**Manchester Institute of Biotechnology — Risk Assessment Form**



| **Date:** 25/02/15 | **Assessed by**:  Hope Adamson | **Validated by**:  Christopher Blanford | **Location**:  MIB | **Assessment ref no:**  CFB 01b | **Review date:**  24/02/16 |
| --- | --- | --- | --- | --- | --- |
| **Task**  Overnight use of rotating disc electrode setup, including potentiostat, electrode rotator, mass flow controllers, and water recirculator. | | | | | |

| **Activity** | **Hazard** | **Person(s) in dange**r | **Existing measures to control risk** | **Risk rating** | **Result** |
| --- | --- | --- | --- | --- | --- |
| Use of devices to generate fixed potentials and currents (potentiostats). | Electrical hazard: risk of electric shock with DC voltages up to ~13 V and DC currents ≤ 30 mA. | Individual researcher | * During training by supervisor or senior group member, all users are made aware of potential risks from electric shocks. * All users must be instructed in proper wiring of electrochemical cells and how to avoid short circuits. * Any obvious danger, sparks/damaged cables are reported immediately to technical staff and the equipment not used or switched off if in use. * Main electrical equipment will be kept above the water circulator. | low | A |
| Use of gas cylinders (flow of O2 and Ar through gas lines and mass flow controllers) | Leak of gases leading to an increase or depletion of O2. | Workers in the vicinity | * All users of gas cylinders must attend a Gas safety and gas regulators training course. * Gas lines will be checked for leaks before leaving overnight. * Exhaust vented by mobile extractor (snorkel). * Control of total volume by mass flow controllers. * The spanner to shut off the cylinder must be left on the cylinder. * In the event of a leak the cylinder will be shut off and gases will be vented through the extractor. * Instructions for this emergency shutdown will be taped to the equipment overnight. See added page. | low | A |
| Use of water circulator | Leakage of water (maximum 6L): risk of contact with electrical equipment and risk of people slipping. | Workers in the vicinity | * Fittings will be checked for leaks before leaving overnight. * Total volume controlled to 6L. * In the event of a leak the circulator will be turned off, electrical equipment (potentiostat, electrode rotator and computer) raised above water level and the water mopped up. * Instructions for this procedure will be taped to the equipment overnight. See added page. | low | A |
| Use of electrode rotator | Risk of entanglement | Worker | * Rotator cuts out with minimal resistance. | low | A |

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| --- |
| **Authorisation by PI**  I confirm that I have considered and understand the experiment and the associated hazards. I am satisfied that all of the hazards have been identified and that the control measures to be followed will reduce the risks to acceptable levels.  Print name: Signed:  Date: |

**Declaration by researcher**

I confirm that I have read this Risk Assessment and that I understand the hazards and risks involved and will follow all of the safety procedures stated.

**Declaration by PI**

I confirm that the researcher who has signed below is competent to undertake the work. My counter-signature indicates that I am happy for the work to proceed.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name (please print)** | **signed** | **PI countersignature** | **date** |
| Hope Adamson |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Experiment running overnight**

Dates:

Emergency contacts: Hope Adamson (07876112118)

Chris Blanford (07969468415)

Checklist before leaving unattended overnight:

|  |  |  |
| --- | --- | --- |
| **Equipment** | **Check** | **Done?**  **(✓)** |
| O2 cylinder | Leak test |  |
| Ar cylinder | Leak test |  |
| Water circulator | Leak test around cell |  |
| Water circulator | Sufficient water in reservoir |  |
| Water circulator | Electrical equipment above water level |  |
| Inlet gas line | Leak check |  |
| Inlet gas bubbler | Sufficient water to hydrate gas |  |
| Outlet gas line | Securely attached to exhaust snorkel |  |
| Exhaust snorkel | Switched on |  |

Emergency shutdown procedures:

|  |  |  |
| --- | --- | --- |
| **Equipment** | **In use?** | **Emergency shutdown procedure** |
| O2 cylinder (black) |  | Turn the spanner on the cylinder anticlockwise to shut off the main valve. Ensure the evacuator is on to vent the gas. |
| Ar cylinder (green) |  | As above |
| Water circulator |  | Turn it off at mains. If there has been a leak, ensure electrical equipment (potentiostat, electrode rotator and computer) is above water level and mop up the water. |
| Electrode rotator |  | Turn off at mains or at back of unit with LED display |
| Computer |  | Turn off at mains (also turns off potentiostat) |

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