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EPA Method TO-11A is used for sampling of formaldehyde and other aldehydes in ambient air using a coated-solid adsorbent. Refer to the method for further details <http://www.epa.gov/ttn/amtic/files/ambient/airtox/to-11ar.pdf>.

## Equipment:

- Air sampling pump capable of sampling at the recommended flow rate with the sampling medium in-line
- Airflow calibrator
- SKC Sorbent Tube Cat. No. 226-120

## Sampling Guide:

- Sampling Flow Rate - 100 to 1500 ml/min
- Sample Time – Varies with volume required
- Air Volume – Varies (50 to 100 L for indoor air samples; see Table)

## Calibration Procedure:

1. Break open both ends of a sorbent tube.
2. Insert the sorbent tube into the rubber sleeve of the adjustable low-flow holder or tube holder. The arrow on the sorbent tube indicates airflow and should point toward the pump (the end of the tube with the YELLOW section should point towards the pump).
3. Calibrate the pump using a sorbent tube, other than the one used for sampling. The pump should be calibrated to the flow rate specified by the method.

Formaldehyde Reporting Limit (PPBV)					
Sampling Rate (L/Min)	Sampling Duration (Minutes)				
	30 Min	60 Min	120 Min	240 Min	480 Min
0.2	14 ppbV	6.8 ppbV	3.4 ppbV	1.7 ppbV	0.85 ppbV
0.5	5.4 ppbV	2.7 ppbV	1.4 ppbV	0.68 ppbV	0.34 ppbV
1.2	2.3 ppbV	1.1 ppbV	0.57 ppbV	0.28 ppbV	0.14 ppbV

## Sampling Procedure:

1. To collect a sample, use a new sorbent tube and set it up as described for calibration. Do not break off the ends until ready to sample. The section of the tube with the WHITE sorbent should be facing away from the pump.
2. Set up the tube in the location where you are going to collect the sample. The sampling tube should be in a vertical position. Turn the pump on and note starting time.
3. Sample at a known flow rate for the recommended period of time to achieve the desired reporting limit (refer to Table).
4. Check the sampling pump from time to time to ensure that it is operating properly.
5. At the end of the sampling period, turn the pump off and note the time.
6. Remove the sorbent tube, seal the ends with the red caps provided, label the tube, and record any pertinent sampling information.
7. Recalibrate the pump with the representative sampling media in line to verify that the flow has not changed by more than 5%.
8. Submit field blanks from the same lot number as the sample tubes. Field blanks should be subjected to exactly the same handling as the samples (open, seal, and transport), except that no air is drawn through them.
9. Carefully pack sample tubes and field blanks in a cooler with FROZEN ice packs. Be sure to include all pertinent information (e.g. sample identification, sampling date, time and sample volume, etc.,) on the chain of custody form that is submitted with the samples. Secure cooler and then ship it to the laboratory via overnight delivery.

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## Storage and Shipping of Sorbent Tubes:

- Store the tubes in a freezer before use. After sampling, refrigerated storage and shipping to the laboratory is required.

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## Analytical Methodology:

- High-performance liquid chromatography - Ultraviolet Detector (HPLCUV)

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## Contact Information:

2655 Park Center Drive, Ste. A  
Simi Valley, California 93065

805.526.7161

805.526.7270 (fax)

