**Faculty of Environment. School of Earth and Environment.** 

**COSHH Risk Assessment Form:**

It is the responsibility of the person directing the research i.e. the Academic Supervisor / Principal Investigator to ensure that assessments are carried out, that they remain valid and that all the control measures identified are applied.

**Section 1: Primary Evaluation.**

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| --- | --- | --- | --- |
| **Person directing the research.** | | **Person conducting the assessment.** | |
| Name | Caroline Peacock | Name | Andy Connelly |
| Position | PI | Position | Technician |

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| --- | --- | --- | --- | --- |
| **Activity Title** | Cohen laboratories general user Risk and COSHH assessment for **full users** | | Activity Reference No |  |
| Brief description of activity  This COSHH assessment covers chemicals that are generally available in the Cohen labs and are purchased by the Cohen technicians on a regular basis. Other chemicals should be covered by individual users COSHH assessments for their projects or by general lab COSHH assessments and so require separate training. Lab users can handle the chemicals in this COSHH form only after a fully lab induction. If they are going to use them regularly (as part of their experiments) then the chemicals should also be covered on the COSHH form for their individual experiment. | | | | |
| Location / Building / Laboratory | | SEE (Cohen) | | |

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| **Names of personnel involved**  *This list must include the names of all personnel involved in this activity. The undersigned must have read this assessment and agree to abide by the control measures outlined within it and with any safe systems of work and working practices which minimise the identified hazards and risks from activity.* | | | | |
| **Name (Capitals)** | **Status** | **Signature** | **Date started** | **Date ceased** |
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*Legend: Status: A = Academic, RF = Research Fellow, PD = Post Doctoral, T = Technical, PG = Post Graduate, UG = Under Graduate.*

**Section 2: Hazard Evaluation and Risk Determination.**

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| --- | --- | --- |
| **Does the method involve the use of?** | | **Action** |
| Chemicals including rock / sand / silica / plaster / wood etc | Yes | Continue with section 3 |
| Flammable materials or solvents | No | Continue with section 3 |
| Flammable and oxidising gases | No | Continue with section 3 |
| Toxic gases | No | Continue with section 3 |
| Asphyxiant gases | No | Continue with section 3 |
| Cryogenic materials (solid / liquid / gas) | No | Continue with section 3 |
| Biological agents e.g. bacteria | No | Complete a supplementary Biological Risk Assessment |
| Human or Animal tissue, cells or body fluids | No | Complete a supplementary Biological Risk Assessment |
| Environmental Samples e.g. soil, water, plants | Yes | Complete a supplementary Biological Risk Assessment |

*N.B. Activities involving the use of ionising radiation must be covered by an appropriate risk assessment and the necessary Permit to Work obtained.*

**Section 3: Hazard Identification (Chemicals).**

Identify and list all chemicals and flammable materials used in this activity and indicate the designated hazard categories (using the matrix in the Guidance Notes).

