



**PWYLLGOR IECHYD A DIOGELWCH  
HEALTH & SAFETY COMMITTEE**

<b>DYDDIAD Y CYFARFOD: DATE OF MEETING:</b>	09 May 2023
<b>TEITL YR ADRODDIAD: TITLE OF REPORT:</b>	Monitoring Staff Exposure to Environmental Hazardous Substances – a requirement of the <i>Control of Substances Hazardous to Health Regulations 2002</i>
<b>CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:</b>	Mandy Rayani (Director of Nursing, Quality and Patient Experience)
<b>SWYDDOG ADRODD: REPORTING OFFICER:</b>	Tim Harrison (Health of Health Safety, and Security)

<b>Pwrpas yr Adroddiad (dewiswch fel yn addas) Purpose of the Report (select as appropriate)</b>
Er Sicrwydd/For Assurance

<p><b><u>Sefyllfa / Situation</u></b></p> <p>This report is presented to the Health and Safety Committee (H&amp;SC) under the standing agenda item to provide assurance against a number of key Health and Safety regulations. This report concerns environmental monitoring as part of the <i>Control of Substances Hazardous to Health Regulations 2002 (COSHH)</i>.</p> <p>Some hazardous substances can be inhaled by staff and others present in the workplace. Many substances have Workplace Exposure Limits (WELs) for inhalation that must not be exceeded, and there is a requirement to reduce exposure to “as low as reasonably practicable” (ALARP). Airborne hazardous substances (which include dust, fumes, gases, vapours, and biological agents) may not be visible or otherwise detectable directly by persons who are/may be at risk of exposure.</p> <p>The level of exposure of a substance can be measured, primarily to ensure it is below the relevant WEL. It can also serve to assess the performance of existing engineered risk control measures (e.g. ventilation systems) or to assess the consequences should those measures fail/not perform as designed. Monitoring is guided by a COSHH Assessment, and can be in the form of environmental monitoring (e.g. general room air measurements) and/or exposure monitoring (personal dosimetry). Monitoring would generally be carried out by contractors with appropriate expertise.</p> <p>In preparing this report, reference was primarily made to Health and Safety Executive (HSE) Approved Code of Practice (ACoP) “I5”. Additional technical/legislative standards are referenced as appropriate. The legislative requirement is combined with an assessment against each regulation within the combined Background and Assessment section below, and a RAG rating applied against each.</p> <p><b><u>Cefndir / Background</u></b></p> <p>The <i>Health and Safety at Work etc. Act 1974</i> places a general duty on employers to protect the health, safety, and welfare of staff and non-staff in the workplace “so far as is reasonably practicable” (SFARP). The <i>Management of Health and Safety at Work Regulations 1999</i> requires employers to undertake and record “suitable and sufficient” risk assessments to identify hazards/potential hazards to staff and anyone else who may be affected by work activities; then to act on the findings to reduce the risk. The <i>COSHH 2002 (as amended)</i> provides more detail</p>
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on how hazardous substances are to be managed in the workplace, and also covers asphyxiation, biological agents, exposure monitoring, health surveillance, and respiratory protection.

(Note: Exposure to asbestos and lead are subject to other regulations and will not be covered in this report).

### **Asesiad / Assessment**

Hazardous substances require identification before being risk assessed. Since one application of environmental and exposure monitoring is to assess the effectiveness risk control measures, this will be briefly mentioned in this report where relevant.

### **Overview: Presence of airborne hazardous substances in the workplace (Regulation 6 COSHH):**

*There is a database of hazardous substances in HDdUHB. COSHH assessment processes are ongoing. This database includes environmental exposures.*

*There are existing Infection, Prevention, & Control and Occupational Health policies/procedures relating to protection from airborne biological agents*

*Estates perform welding, grinding, metal working, and wood cutting; some existing control measures exist (Local Exhaust Ventilation (LEV) in places) but a more detailed COSHH assessment process is planned.*

*Surgical smoke – Theatres: some diathermy devices use on-tip extraction, and there are >20 air changes per hour (ACH) in operating theatres. Compliance is likely but detailed COSHH assessment processes are planned.*

