Rtx®-CLPesticides Column Kits

These kits include both a CLPesticides and CLPesticides2 column, a Universal Angled ‘Y’ Press-Tight® Connector, and a 5m guard column. (Note: Columns are not preconnected in these kits.)

Description	cat.#
0.53mm ID Rtx®-CLPesticides Kit	11197
0.32mm ID Rtx®-CLPesticides Kit	11198
0.25mm ID Rtx®-CLPesticides Kit	11199

Universal ‘Y’ Press-Tight® Connectors

20405, each 20406, 3-pk.

Universal Angled ‘Y’ Press-Tight® Connectors

20403, each 20404, 3-pk.

Rtx®-CLPesticides2 Columns

ID	df (µm)	Stable to	15m	30m
0.25mm	0.20	340°C	11320	11323
0.32mm	0.25	340°C	11321	11324
0.53mm	0.42	340°C	11337	11340

ID	df (µm)	Stable to	10m	20m
0.18mm	0.14	340°C	42301	42302

5m Phenylmethyl-Deactivated Guard Columns

ID (mm)	cat.#
0.25	10043
0.32	10044
0.53	10045

Uniliner® Direct Injection Sleeves for HP GCs

4mm ID x 6.3mm OD x 78.5mm Length	
20335, each	20336, 5-pk.

Additional Applications Notes from Restek!

- Cat.# 59539... *GC Analysis of US EPA Method 504.1 Organochlorine Pesticides using the Rtx®-CLPesticides and Rtx®-CLPesticides2 Columns.*
- Cat. #59547... *GC Analysis of US EPA Method 8081A Chlorinated Pesticides Using Rtx®-CLPesticides and Rtx®-CLPesticides2 Columns.*
- Cat. #59559... *Optimizing the Analysis of Chlorophenoxy Herbicides.*

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