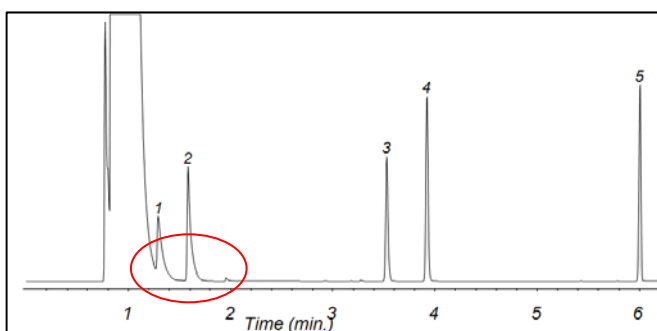




GC Troubleshooting Series

Part Four: Tailing Peaks

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Routine inlet maintenance is essential to preventing issues like tailing peaks.

Possible Cause: Column and Inlet Maintenance

Sudden issues with tailing indicates column contamination, possibly caused by a recent dirty sample.

Using sample prep, such as SPE, or filtration is a good idea to help avoid issues like peak tailing. And it can extend the life of your column.

To learn more about Agilent SampliQ SPE, visit www.agilent.com/chem/SampliQ

Guard columns are also a good way to capture sample contaminants before they reach your analytical column.

Agilent J&W Duraguard columns have a "built in" guard column, with no press-fit connectors. They minimize front-end contamination and increase column lifetime. Any DB polysiloxane or GC/MS phase can be made as a Duraguard column with .18mm ID or larger fused silica tubing. Visit www.agilent.com/chem/duraguard for more information.

Possible Cause: Column Activity

Trimming the end off of a column can help remove activity at the end of the column. If this does not work, you may need to replace your column.

If you routinely work with active compounds, consider using the Agilent J&W Ultra Inert column. Learn more at www.agilent.com/chem/ultrainert.

Possible Cause: Column Blockage

Column blockage may cause peak tailing. Inject something with no known tailing to test if a blockage is present. If the compound tails, you know you have a column blockage.

Possible Cause: Improper Column Installation

Proper column installation is very important, both in the inlet and the detector. Improperly installed columns can result in peak tailing.

Possible Cause: Solvent-Phase Polarity Mismatch

Solvent solubility may be affected by a solvent-phase polarity mismatch, which will manifest as peak tailing. Try changing your stationary phase or solvent.

Possible Cause: Reverse Solvent Effect

If peak tailing is occurring only in peaks closest to the solvent front or major component peak, consider the Reverse Solvent Effect. Try a retention gap or guard column to correct this.

Possible Cause: Solvent Effect Violation for Splitless or On-column Injections

If peak tailing is decreasing with retention, you may be getting a solvent effect violation.

Decrease initial column temperature – 10 – 20 degrees -- to get a better focusing effect of the solvent.

Possible Cause: Split Ratio Too Low

In a split injection you will want a minimum of 20 mL/minute of total flow through the inlet.

If the split ratio is too low, the flow rate may not be high enough to maintain an efficient sample introduction.

If you suspect this is your issue, increase your split vent flow rate.

Summary:

Common causes for peak tailing:

- 1) Inlet contamination. Do basic inlet maintenance: replace the liner, the o-ring, septa, possibly the gold seal. Consider sample prep or filtration to prevent the issue from re-occurring.
- 2) Column activity. Trim the column, or replace the column if trimming doesn't solve the issue.
- 3) Column blockages – try injecting hexane or butane, which shouldn't have any tail. If they do tail, you know you have a blockage.
- 4) Poorly installed column. Try re-installing.
- 5) Solvent polarity mismatch.
- 6) Reverse Solvent Effect.
- 7) Solvent effect violation. Decrease your initial column temperature by 10 – 20 degrees to address this.
- 8) Split ratio too low: you will want a minimum of 20 mL/minute of total flow through the inlet.