

# BIOLOGICAL MONITORING METHODS

January 2005

## Method for N-methylacetamide in Urine (a metabolite of N, N' - dimethylacetamide)

**Hazardous Substance:**  
N,N-Dimethylacetamide

Occupational Exposure Standard = 10 ppm  
(skin notation)  
CAS No. 127-19-5

**Biological Monitoring Guidance Value:**  
Health Guidance Value = 100 mmol  
NMA /mol creatinine  
Conversion: 1mmol/mol = 0.646 mg/g

For further advice contact:

Group Support Unit  
Room L.2.51  
Health and Safety Laboratory  
Harpur Hill  
Buxton  
SK17 9JN

Telephone: 01298 218099 Fax: 01298 218172

Website: [www.hsl.gov.uk](http://www.hsl.gov.uk)

#### **Sample Collection**

Time: End of shift urine sample towards the end of the working week

Equipment: Polystyrene universal container (30ml)

#### **Description of Suggested Method**

Urine (1 $\mu$ l) is injected directly into a gas chromatograph at an injection temperature of 250°C. N-methylacetamide and N-ethylacetamide (the internal standard) are separated on a HP Innowax column 30m x 0.32mm 0.5  $\mu$ m film at 135°C. They are detected using selected ion monitoring GCMS in EI mode using m/z 73 (NMA) and m/z 87 (NEA).

#### **Reference**

Dyne D.

Biological Monitoring Method for N,N'-Dimethylacetamide.  
HSL Report OT/96/03 (available from HSL).

#### **Alternative Method**

Barnes & Henry. (1974) The determination of N-methyl formamide and N-methyl acetamide in urine. Am Ind Hyg Assoc J, 35, 84-87.

#### **Sample Transport to Laboratory**

At ambient temperature, samples should arrive within 48h of collection. If delay anticipated, store at -20°C. Samples sent through postal system must comply with Post Office regulations.

#### **Analytical Evaluation**

##### Precision

- within day <6% RSD at 430  $\mu$ mol/l
- day to day <10% RSD at 430  $\mu$ mol/l

##### Detection Limit

- 3x background - 15  $\mu$ mol/l

##### Calibration Range

- typically 0-1000  $\mu$ mol/l

##### Sample Stability

- 5 days at ambient,
- >3 months at -20°C

##### Analytical Interferences

- None known

#### **Other Information**

##### *Elimination half-time*

N-methylacetamide in urine, approximately 24 hours

##### *Confounding Factors*

None known

##### *Unexposed Levels*

None

##### *Creatinine Correction*

Advised

#### **Quality Assurance**

Internal QC - must be established

External QA - available from Health & Safety Laboratory