

Lachat Tech Tips – Go with the flow...

Flow is extremely important in Flow Injection Analysis. When issues arise with the QuikChem FIA analyzers, they are often related to flow. This is especially the common cause of failure when a specific chemistry had been working well for a while, but suddenly stops producing good results.

Good Tubes = Good Flow

Flow issues are usually related to tubing. Good pump tubes are necessary for good flow. Most users are aware that pump tubes need to be changed frequently. Transmission tubing and manifold tubing does not need to be changed as frequently as pump tubes, but can lead to flow problems if a clog or crimp occurs.

Don't neglect waste lines!

Waste lines need to be in good condition, but are often neglected as they occur after the manifold and after the detector. Even though the waste lines are after the point of detection, good waste line management is necessary for good flow. Everything goes through the waste line eventually. If the waste line is dirty, submerged, or mismanaged, it can create issues, varying from no peaks to drifting peak values over time.

- Make sure waste lines are not dirty. Waste lines tend to get stained and/or may contain microbial growth over time. When the waste line gets dirty, it will affect the flow. Even if you can see the waste line dripping, it may not be flowing as fast as it could be.
- Make sure the waste line is not submerged. If the waste line goes to the bottom of a waste container and the container starts to fill, the end of the waste line will be submerged. This creates backpressure that can affect flow. A good idea is to cut the waste line as short as possible and tape it to the top of the waste container. Another option (when the reagents are not toxic and this is permitted) is to have the waste line lead directly to a drain.
- Make sure the waste line is not mismanaged. The waste line needs to gravity drain, so it should drop down to a drain or container placed *below* the detector. If the waste line travels upward to a container or across a long amount of bench space to reach a sink, it will create backpressure, which can cause flow related issues.

An easy way to determine if the waste line is contributing to a flow issue is to detach the waste line and let the waste run into a beaker. If the flow improves or the problem goes away, then the waste line is an issue. If there is no change, then the problem is not the waste line.

Some flow issues are obvious... many are not.

Some flow issues may be obvious and visible right away when watching the flow of reagents through new transmission lines. One visual check method is to pull a reagent line out of the reagent for a moment to introduce some air. You can watch the flow of the air bubbles through the tubing to make sure it is moving forward.

Unfortunately, many flow problems are subtle and may not be visible by watching reagent lines. If you are experiencing problems with flow or anything else, please contact Lachat Tech Support.

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