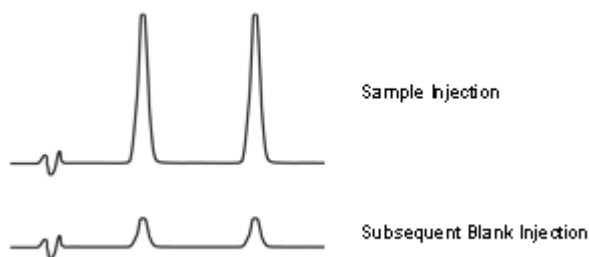




Injector Carryover

Small peaks present in chromatograms of blank injections are one of the most common and at times difficult symptoms to eliminate.



The peaks in the blank injection are typically attributed to injector carryover when they are observed at low levels but with the same retention times and chromatographic characteristics as the known peaks in the sample.

This can present problems when the magnitude of the observed peaks is large enough to skew the calibration/quantitation or raise potential questions towards the validity of the calculated results.

Contaminated blank solutions or improper wash solutions are the most common culprits. The wash solution needs to readily solubilize all of the components in the sample, and a mixture of water:organic (with the same organic solvent as in the mobile phase) is a good starting point. If acidic or basic conditions are necessary, using a volatile acid or base (such as formic acid or ammonium hydroxide) is preferable to a buffer salt that can otherwise leave precipitates.

Surface transfer can also be a minor contributor to carryover, where the injector loop has the largest surface area of contact for the injected solutions. Trying different injector loop materials (stainless steel and PEEK being the most typical) can be a quick first step to take.

The outer surface of the needle itself can also be a potential source of cross contamination, and autosamplers with “needle-dip” capabilities can be utilized to minimize this effect. Such effects are somewhat unusual to present serious carryover issues, but in extreme cases (such as with compounds with very high response factors), multiple “needle-dip” solution vials can be utilized to prevent cross-contamination buildup within an individual vial.

Autosamplers of different makes and models can have different mechanisms of injection and wash. Therefore, it is also recommended to consider troubleshooting techniques and solutions specific to a given autosampler/injector.

Key words: HPLC, troubleshooting, ghost peaks, carryover, Injector carryover, blank peaks

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