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| **Name of Substance** | **Hazard Category**  **(Risk Phrase No)** | **Amount held** | **Route of Entry** | **Chronic Effects** | **WEL**  **(if assigned)** | **Amount handled** | **Hazard Level (L/M/H)** |
| HCl (Concentrated) | R34, R37 | 2.5Lx10=25L | E S Ig In | May affect liver, bleeding of nose and gums, nasal and oral mucosal ulceration,  conjunctivitis, yellowing of teeth  and erosion of tooth enamel, dermatitis. | 5 ppm (short term exposure).  1 ppm (long term exposure). | Max 2.5l. | M |
| HNO3 | O Co  R8 R35 | 2.5Lx10=25L | E S Ig In | The substance may be toxic to lungs, mucous membranes, upper respiratory tract, skin, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated  or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged  exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. | Short term: 2.6 mg/m3 (1 ppm) | Max 2.5L | M |
| Sulphuric acid | R35 Co | 2.5Lx5=12.5L | E S Ig In | CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs | TWA 0.05 mg/m3 | Max 2.5L |  |
| Ethanol | R11 | 2.5Lx10=25L | E S Ig In | Cancer hazard: This substance has caused adverse reproductive and foetal effects in humans: Substances known to cause developmental toxicity in humans: Tumorigenic effects have been reported in experimental animals: May cause adverse liver effects: May cause adverse kidney effects | TWA 1920 mg/m3 | Max 2.5L |  |
| Methanol | R11, HF R39/23/24/25 T | 2.5Lx10=25L | E S Ig In | Repeated exposure to airborne methanol have been associated with headaches and with damaged vision. Neurological damage, giving rise to permanent motor dysfunction may follow methanol poisoning. Repeated skin contact can cause defatting dermatitis with dryness and cracking. Repeated inhalation exposures to rats caused central nervous system and behavioural effects, and changes to the spleen. Repeated oral exposures to rats caused liver toxicity, central nervous system effects and behavioural changes. | STEL: 333mg/m3  TWA 266mg/m3 | Max 2.5L |  |
| Isopropanol | R11 HF  R36/67 Ir | 2.5Lx10=25L | E S Ig In | The substance may be toxic to kidneys, liver, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. | STEL 1250mg/m3  TWA 999 mg/m3 | Max 2.5L |  |
| Acetone | R11 HF  R36/66/67 Ir | 2.5Lx10=25L | E S Ig In | The substance may be toxic to kidneys, the reproductive system, liver, skin. Repeated or prolonged exposure to the substance can produce target organs damage. | STEL 3620mg/m3  TWA 1210 mg/m3 | Max 2.5L |  |
| Water (DI and Milli-Q) | N/A | | | | | | |
| Users samples | These should have been COSHH assessed by the users and so be appropriately labelled. See labelling advise in Induction document. | | | | | | |
| Compressed gases/cryogens | See compressed gases/cryogens COSHH assessment | | | | | | |
| HF | See HF COSHH assessment | | | | | | |
| Any other chemicals | Should be covered by individual users risk assessments | | | | | | |

*Legend: Hazard Category: VT = Very Toxic, T = Toxic, H = Harmful, Co = Corrosive, I = Irritating, E = Explosive, O = Oxidising, C = Combustible,  
 F = Flammable, HF = Highly Flammable, EF = Extremely Flammable.*

*Legend: Route of Entry: E = Eyes, S = Skin contact or absorption, Ig = Ingestion, In = Inhalation, P = Penetration.*

*Legend: Chronic Effects: R = Reproductive, C = Carcinogenic, T = Teratogenic, Cu = Cumulative, A/S = Allergenic / Sensitising.*

*WEL: Workplace Exposure Limit: If assigned, usually in ppm for vapours or mg/m3 for particulates.*

**Section 4: Risk Identification and Reduction.**

Identification of those at risk of exposure, and the requirement for Occupational Health Surveillance.

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| --- | --- |
| Are there any substances listed that have the Risk Phrases R40, R42, R43, R45, R46, R48 or R49 **or** that have been determined to be in the **high** risk category in Section 3? | No |
| If Yes, a request for Occupational Health Surveillance must be made, accompanied by a copy of this risk assessment before work is carried out.  *Has this been carried out?* | No |
| Are there any substances listed that have the risk phrases R60, R61, R62, R63, R64 or R68 i.e. those affecting women of a child bearing age?  *If Yes, identify the substances.* | No |
| If Yes, a request for Occupational Health Surveillance must be made, accompanied by a copy of this risk assessment before work is carried out.  *Has this been carried out?*  ***N.B. This Risk Assessment must be reviewed for new, expectant or nursing mothers.*** | No |
| Are there any personnel other than those named in this risk assessment who may be at risk from exposure e.g. other laboratory workers, Estate Services Staff, Cleaners, Service Engineers, Maintenance Staff etc.  *If Yes, please give details. Is a Safe System of Work available and is a Permit to Work system in place?*  All persons that are encountered on route may be exposed. | Yes |
| Are cryogenic substances used in the process?  *If Yes, identify the cryogenic material and its state.* | No |
| Are flammable solvents ever stored with, or used in conjunction with, chemicals with which they may react e.g. oxidizers or acids?  *If Yes, please identify.* | No |
| Are any extremely flammable or highly flammable solvents held in quantities in excess of 500ml, stored or used in a refrigerator or freezers?  *If Yes, please identify.* | No |
| Are any flammable solvents used in conjunction with heating processes or electrical apparatus that could generate sparks?  *If Yes, please identify process and apparatus.* | No |

