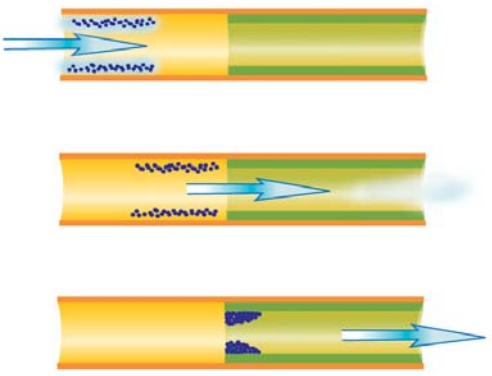
Contamination can cause active sites as well as change the conditions of the focusing zone of the analytical column. Both conditions will adversely affect the chromatography. Another advantage of the guard column is when a section is trimmed for maintenance the resolution of closely eluting compounds will not be affected because the guard column is not a contributor to the resolving power of the analytical column. This allows for a longer lifetime of the analytical column, and replacing only the guard column when it becomes too short.

AJ Saclyn
Associate Product Marketing Manager

Figure 2 Retention gaps are used to focus components in a tight band at the beginning of the analytical column



a) Sample introduction: liquid film of solvent and sample are deposited in the first length of capillary.

a) Sample introduction: liquid film of solvent and sample are deposited in the first length of capillary.

c) When target compounds come in contact with the stationary phase, they are refocused on the analytical column, resulting in a narrow initial band width.

In summary, the retention gap and guard column are essentially the same products, but are used for different purposes. The deactivated tubing helps focus target analytes at the head of the analytical column for on-column and splitless injections, and also prevents nonvolatile material from contaminating the head of the analytical column.

What type of guard column should be used?

When using a guard column, it is important to match the polarity of the solvent and the polarity of the surface deactivation. Intermediate-Polarity (IP) is good for a wide variety of applications and allows most common solvents (methylene chloride, hexane, isooctane, toluene) to easily wet and create a uniform film on the tubing surface. If more polar solvents such as methanol or water are used, a polar-deactivated guard column is recommended to allow the solvent to wet the tubing surface. Polar-deactivated guard columns are not resistant to harsh "water vaporization" that occurs when water in the liquid state is injected into the tubing and rapidly vaporizes (such as in steam cleaning). Hydroguard™ deactivation is an alternative for direct aqueous injections. However, a Hydroguard™-deactivated guard column will not allow polar solvents to wet the tubing surface, and may cause beading of the solvent if the oven temperature is 20°C below the solvent boiling point.

Siltek® deactivation creates a highly inert surface for very active compounds such as chlorinated pesticides. Base-deactivated guard columns reduce adsorption and tailing for amines and other basic compounds.

How is a guard column connected to the analytical column?

We offer Vu2-Union™, Press-Tight®, and other connectors for attaching guard columns to fused silica columns. MXT™ unions are available for connecting stainless steel MXT® columns and guard columns. See pages 224 to 227 for information about these connectors.

it's a **fact**

To eliminate connections, use our unique Integra-Guard™ Column. See **page 30**.