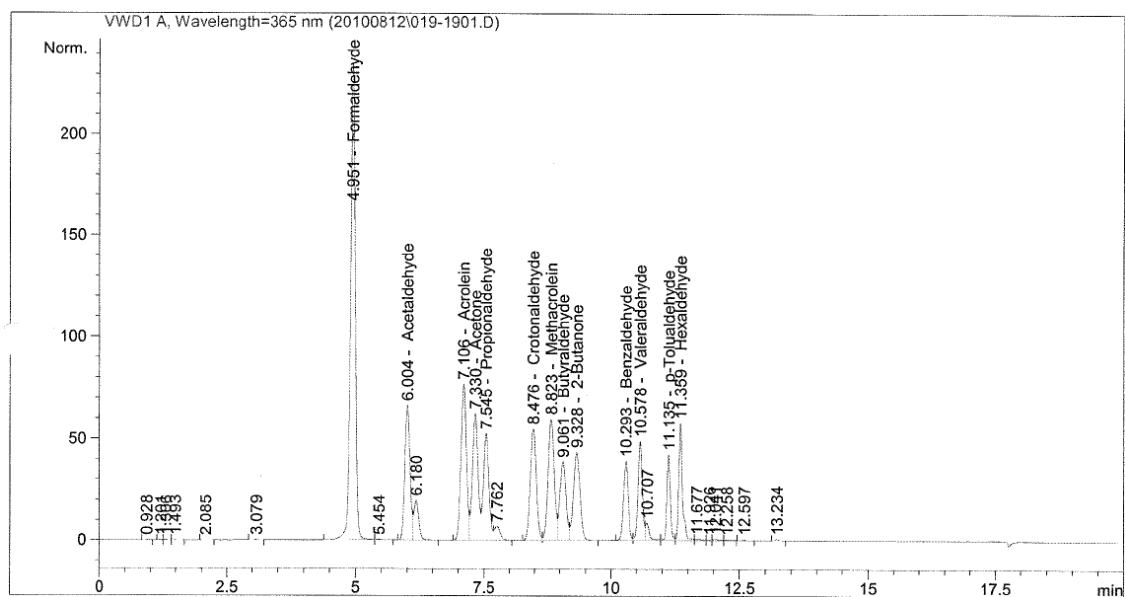
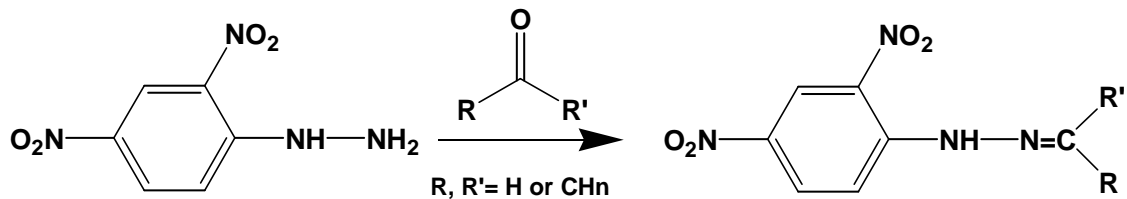


The method described below has been developed on the basis of the “compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (2<sup>nd</sup> Edition)” [EPA/625/R-96/-1-b; Compendium Method TP-11A: Determination of Formaldehyde in Ambient Air Using Absorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC)]

### EXPERIMENTAL DETAILS FOR CARBONYL ANALYSIS (vehicular exhaust)

Carbonyl compounds are measured up-stream of the vehicle exhaust. The diluted exhaust was drawn through 2,4-dinitrophenyl-hydrazine coated silica cartridges (Waters<sup>TM</sup> Sep-Pak<sup>®</sup> DNPH-cartridges). Aldehydes and ketones present in the exhaust flow are collected as their non-volatile 2,4-dinitrophenylhydrazone derivatives. The cartridges are then eluted with 2.5mL acetonitrile and 2.5 mL water and analyzed by HPLC-UV ( $\lambda=365\text{nm}$ ). The cartridges are then eluted with 2.5mL of acetonitrile, diluted with 2.5 mL of water and stored at 5°C until analysis.

Samples were analysed by HPLC-UV (high performance liquid chromatography) with a temperature stabilized (20°C). The column used was 30 cm x 3.9mm C18 -coated silica gel (*Several possible columns and sizes have been proposed lately for improvement of separation and rapidity of the analysis*) run in gradient mode (0.9 ml/min). Eluents were H<sub>2</sub>O (A-eluent) and acetonitrile (B-eluent). The gradient was programmed from 50% to 90%. Detection and quantification were carried out at 365 nm.



(Source: Clairotte, 2010-JRC Transport and Air Quality Unit)