*Surgical smoke – Outpatients (OPD): hyfrecators are used with a portable smoke filtration system; serviced in accordance with COSHH Regulations; exposure to surgical smoke for minor operations is considered to be ALARP.*

*Surgical smoke – Colposcopy: under assessment; control measures are employed; additional reasonably practicable measures are being explored.*

*Formaldehyde: Theatres use non-ducted fume cabinets, Mortuary use downdraught tables – serviced in accordance with COSHH Regulations; Theatre usage has been COSHH-assessed. Ventilation is compliant with HTM 03-01A and other relevant standards. Other areas use formaldehyde in small containers e.g. OPD. This has been subjected to COSHH assessment.*

*Pathology – xylene is used for tissue processing; respiratory protection is used in areas/tasks where there is residual risk of exposure.*

*Estates used the largest number of chemical products and have the potential for exposure to hazardous vapours: e.g. solvent-based, boiler chemicals, aerosols, adhesives. After initial assessment it is considered to be at a low level. The highest risk substances have been COSHH assessed and suitable respiratory protection is use where needed. COSHH assessment processes are ongoing.*

*Welsh Ambulance Services NHS Trust (WAST) have performed some environmental and exposure monitoring of vehicle emissions; so far at Glangwili*

*Hospital. This aspect has the potential to affect Hywel Dda University Health Board (HDdUHB) working in the vicinity of Emergency Departments. Results are not yet available, but the Health, Safety, and Security team are supporting with WAST as appropriate.*

*The Hospital Sterilisation and Disinfection Unit (HSDU) use disinfectant agents containing Peracetic Acid and Hydrogen Peroxide, however there is effective air monitoring, ventilation compliant with Healthcare Technical Memorandum (HTM) 03-01 Part A, and processes designed to minimise exposure. COSHH assessments have been completed for most substances in HSDU, and all substances with an inhalation risk.*

*Anaesthetic agents – desflurane, isoflurane, sevoflurane: anaesthetic systems recycle gas and purge lines are fitted with activated carbon filters. Emission to atmosphere is low and Theatre/Intensive Care Units have >20 air changes per hour. Only isoflurane has a WEL (50ppm time-weighted average over 8 hours). Exposure is likely to be below WEL. These agents have been COSHH assessed.*

*Anaesthetic agents – Entonox (nitrous oxide): in many areas, ventilation is compliant with HTM 03-01A. High use areas (labour wards, endoscopy) require more detailed assessment and exposure monitoring (see below). COSHH assessments have been completed and will be reviewed post-monitoring.*

## **Overview: Prevention of exposure and use of control measures (Regulations 7, 8, 9 COSHH):**

### **Use of Local Exhaust Ventilation (LEV) as a control measure for environmental hazards:**

*A survey of LEV in HDdUHB has been conducted by the Health, Safety, and Security team, and presented to the HDdUHB Ventilation Group. Included: ducted/non-ducted fume cabinets (Pathology, Theatre), downdraught tables (Pathology, Mortuary), dust extractors (Estates), surgical smoke extractors (Outpatients, Colposcopy, Theatre) and Microbiological Safety Cabinets (Public Health Wales; Clinical Research). The survey also covered LEV servicing.*

The use of Respiratory Protective Equipment (RPE): Although RPE is not a control measure, there are also a wide range of RPE options to use as a last line of defence against airborne hazards.

*Over 400 fit testers have been trained in HDdUHB. The Health, Safety, and Security team can specify half masks and powered air respirators with appropriate vapour filters and provide training. FFP3 masks are available for dust, fumes, and biological agents when appropriate.*

### **Monitoring exposure at the workplace (Regulation 10 COSHH):**

#### **Previous environmental and exposure monitoring in HDdUHB:**

*Podiatry have had exposure monitoring (April 2017) for dust from orthotic product grinding and from adhesives (dichloromethane, butane, and methyl ethyl ketone). The adhesives are used in an extraction system with a carbon filter, serviced in line with the COSHH Regulations. COSHH Assessments have been*

completed. Podiatry rooms at Glangwili Hospital (GGH) and Prince Philip Hospital (PPH) (including the portacabin) were studied by the contractor (Lucion Services), with personal dosimetry and room measurements. All results were considerably lower than the relevant Workplace Exposure Limits. No remedial actions were required. Exposure is considered to be “as low as reasonably practicable” (ALARP).