**Section 5: Prevention and Control of Exposure.**

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| --- | --- |
| Can the method be replaced by one that does not involve the hazardous substance(s)?  *If Yes, please give details.* | No |
| Can any of the substances be eliminated, replaced or substituted by less hazardous alternatives?  *If Yes, please give details.* | No |
| Are the hazardous substances available in a lower practicable concentration?  *If Yes, please give details.* | No |
| Can the quantities of hazardous substances purchased, stored, used and produced as waste be reduced?  *If Yes, please give details.* | No |
| Have all users been trained in the use and transport of cryogenic vessels and the use of cryogenic material? | N/A |
| Are personnel trained in the correct method of securing cylinders for use or transit and in selection and fitting of pressure reduction valves and are leak tests carried out when connecting a gas cylinder?  *If Yes, identify the individuals and details.*  *Please see the relevant SOP and training records.* | Yes |

**Section 6: Storage and Transportation.**

Please indicate how the following substances are stored if relevant:

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| --- | --- | --- |
| Toxic | Toxic substances are either stored in a locked toxics cabinet unless either a liquid solvent, base, or acid in which case they are stored in a vented cabinet. | |
| Corrosive | Corrosive liquid bases and acid are stored in vented cabinets. | |
| Flammable / Highly Flammable / Extremely Flammable | Flammable liquids are stored in vented cabinets. | |
| Other | Flammable acids (i.e. acetic) are stored separately from oxidising acids. | |
| Will any of these substances need to be transported to other parts of the building or other buildings **on campus**?  *If Yes, please give details on how containment will be achieved.*  Containers of concentrated acids must be transported with a secondary containment (e.g. a bottle caddy) for transport between labs. This assessment does not cover transport between buildings. | | Yes |
| Will any of these substances need to be transported to other sites **off campus**?  *If Yes, please give details including a) Name of other site: b) Substance and quantity: c) Method of transportation: d) Containment method. No* | | No |
| Are any flammable solvents stored outside a fire resistant cabinet?  *If Yes, please explain why?* | | No |
| Are replacement cylinders always kept in the external gas store?  *If No, please explain why?* | | Yes |
| Are all gas cylinders transported to and from the laboratory in a purpose made gas cylinder trolley?  *If No, please explain why?* | | Yes |

**Section 7: Containment and Ventilation.**

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| --- | --- |
| Can some or all parts of the process be carried out on the open bench with good ventilation?  *If Yes, please give details including any additional containment methods e.g. drip trays.*  All users work is carried out in drip trays to prevent cross contamination of experiments and reduce spillage. | Yes |
| Is a fume cupboard or any other form of local exhaust ventilation (LEV) required for any part of the process?  *If Yes, please give details including type and location.*  Handling any concentrated acids or large quantities of solvents should be carried out in a fume cupboard. | yes |
| Is the fume cupboard or any other form of LEV periodically checked and inspected and subject to insurance inspection?  *If Yes, please give details including date of last insurance inspection.*  Yes, regularly. | Yes |
| Does any part of the process need to be totally enclosed e.g. inside a glove box or anaerobic chamber?  *If Yes, please give details.*  See relevant Risk and COSHH assessment for this. | Yes |
| Is a chemical spill containment kit available if required?  *If Yes, please give details including location and name of trained personnel for use and of the personnel responsible for maintenance and replacement of the kit.*  *N.B. Please ensure that the kit available is adequate enough to contain a maximum credible spill of materials involved.*  Yes, each lab as a container of vermiculite. Otherwise there are more complete spills kits in 9.132, 8.130, and on the level 9 corridor. | N/A |
| If liquid cryogens are being used, is the room sufficiently well ventilated to ensure against oxygen depletion / enrichment?  See appropriate COSHH and Risk Assessment. | Yes |
| Where gases are being used, is the room sufficiently well ventilated to ensure against oxygen depletion / enrichment?  Assessments have been carried out on each room – see appropriate documents. | Yes |

**Section 8: Personal Protective Equipment (PPE).**

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| --- | --- |
| Are gloves to be used for any part of the process?  *If Yes, please describe the parts of the procedure and specify the type of glove to be used.*  Gloves should be used for handling any chemicals or samples within the laboratory. See Lab induction document for details of which gloves to use for which applications. In general, nitrile gloves are used for handling general samples and chemicals. | Yes |
| Is any form of eye or face protection to be used for any part of the process?  *If Yes, please describe the parts of the procedure and state the type of eye or face protection to be used e.g. visor, goggles or safety glasses and whether they should be impact resistant or chemical resistant.*  Eye protection should be used at all times within the laboratories. See Lab induction document for details. | Yes |
| Is any form of respiratory equipment to be used for any part of the process?  *If Yes, please describe the parts of the procedure and state the type of respiratory equipment to be used.*  *N.B. For some cartridge respirator units face fit testing should be considered.* | No |
| Is any other form of protective clothing to be worn in addition to lab coats?  *If Yes, please give details.*  When transporting gas cylinders steel toe cap boots should be worn. | Yes |

**Section 9: Waste Disposal.**

Enter all substances in the appropriate box next to method of disposal.

