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## Characteristics

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Formaldehyde is a colorless, strong-smelling gas often found in aqueous (water-based) solutions. Commonly used as a preservative in medical laboratories and mortuaries, formaldehyde is also found in many products such as chemicals, particleboard, household products, glues, permanent press fabrics, paper product coatings, fiberboard, and plywood. It is also widely used as an industrial fungicide, germicide and disinfectant. Formaldehyde is a sensitizing agent that can cause an immune system response upon initial exposure. It is also a cancer hazard. Acute exposure is highly irritating to the eyes, nose, and throat and can make anyone exposed cough and wheeze. Subsequent exposure may cause severe allergic reactions of the skin, eyes and respiratory tract. Ingestion of formaldehyde can be fatal, and long-term exposure to low levels in the air or on the skin can cause asthma-like respiratory problems and skin irritation such as dermatitis and itching. Concentrations of 100 ppm are immediately dangerous to life and health (IDLH). Note: The National Institute for Occupational Safety and Health (NIOSH) considers 20 ppm of formaldehyde to be IDLH.<sup>1</sup>

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## Methodology

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The analytical test method used by Prism for gaseous formaldehyde or for formaldehyde in water has been correlated or is compliant with the California Air Resources Board's (CARB) § 93120, European DIN Standard EN-717 and ASTM methods D-5582 and E-1333. It has also been compared with DNPH testing used in NIOSH 2016 and found to be in good agreement.<sup>2</sup>

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## Application

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Ambient air sampling is done with our A14 formaldehyde sorbent tube and a 200 mL/min air pump. For formaldehyde levels in air below 1 ppm(v/v) a sampling time of 20-30 minutes (4-6L sample volume) is optimal. Do not exceed 30 minute sample times (6L sample volumes) to prevent sample breakthrough on the tubes. Sample times exceeding 45 minutes (9L sample volume) may not be analyzed and a new sample may be requested. For formaldehyde levels that might exceed 1ppm (v/v) (industrial areas, embalming centers, histology laboratories, etc.) a sampling time of 5-10 minutes (1-2L sample volume) is adequate. Do not exceed a 10 minute (2L sample volume) for high levels of formaldehyde, to prevent the possibility of the instrument going off scale. The minimum detection limit for formaldehyde is <5 ng/L (4 ppb v/v).

A comprehensive review of formaldehyde in the indoor environment, sources, test results, testing methods, and discussion was published by Salthammer et. al. and can be found on-line as well.<sup>2</sup>

## References

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(1) [http://www.osha.gov/OshDoc/data\\_General\\_Facts/formaldehyde-factsheet.pdf](http://www.osha.gov/OshDoc/data_General_Facts/formaldehyde-factsheet.pdf)

(2) Salthammer et. al., **Formaldehyde in the Indoor Environment**, Chem. Rev. 2010, 110, 2536-2572

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