

Advantages of Active Sorbent Tube Sampling verses Passive Badge Sampling for Formaldehyde Determination

When performing air sampling to determine formaldehyde contamination levels it is important to understand the difference between active and passive sampling techniques.

Active Tube sampling involves the use of a device, like a pump, which actively draws the air through a collection media which extracts the formaldehyde from the air. Typically a tube filled with sorbent is connected to a pump which draws air at a known flow rate for a recommended amount of time (20 min to 8 hours is commonly used).

Passive Badge sampling involves collection of airborne formaldehyde by diffusion either through a static air layer or permeation through a membrane into a collection media. Typically a badge filled with sorbent material is placed or worn in an environment for a recommended period of time (24 – 48 hours is commonly used).

The primary advantage of active sampling is the collection of a larger sample volume. This ensures a representative sample is collected regardless of environmental factors. A larger sample volume also provides the ability to detect lower formaldehyde concentrations.

The primary advantage of passive sampling is the ease and low cost of sample collection. However, when performing passive sampling it is important to understand that environmental factors can impact the sampling. Stagnant air with minimal air movement will significantly reduce the effective sample volume and potentially generate a non-representative sample result. Conversely, high or variable air movement may change the diffusion rates and lead to uncertainty in the total volume. High concentrations of contaminants like ozone and/or humidity can potentially interfere with sample collection.

When purchasing any air sampling test whether Active or Passive sampling it is important that the manufacturer recommendations be completely understood prior to sampling and followed during collection to ensure accuracy of results. This includes following the exact sampling guidelines provided with the test kit. For example: Prism Analytical's Formaldehyde test has a recommended sampling time of 20 min at 0.2 L/min (4 L total sample volume), max 30 min.