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| --- | --- | --- |
| **Method of Disposal.** | **Substance.** | **Contact details for Waste Disposal if applicable.** |
| Chemical waste collection. | In the first case all concentrated acids. | Sarah Burdall |
| Halogenated solvent waste collection. |  |  |
| Non-halogenated solvent waste collection. |  |  |
| Healthcare Waste (yellow bag). |  |  |
| Drain dilution with excess water. | Small quantities’ of solvents | n/a |
| Drain dilution with prior neutralisation. |  | n/a |
| Please describe any neutralisation process used in conjunction with the above method of disposal. | | |

**Section 10: Emergency Procedures.**

**First Aid.**

Describe the First Aid procedures in place for accidental exposure to any substances outlined in this Risk Assessment.

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| --- | --- |
| **Area of contact** | **First Aid Procedure** |
| Eyes | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician |
| Skin | Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a  physician |
| Lungs | If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| Mouth | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with  water. Consult a physician. If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| Outline any First Aid procedures for exposure to Cyanide or Hydrofluoric Acid.  *N.B Both substances are major COSHH hazards and as such require a specific Safe System of Work to be agreed with by the local Health and Safety Co-ordinator which should include the provision of currently recommended antidotes and treatments. To be reviewed annually.* | |

**Fire Fighting Measures.**

Enter all flammable substances used in the box below against the most appropriate fire extinguishing medium.

*N.B. Only enter substances against extinguishers that are both suitable and available.*

|  |  |
| --- | --- |
| Extinguisher | Substance |
| Water | Use water spray, alcohol, resistant foam, dry chemical or carbon dioxide.  If sulphuric acid involved sulphur oxides may be produced.  Wear self-contained breathing apparatus for firefighting if necessary. |
| Chemical foam |
| Fire blanket |
| Carbon dioxide |
| Dry powder |

**Major Spillage.**

Name the substance below that could be involved in a significant spill and indicate the correct method of disposal e.g. chemical waste, solvent waste, dilution to drain etc.

|  |  |
| --- | --- |
| Substance | Method of disposal |
| All | Chemical waste collection. See Induction document for details |
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| Please give details of any additional PPE that may be required whilst dealing with a major spill e.g. self contained breathing apparatus, respirator masks, aprons, gloves, protective footwear etc. Also indicate where this equipment is stored and the name of staff trained to deal with a major spill including their contact details. | |

**Section 11: Information, Instruction and Training / Supervision.**

|  |  |
| --- | --- |
| Please indicate the sources of information used in compiling this assessment including Manufacturers Materials Safety Data Sheets (MSDS) and other sources of information e.g. Academic literature, HSE Codes of Practice etc.  Sigma Aldrich MSDS | |
| List any part of the procedure for which training / supervision is required and indicate whether training records are kept or not with a location. Include details of those trained in spill containment procedures.  Training is required for any work in the laboratories. Other activities in the labs may require training. | |
| Is Lone Working permitted for the activity outlined in this Risk assessment?  *If Yes please give details outlining any specific control measures (Lone Working Risk Assessment available).*  Requires lone work risk assessment for the individual involved. | Yes |

**Section 12: Declaration.**

This activity has been assessed and the identified control measures listed are a requirement of the Faculty / School. This assessment must be accessible and signed by all personnel involved in this procedure.

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| --- | --- |
| Name of Assessor | Andy Connelly |
| Signature |  |
| Date |  |

|  |  |
| --- | --- |
| Name of Academic Supervisor / Principal Investigator / Line Manager | Caroline Peacock |
| Signature |  |
| Date |  |

Assessment Review

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Review 1 | Reason for review | Review 2 | Reason for review |
| Due Date |  |  |  |  |
| Date Conducted |  |  |
| Conducted by |  |  |