Exposure monitoring

What this sheet covers
This sheet describes good practice for monitoring worker exposure. It includes advice to test fixed alarms.

Monitoring
✓ Monitoring means measuring workers’ exposures to named substances. Exposure may be by inhalation, by skin contact, or by swallowing.
✓ Personal monitoring assesses a person’s exposure. Other sampling is used to assess the effectiveness of control measures.
✓ Ask consultants tendering for work for evidence of their competence, and of any laboratories they use for analysing samples.
✓ Provide past results of monitoring, so the consultant can put new results into context.
✓ Monitoring is required:
  - to help select the right controls;
  - where substances present a serious health risk;
  - to check that exposure limits are not exceeded and your control measures work well enough;
  - to help choose the right amount of respiratory protection;
  - to identify any need for health surveillance; and
  - when an inspector has issued an enforcement notice that requires you to monitor exposure.
✓ Exposure measurement is not an alternative to controlling exposure.
✓ Exposure varies from day to day, so you need the result to be no more than a fraction of the exposure limit, eg below one third.
✓ Monitoring always requires workers’ co-operation, doing their jobs as normally as possible.
✓ Workers should be informed of the result.
✓ This sheet also contains a form for use where biological samples require workers’ informed consent. See below.
✓ Static or background sampling is useful:
  - to check on the performance of extraction equipment;
  - to understand the potential for bystanders to be exposed.

Caution: Static or background sampling will not reflect personal exposure.
**Air monitoring**

- Air monitoring measures exposure by inhalation. It should take place on a busy day with the process running normally.
- Personal samples only are valid for comparing with exposure limits:
  - Full shift (12 hours) exposures should be compared with two-thirds of the 8-hour exposure limit.
  - Exposures at raised pressures need expert interpretation.

**How do I sample air?**

- Sometimes you can use special meters, smoke tubes or colorimetric detector tubes to see if there is a problem with your controls.
- Normally you need specialised sampling equipment. Contact a health and safety consultant in occupational hygiene.
- Sometimes you will also need biological monitoring to detect exposure through skin contact, by swallowing, or if respirators are not working well enough.

**Biological monitoring**

- Biological monitoring is recommended in cases where:
  - exposure control relies on the effectiveness of respirators;
  - exposure via the skin or ingestion could lead to adverse health;
  - there is a measureable metabolite, preferably in urine or exhaled breath.
- Biological monitoring needs ‘informed consent’ – eg see form below.
- Biological monitoring is necessary for work with lead.

**Caution:** Biological monitoring is not health surveillance.

**Consultant’s report**

- Ask tendering consultants how will they check that you understand their report?
- Demand ‘context’ information with every sample: who, what task, done how often, for how long, with what equipment and what control measures, and observations on how the worker did the job.
- Ask for comments on other exposure routes.
- Require all monitoring results and an explanation of what they mean.
- Follow recommendations on maintaining or improving the control measures.
- This should have two parts: fact and opinion.
- Checklist of points to cover.

**Facts**

- The background to and purpose of the monitoring.
- The process measured, the hazards involved, the work patterns.
- The control measures in place and their performance.
- Photographs and diagrams.
- What measurements were taken, and how
- How and where samples were analysed.
- Exposure limits or benchmarks, and comments on these.
- Industry standards of good control practice.
- Monitoring results, calculations and 8-hour time-weighted average exposures.
Opinion

- Exposure sources and adequacy of the control measures.
- Discussion of results and compliance with standards.
- Assessment of risk.
- Identification of tasks not measured that are likely to involve exposure.
- Work groups that could be exposed, but were not monitored.
- Any matters of concern, and how to address them.
- Recommendations for improvement or further surveys.

Testing

✔ Where gas or vapour alarms are provided, test that these are working at least once a week or as provided in the planned maintenance routine (PMR).

Useful links

Occupational Safety and Health Consultants Register
www.oshcr.org/

Further information

ISBN 978 0 7176 6188 6
www.hse.gov.uk/pubns/books/hsg173.htm

Occupational exposure limits for hyperbaric conditions:
Hazard assessment document
Environmental Hygiene Guidance Note EH75/2
HSE Books 2000
ISBN 978 0 7176 1899 6

Workplace exposure limits EH40
www.hse.gov.uk/coshh/table1.pdf

You can find the full Offshore COSHH essentials series at
www.hse.gov.uk/coshh/index.htm

This guidance was developed by representatives from the UK offshore oil and gas industry and trade unions, with HSE.
Informed consent: For taking biological samples from workers

Regarding the control of exposure to [named substance] at [identified premises], your agreement is needed to provide a sample of [blood/urine/breath/other] to a representative of [service provider], to decide whether further steps are needed to control your exposure.

Please note:

1. The sample will only be analysed for [named substance]

2. The result will indicate your personal exposure to [named substance]

3. Do you want to receive your own copy of the results and be told what it means [Yes/No]? If Yes, send the result to [person’s address]. You can show the result to your trade union representative, if you wish.

4. The results will show whether improvements in control are needed to reduce your exposure.

[Yes/No] You can send my personal test result and interpretation to my employer.

[Yes/No] You can send my anonymised result and interpretation to my employer.

[Yes/No] You can send only the interpretation to my employer.

[Employee’s signature] and [date]