#### Reduction in oxygen levels (also covered by COSHH Regulations):

Trained Estates staff entering/working in Confined Spaces carry personal gas monitors to detect reduced oxygen levels. Oxygen levels are safely tested before entry, and continually during the work task. Oxygen levels can reduce due to corrosion, combustion, microbial growth, and displacement of air by gases.

Porters and some nursing staff handle liquid nitrogen. Most liquid nitrogen is kept in outside stores, with good ventilation (except PPH). Outside areas have been risk assessed as not requiring environmental monitoring. PPH OPD was subjected to indicative measurements as part of the COSHH assessment process. Oxygen levels were at atmospheric levels within the store cupboard. Outside storage is being explored.

#### Task-based environmental monitoring in HDdUHB:

Trained Estates staff who enter confined spaces carry gas monitors/alarms to check for carbon monoxide, oxygen levels, hydrogen sulphide, and flammable vapour. Gas monitors are regularly “bump tested” (in-house calibration using a reference gas) as well as being externally serviced.

Where exposure monitoring is not necessary: The COSHH Regulations specify that exposure monitoring is not a strict requirement when there is a contained process with sufficient warning systems to alert to a breach of containment; or where there are alternative means of assessing exposure e.g. measuring air velocity.

*HSDU (Hospital Sterilisation and Decontamination Unit):* the endoscope reprocessing systems are contained and designed to minimise exposure but it is possible for disinfection agents to leak into the working area. The area is fitted with fixed air sensors and alarm for Peracetic Acid (PAA), set to the USA OSHA WEL as there is no UK WEL (and the USA limit is very low). The ventilation (air changes per hour rate) meets HTM 03-01 Part A. Additional ventilation is available in some HSDU departments in emergency situations.

*Magnetic Resonance Imaging (MRI):* liquid helium is contained within the MRI scanner and there is a low risk of exposure during normal operation. In the event of an emergency quench, gaseous helium may enter the workplace and displace breathable air downwards from the ceiling. Oxygen sensors and alarms are fitted above head height. Additional ventilation is available in some MRI units.

Areas where there is a sufficient air velocity to meet other requirements or regulations do not necessarily require exposure monitoring to be compliant with COSHH Regulations. Exposure monitoring may be advised for assurance or when otherwise guided by the COSHH assessment.

*Estates departments are able to measure air velocities to ensure compliance with HTM 03-01A and other standards. HDdUHB also has a Compliance department - one of the Officers assesses compliance with HTMs.*

Areas assessed as requiring exposure monitoring:

Two areas have been identified that require exposure monitoring in order to provide assurance on the level of exposure (see below). While it is believed that the current ventilation rates are likely to result in compliance with COSHH Regulations, monitoring data is needed to evidence this.

Nationwide concerns regarding Entonox use in Midwifery (see below) also add to the need for monitoring to evidence HDdUHB compliance. Other departments such as Accident & Emergency, Radiology, and Plaster rooms use Entonox at much lower levels and for shorter duration, so are likely to be compliant even though they will have lower ventilation rates.

*Midwifery (GGH, Withybush Hospital (WGH) and Bronglais Hospital (BGH): A letter was sent from the Royal College of Midwives detailing concerns regarding nitrous oxide exposure in certain NHS trusts in England. HDdUHB has issued a response to this letter. Exposure and environmental monitoring is advised.*

*There is verbal assurance that GGH meets/exceeds the requirements of HTM 03-01A relating to ventilation in labour wards. HTM 03-01A specifies a minimum of 10 ACH (air changes per hour) for protection against airborne anaesthetic agents. It is therefore likely that exposure to anaesthetic agents such as nitrous oxide is below the Workplace Exposure Limit of 100ppm time-weighted average over 8 hours*

