

## Determination of Aldehydes and Ketones in Air and Drinking Water

### *Applications:*

*Ambient Air Quality*

*Indoor Air Quality*

*Natural Gas Combustion*

*Drinking Water*

*Waste Water*

Formaldehyde plays an important role in smog formation. Sources of formaldehyde in air come from by-products of natural gas combustion, pulp industry, compressed wood, adhesives and furniture manufacturing. Formaldehyde causes abnormal cross linkage between DNA strands and protein and is also a well-known carcinogen. Because of its adverse human health effect, monitoring of formaldehyde in air and drinking water is required in some areas.

Carbonyl compounds such as formaldehyde react rapidly with 2,4-dinitrophenylhydrazine (DNPH) in acidic media to form a yellow to orange colored stable hydrazone derivative. Carbonyl compounds in air such as formaldehyde are collected by drawing a known volume of air through a DNPH coated cartridge or DNPH solution in impingers. After sampling is completed, the DNPH coated cartridge or DNPH reagent is returned to the lab for the analysis of hydrazones by High Performance Liquid Chromatography (HPLC) with UV/VIS detector. Concentration of various carbonyl compounds in air is determined from the quantity of the associated hydrazones found in the DNPH solution and the volume of air sampled. The detection limit of C<sub>1</sub>-C<sub>7</sub> carbonyls, including benzaldehyde, measured effectively by this method is 0.01 ppbv.

