Guidance sheet for:
Lindane in plasma

BMGV: 70nmol lindane/L plasma

Hazardous Substance
Lindane
CAS number: 58-89-9

Alternative names:
Gamma hexachlorocyclohexane
Biological Monitoring Guidance Values

Lindane in plasma

Biological Monitoring Guidance Value (BMGV)

Guidance value: 70nmol lindane/L plasma
Conversion: 1nmol/L = 0.29µg/L

Other Guidance Values

None.

Sample Collection

Whole blood samples should be collected pre-shift or at the end of shift into 5mL EDTA-containing blood containers (30mL).

Sample Transport to Laboratory

Send samples to the laboratory by first class post (or equivalent) to arrive within 48 hours of collection. If any delay is anticipated, store at 4°C. Packaging must comply with Post Office regulations.

Description of Suggested Method

Aliquots of plasma are spiked with deuterated lindane internal standard and extracted into hexane. Hexane extracts are concentrated under nitrogen and dissolved in nonane before injection into a gas chromatograph capillary column. Detection is by negative ion chemical ionisation mass spectrometry with selected ion monitoring (m/z 255 for lindane and m/z 261 for the internal standard).

Analytical Evaluation

Detection limit:
5nmol/L (3 x background)

Calibration range:
Typically 0-172 µmol/L

Precision:
- within day <4% RSD at 77nmol/L
- day to day <7% RSD at 77nmol/L

Sample stability:
2 days at ambient temperature, >3 months at 20°C (plasma)

Analytical Interferences: None known

http://www.hsl.gov.uk/online-ordering/analytical-services-and-assays/biological-monitoring
Other Information

Elimination half-time:
For lindane in plasma from a single exposure, approximately 20 hours. Longer for repeated exposures.

Confounding factors:
None known

Unexposed level:
<5nmol/L

Interpretation

Blood or plasma lindane results reflect systematic exposure to lindane that may have entered the body by inhalation or through the skin. If biological monitoring results are greater than the guidance value, it does not necessarily mean that ill health will occur, but it does mean that exposure is not being adequately controlled. Under these circumstances employers will need to look at current work practices to see how they can be improved to reduce exposure.

Alternative Methods


Quality Assurance

Internal QC:
Must be established

External QA:
Available from Health and Safety Laboratory

http://www.hsl.gov.uk/online-ordering/analytical-services-and-assays/biological-monitoring
Biological Monitoring Guidance Values

Lindane in plasma

Links

EH40 List of Approved Workplace Exposure Limits
http://www.hse.gov.uk/pubns/books/eh40.htm

Biological Monitoring at HSL
http://www.hsl.gov.uk/online-ordering/analytical-services-and-assays/biological-monitoring

References

Internal HSL method available on request.

For further advice, please contact us:

Sample Registration, Health and Safety Laboratory, Harpur Hill, Buxton. SK17 9JN.

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