SCHOOL OF BIOLOGICAL SCIENCES
HEALTH AND SAFETY
CODE OF PRACTICE
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SECTION 1 – BIO/BMRC BUILDINGS CODE OF PRACTICE

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EXPECTED CONDUCT OF ALL STAFF

All staff and research workers in the School of Biology and BMRC buildings should behave in a manner which avoids annoyance or inconvenience to others. The School buildings are professional work environments; this fact should guide decisions about appropriate dress and behaviour.

- Smoking is prohibited in all buildings and within 5 meters of all external doors.
- Radios, computers and similar electronic devices should not be used in a manner that causes annoyance to other workers, students or visitors. The use of such equipment in open plan offices / study areas is not appropriate. Users must at all times be able to hear emergency alarms above any personal device/ear phones.
- Personal and communal work areas should be kept tidy so that cleaning staff have access to floors and surfaces. Research workers are responsible for keeping their own benches clean and tidy and for cleaning their own apparatus.
- Large personal items (including bicycles) should not be brought into buildings.
- On leaving UEA research and desk areas should be cleared. Apparatus cleaned / made safe and samples/paperwork should be disposed of or stored and logged appropriately in consultation with academic supervisors.
INTRODUCTION
This Code of Practice must be adhered to by all staff working within The School of Biological Sciences at UEA.

_As part of the School of Biology’s commitment to Health and Safety, all staff who intend to work in BIO or its associated buildings / facilities are required within TWO DAYS of arriving at UEA to have read and understood this ‘School of Biological Sciences Health and Safety Code of Practice’. _

All staff working in school buildings but NOT working in the schools laboratories or research facilities are required to read SECTION 1 of the Health and Safety Code of Practice only.

All staff working in school buildings INCLUDING working in the schools laboratories or research facilities and anyone working as a demonstrator on a teaching course is required to read SECTION 1 AND SECTION 2 of the Health and Safety Code of Practice.

‘The Declaration’ in Appendix I must be completed as appropriate and returned to the school office within two days of arrival after which card access and key code access will be granted (an additional copy of The Declaration is printed on the back page of this booklet for tear off and completion).

For all staff working in school laboratories or research facilities, the reading of this Code of Practice is not a replacement for the requirement for a laboratory Health and Safety Induction Training. All laboratory staff must receive Health and Safety Induction Training as soon as possible on arrival at the UEA. All staff should contact the Laboratory Manager to register for this induction. Any short term visitors to the school must also read and sign the declaration in Appendix I having read this code of practice as appropriate to their work if they will be in the school for any greater than 1 week.

Further useful information with specific topics relevant to work in Bio can be found on the BIO Health & Safety intranet site: https://intranet.uea.ac.uk/biological-sciences/intranet/hands

GENERAL HEALTH AND SAFETY INFORMATION
Management of Health & Safety in BIO buildings (and BMRC which comes under the umbrella of BIO) is monitored and managed by the School of Biology Safety Committee overseen by the Head of School who has overall responsibility for Health and Safety in the School of Biological Sciences and the BMRC. The safety rules laid out by this committee and the school are applicable to all staff working within these facilities regardless of their school of employment.

UEA Staff and students have a legal obligation (Health and Safety at Work Act 1974) to take reasonable care for the health and safety of themselves and of others who may be affected by their acts or omissions. Staff must also co-operate with the University in ensuring compliance with its legal obligations. The University expects all staff and students to take their responsibilities seriously and to co-operate with the safety measures that it adopts. Remember, foresight is better than hindsight. If you see something wrong, correct it and/or report it.

_The UEA’s obligations include:_
- Undertaking risk assessments.
- Providing adequate training.
- Formulating local rules (policies and procedures).
- Formulating emergency plans.
- Complying with statutory notifications.
- Supervising and monitoring safety (including health screening).
- Setting up and monitoring safety committees.

All staff should be aware of and make themselves familiar with the UEA Health and Safety Policy which can be found here: https://intranet.uea.ac.uk/uss/intranet/Statement+of+Safety+Policy
DISCIPLINARY PROCEDURE FOR LACK OF COMPLIANCE WITH RULES:
To this end the School have the following procedures in place to ensure that all staff adhere to the UEA and BIO/BMRC local rules laid out in this booklet. In the event of a member of staff who is found to be ignoring or not following the safety practices detailed the following cascade will be initiated:

- First a verbal warning should be issued either from a member of senior technical staff or their lab supervisor / PI.
- If a member of staff continues to ignore these rules then the member of staff is given a written warning which is copied in to their supervisor/PI and copied to the Head of School.
- If after two warnings the staff member still is ignoring rules then their access card will be deactivated with immediate effect. They will receive a further written missive once again copied to supervisor and to Head of School to inform them that their card has been deactivated and that they are no longer permitted access to university buildings. Their card will not be reinstated until such a time as they have had a personal meeting with the Head of School to discuss what they must do to comply with the rules. The Head of School will then inform the laboratory manager when they feel satisfied that the rules are being adhered to and the member of staff is safe to work in the buildings.

