



25.14 Biological Monitoring: A Guide to Sampling & Guidance Values

Introduction

Biological monitoring is the measurement and assessment of chemicals or their metabolites (substances the body converts the chemical into) present in exposed workers bodies. These measurements are made using samples of breath, urine, blood, or any combination of the above.

Purpose of Sampling: Health Surveillance | Exposure Control

Sampling Considerations. Factors that affect sampling choice include:

Half-life. A measure of how quickly a substance is excreted from the body.

Sample type. Usually urine, blood, or breath. **Target Chemical.** Some substances can be measured directly; others may require the measurement of a metabolite (a substance that is produced by the body as it breaks down a chemical).



Biological Monitoring Guidance Values (BMGV)

Substance	Biological monitoring guidance values	Sampling time
Butan-2-one	70 µmol butan-2-one/L in urine	Post shift
2-Butoxyethanol	240 mmol butoxyacetic acid/mol creatinine in urine	Post shift
Carbon monoxide	30 ppm carbon monoxide in end-tidal breath	Post shift
Chromium VI	10 µmol chromium/mol creatinine in urine	Post shift
Chlorobenzene	5 mmol 4-chlorocatechol/mol creatinine in urine	Post shift
Cyclohexanone	2 mmol cyclohexanol/mol creatinine in urine	Post shift
Dichloromethane	30 ppm carbon monoxide in end-tidal breath	Post shift
N,N-Dimethylacetamide	100 mmol N-methylacetamide/mol creatinine in urine	Post shift
Glycerol trinitrate (Nitroglycerin)	15 µmol total nitroglycols/mol creatinine in urine	At the end of the period of exposure
Isocyanates (applies to HDI, IPDI, TDI and MDI)	1 µmol isocyanate-derived diamine/mol creatinine in urine	At the end of the period of exposure
Lindane (gBHC(ISO))	35 nmol/L (10 µg/L) of lindane in whole blood (equivalent to 70 nmol/L of lindane in plasma)	Random
MbOCA (2,2' dichloro-4,4' methylene dianiline)	15 µmol total MbOCA/mol creatinine in urine	Post shift
Mercury	20 µmol mercury/mol creatinine in urine	Random
4-methylpentan-2-one	20 µmol 4-methylpentan-2-one/L in urine	Post shift
4,4'-Methylenedianiline (MDA)	50 µmol total MDA/mol creatinine in urine	Post shift for inhalation and pre-shift next day for dermal exposure
Polycyclic aromatic hydrocarbons (PAHs)	4 µmol 1-hydroxypyrene/mol creatinine in urine	Post shift
Xylene, o-, m-, p- or mixed isomers	650 mmol methyl hippuric acid/mol creatinine in urine	Post shift

How to interpret your results

You should compare your results to the values in the table overleaf. In most cases, you should expect your results to be below the guidance values. Where they are not, you may wish to discuss your results with your Occupational Health Professional, Health & Safety Officer, or manager.

Further Information

Most of the information in this guide has been supplied by the Health & Safety Executive (HSE). Their website is a useful source of information regarding Health & Safety: <https://www.hse.gov.uk/index.htm>.

A copy of this & other documentation can be found from <https://mohs.co.uk/resources> or using the QR code at the top of this page.