*The Health, Safety, and Security team are working to provide assurance in this area, such as obtaining ventilation data and performing site visits as initial actions. COSHH assessments are being completed and will be updated with ventilation information and exposure monitoring data. Any remedial actions required will be informed by the results of this assessment process.*

*Endoscopy (All Sites): Will be added to the above monitoring exercise due to complete data capture and to provide assurance due to the potential for higher levels of use of Entonox.*

*Endoscopy – PPH: PPH has a procedure room that does not meet the requirements of HTM 03-01 Part A. Exposure monitoring is advised in this room (room and personal dosimetry) to ensure nitrous oxide levels are below the Workplace Exposure Limit of 100ppm (time-weighted average over 8 hours).*

*Endoscopy – BGH / WGH / GGH: These sites have endoscopy units that are Joint Advisory Group (JAG) accredited and have ventilation that exceeds the requirements of HTM 03-01 Part A relating to ventilation in Endoscopy units. This document specifies a minimum of 10 ACH (air changes per hour) for protection against airborne anaesthetic agents. It is therefore likely that exposure to anaesthetic agents such as nitrous oxide is below the Workplace Exposure Limit of 100ppm (time-weighted average over 8 hours).*

### Argymhelliad / Recommendation

The Health and Safety Committee is requested to receive assurance from the progress made to date and the plan going forward to reach compliance against the COSHH Regulations in terms of Workplace Exposure Limits.

The Committee is also requested to note that exposure monitoring is recommended for Midwifery and Endoscopy at the same time – these are the two highest users of Entonox and data is needed to evidence that compliance with Healthcare Technical Memoranda also delivers compliance with COSHH Regulations in these areas.

### **Amcanion: (rhaid cwblhau)**

#### **Objectives: (must be completed)**

Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	2.1 Provide assurance around the UHB arrangements for ensuring the health, safety, welfare and security of all employees and of those who may be affected by work-related activities, such as patients, members of the public, volunteers contractors etc.
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	Not Applicable
Safon(au) Gofal ac Iechyd: Health and Care Standard(s):	1. Staying Healthy 2. Safe Care 2.1 Managing Risk and Promoting Health and Safety 2.4 Infection Prevention and Control (IPC) and Decontamination
Amcanion Strategol y BIP: UHB Strategic Objectives:	2. Working together to be the best we can be
Amcanion Cynllunio Planning Objectives	Not Applicable
Amcanion Llesiant BIP: UHB Well-being Objectives: <a href="#">Hyperlink to HDdUHB Well-being Objectives Annual Report 2018-2019</a>	2. Develop a skilled and flexible workforce to meet the changing needs of the modern NHS

### **Gwybodaeth Ychwanegol:**

#### **Further Information:**

Ar sail tystiolaeth: Evidence Base:	Contained within the body of the report.
Rhestr Termau: Glossary of Terms:	Contained within the body of the report.
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Ansawdd Iechyd a Diogelwch:	Health and Safety Advisory Group

Parties / Committees consulted prior to Health and Safety Committee:	
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<b>Effaith: (rhaid cwblhau)</b> <b>Impact: (must be completed)</b>	
<b>Ariannol / Gwerth am Arian:</b> <b>Financial / Service:</b>	Environmental assessments may need to be procured via external contractors.
<b>Ansawdd / Gofal Claf:</b> <b>Quality / Patient Care:</b>	There is a positive impact on staff and patient safety, health and wellbeing through compliance with health and safety regulations.
<b>Gweithlu:</b> <b>Workforce:</b>	Potential for adverse future staffing impacts if this legislation is not complied with as it relates to employee safety.
<b>Risg:</b> <b>Risk:</b>	Risk to health and safety management.
<b>Cyfreithiol:</b> <b>Legal:</b>	Potential for enforcement action including Improvement Notices/Prosecutions and claims due to breaches in legislation.
<b>Enw Da:</b> <b>Reputational:</b>	Potential for enforcement action including Improvement Notices/Prosecutions and claims due to breaches in legislation.
<b>Gyfrinachedd:</b> <b>Privacy:</b>	Not Applicable
<b>Cydraddoldeb:</b> <b>Equality:</b>	No evidence gathered to indicate a negative impact on any protected group/s.