UNIVERSITY SAFETY SERVICES (USS)
UEA Safety Services provides all staff and students at UEA with advice and guidance on safety. They have neither an executive nor an enforcement role.

USS is always available to answer any questions or queries relating to health and safety at work and actively encourage people to contact their services should they require guidance. Or visit Safety Services website at:  https://intranet.uea.ac.uk/uss/intranet  for safety advice, guidance and information.

Safety management is the responsibility of those, within the University, who are in charge of work, of students or of other staff. Safety Services provides advice to support this activity.

UEA SAFETY CONTACTS
Comprehensive information regarding health and safety contacts can be located on the BIO Health and Safety and the USS Intranet. The Laboratory Manager or University Safety Services can always be contacted if you need further help or if you are unsure. Also see ‘Access Hours in BIO/BMRC, Out of hours emergency contact list’ and Appendix II.
EMERGENCY PROCEDURES

FIRE SAFETY

- **Sound the Alarm** - If you discover a fire, sound the alarm by striking the “break glass” on the nearest fire alarm point / strike box. These are found in BIO beside the fire exits at the end of each corridor (East / West) the lobby opposite the lift on each floor and on stairwell on every level. In BMRC these are found near the main lab entrance doors from BIO on each level and in the East and West stairwells on each floor. You will be shown these during your induction and you must ensure you are familiar with the location of fire alarm points in the areas in which you work.

- **Ring Security / Emergency Services** - If it is appropriate and safe and there is enough time ring extension 2222 or 9-999 and give details of the location and extent of the fire including any special hazards, such as, gas cylinders or radioactivity in the area of the fire. As well as laboratory and office telephones there is an emergency telephone opposite the BIO lift on each floor.

- **Use Appropriate fire extinguisher** - If you are confident using the appropriate fire extinguisher or a fire blanket and if the fire is small you may tackle the fire but you **must not take any personal risk**. If the fire cannot be extinguished or if you do not feel confident to tackle it you must leave the building immediately. Fire extinguishers and/or blankets are placed strategically throughout BIO along each corridor of every floor and to the East and West end of each floor in BMRC. Take time to familiarise yourself with their locations and note the extinguisher code (labels are displayed at each location). Please remember that electrical fires should be attacked using a dry powder extinguisher. If in any doubt leave the fire fighting to the emergency services

- **Leave the Building** – If you hear the fire alarm you must leave the buildings immediately. If possible close all doors on exit and leave the building following the Green and White Emergency signs. During your induction you will be shown the fire exit nearest your usual place of work. Use the “fire exits”, these doors automatically release when the fire alarm is activated. **DO NOT stop / wait to collect belongings.**

**DO NOT USE THE LIFTS FOR EVACUATION IN EVENT OF FIRE**

Always follow the directions of fire wardens. They will be identified by wearing YELLOW tabards. Do not re-enter buildings until told it is safe to do so.

**Assembly points:**

Staff from BIO should assemble on the grass between BMRC and the Sainsbury centre (please do not assemble in the BIO loading bay, the ‘walk way’ or in the road). Staff from BMRC who exit from the west exit should assemble on the grass between BMRC and the Sainsbury centre and from the east exit should assemble in the BMRC loading bay by the BMRC fire assembly point (green sign).

**Fire Alarm Testing:**

The fire alarms are tested every Tuesday morning between 8 and 9am. Intermittent alarms or alarm sounding for just a few seconds during this period can be ignored. However if the alarm continues at this time, the alarm must be assumed NOT to be a test and the buildings must be evacuated as normal.

- Fire alarm – constant alarm sounds
- Test – intermittent alarm sounds

**Additional useful fire precautions to take in and around your workplace:**

- **Know** at least two escape routes from your workplace to a FIRE EXIT.
- **Know** the locations of ALL Telephones, Fire Extinguishers and Fire alarm strike points.
- **Know how to** switch off gas and the electricity to equipment etc. (if time and safety allows).
- **Ensure** you keep clutter and paperwork etc to a minimum
- **Ensure** all fire exit routes remain clear from trolleys etc

**DISABLED PERSONS AND FIRE:**
Please seek advice and information from USS intranet site prior to using BIO buildings. If you are a wheelchair user or at any time during your employment or study period have restricted mobility and you need access to BIO buildings, you must inform the Laboratory Manager and a Personal Emergency Evacuation Plan (PEEP) will be prepared. In event of a fire alarm sounding you should follow instructions in your PEEP for exit (if there is no PEEP in place you should make your way to the nearest stairwell or refuge area and await rescue).

FIRST AID / ACCIDENTS

Please take time to make sure you are aware of how to contact a First Aider. Names, extension numbers and locations of first aiders are listed on the BIO Health and Safety (H&S) intranet and are posted at prominent locations throughout buildings on all floors. All staff should familiarise themselves with locations of these contact lists.

In event of an injury to anyone at UEA you should call for help unless the incident is minor.

