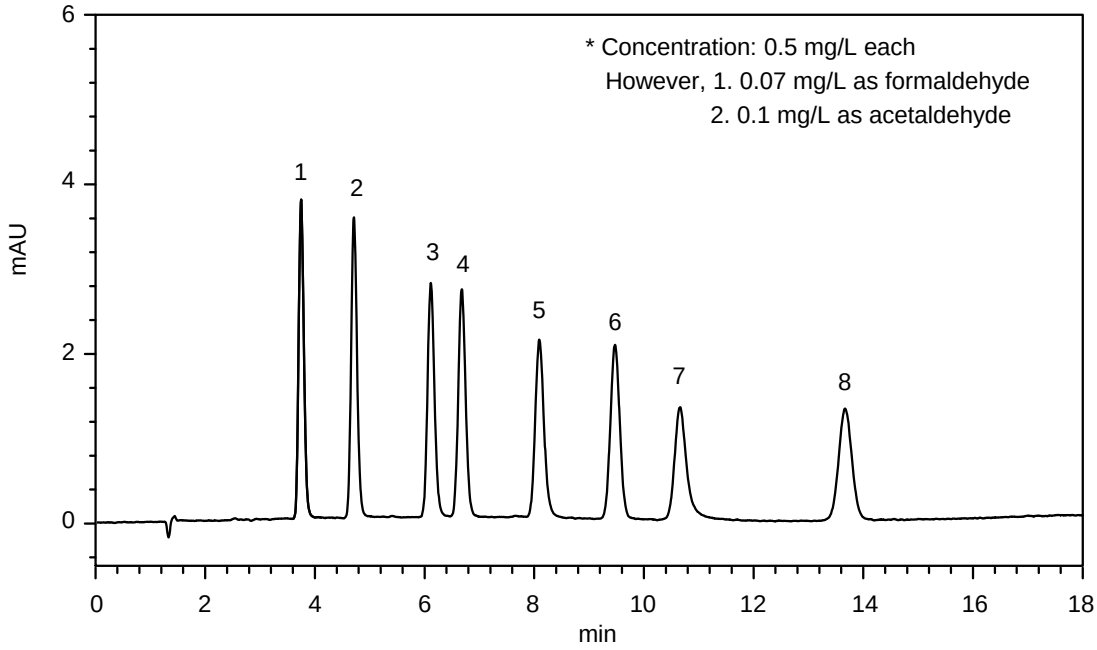
Analysis of 8 DNPH-Aldehyde Standards

The air contaminated with chemical substances released by the building and interior decorating materials of houses are causing various health problems to human bodies and so-called sick house syndrome has become an issue. As a result, from between 2002 and 2003 in Japan, the analyses of chemical substances including formaldehyde and volatile organic compounds (VOC) became to be regulated by the Ministry of Education, Culture, Sports, Science and Technology, Ministry of Land, Infrastructure, Transport and Tourism, and Ministry of Health, Labour and Welfare. In addition, the concentration to control formaldehyde in the working environment for operations including the manufacturing and handling of formaldehyde has been specified since 2009. A HPLC method is specified as the analysis method. In the HPLC method, aldehydes in air is collected in the collection tube impregnated with 2,4-dinitrophenylhydrazone (DNPH). After the derivatization, the sample extracted with the solvent is analyzed by HPLC. The analysis of the mixed solution of eight aldehydes and DNPH is introduced here.



1. Formaldehyde-DNPH
2. Acetaldehyde-DNPH
3. Acetone-DNPH
4. Propionaldehyde-DNPH
5. Crotonaldehyde-DNPH
6. Isobutylaldehyde-DNPH
7. Bezaldehyde-DNPH
8. n-Valeraldehyde-DNPH

SAMPLE 10 μL of Std. Soln. *	PRESSURE
PACKING MATERIAL HITACHI LaChrom C18 (5 μm)	TEMPERATURE 40°C
COLUMN SIZE 4.6 mm I.D. × 150 mm (P/N : 891-5050)	SEPARATION METHOD Partition/Adsorption
ELUENT CH_3CN / H_2O = 60 / 40 (v/v)	DETECTOR DAD 360 nm
FLOW RATE 1.0 mL/min	INSTRUMENTS Chromaster 5110 (Pump), Chromaster 5210 (Autosampler), Chromaster 5310 (Column Oven), Chromaster 5430 (Diode Array Detector)

NOTE * The standard was prepared by using acetonitrile.

KEY WORDS
Environmental Analysis Related, Air, Environment, Health, Air Pollution, Indoor Air Pollution, Sick House, DNPH-Aldehyde, DAD, Chromaster, LaChrom C18, Partition/Adsorption

High Performance Liquid Chromatograph (HPLC)

Sheet No. LC110002-01