- Location of First Aid Boxes – In BIO First Aid boxes are located in lobby next to the lift on floors 01, 0, 1, and 2. On floor 02 they are located outside the wash-up rooms and in the teaching lab. In the BMRC these are located in the west lobby areas of floor 02 and 01 and in the kitchen on floor 0.
- In an emergency call - Ambulance ((9)999 AND telephone UEA Security x2222 (day or night) from any telephone or from an emergency telephone in each lobby / foyer next to the lifts.
- If Emergency (fire) alarms sound, do not attempt to move an injured person out of the building unless there is imminent danger. If it is safe to do so, stay with the injured person until help arrives. If you are at all unsure leave the building and inform the emergency services of the location of the injured person.
- All accidents must be reported by use of UEA accident / incident report forms (see USS)

If an accident is not serious but after attendance by a UEA first aider further treatment is recommended, the person should go to their own GP (this should be the University Health Centre ONLY if they are registered with the doctors there) or the Norfolk and Norwich University Hospital Accident and Emergency Unit as appropriate. If a taxi is required to get to the hospital or medical centre the fee will be refunded by the University. Please keep a receipt and speak to the Laboratory Manager to claim a refund.

If you use any item from a first aid box please contact the named person on the box or if first aid stocks have been depleted and require replenishment. Please send an email as indicated on the first aid box if minimum requirements (list inside the first aid box) are not fulfilled.

ACCIDENTS AND HAZARDOUS INCIDENTS REPORTING

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (1995) require that records be kept by the University of accidents that occur to staff, students or other persons on the University premises. All accidents, however minor, must be reported to Safety Services on an accident form available on the USS intranet. The line manager or supervisor of the person involved in the accident and/or a colleague involved in /witness to the accident should also complete the accident report form where possible. It is better to have duplicate forms than none; also different people may have a different perspective of events leading to the accident or incident. All serious accidents and dangerous occurrences must be reported to USS without delay. It is vital not to disturb the area where a serious accident/incident occurred until permission is given by the Director of Safety Services.
A hazardous incident is an unintended event that has the potential to cause personal injury, but has NOT done so on this occasion, e.g. slipping on an uneven surface, equipment malfunctions with the potential to cause harm etc. Any such event should be reported to University Safety Services (USS) and the Laboratory Manager using a hazardous incident report form (see web link above).

FAILURE OF MAINS SERVICES:
In the event of a power failure, flood, gas leak, mechanical breakdown, steam failure or other emergency you should:

- **Ensure your safety and that of other people in the building**, if the incident has the capacity to cause danger to building occupants, activate fire alarms to evacuate the building.
- Safeguard experimental material as far as practicable or safe to do so.
- In the event of floods remember that there may also be electrical or radiation hazards. Warn people in laboratories on the floor/s below to safeguard papers and equipment. Do not attempt to move wet electrical equipment until it is disconnected from the mains.
- Urgently contact appropriate people - Inform Laboratory Manager, contact chief technician or dial Estates and Buildings x2121 giving details and location of problem. Failures out of hours see ‘Out of Hours Contacts’. In any emergency contact Security on x2352 giving details of the problem.
- Use common sense, e.g.: if a refrigerator stops working transfer critical material to another.
- For equipment failures follow instructions on ‘Apparatus in use out of normal hours’ cards.
- Only call out staff to real emergencies.
ACCESS HOURS IN BIO / BMRC (including Out of Hours and lone working)

‘Normal working hours’: 08:00 to 17:30 Monday – Friday (excluding public or customary holidays)

‘Limited Access Hours’: 06:00 to 08:00 & 17:30 to 22:00 Monday–Friday & 06:00 to 22:00 Saturday, Sunday and holidays.

If you have to work during limited access hours, please inform someone from your laboratory and complete and sign an ‘out of hours risk assessment’ (contact a chief technician for advice). Access will be authorised by campus card only and you MUST sign-in and sign-out at the Atrium entrance (main door) for the appropriate building in which you will be working.

Lone Working is defined as working when no other person is working within earshot / line of sight in the same laboratory. Lone working is discouraged at all times where possible always work within earshot/line of sight of a colleague. Lone working is more likely to occur during limited access hours but can happen at any time (lunch breaks, seminars, using equipment in other rooms, etc). If laboratory work must be undertaken when you are alone, all activities should be covered by a risk assessment. Your supervisor must be consulted before the event.

The lone working and out of hours risk assessment

Any Laboratory work out of hours must be restricted to familiar operations that have been assessed as having minimal risk. The risk assessment (contact chief technician or safety officer for a copy of out of hours risk assessment forms) must take into account that as a lone worker you have increased vulnerability when the unexpected occurs. In these situations try to restrict activity to familiar operations that are low risk.

- Your supervisor must be consulted as to what work is appropriate to be completed while lone working.
- Lone working should only be carried out when there are no reasonable alternatives.
- If working alone in the lab then a ‘buddy system’ should be employed wherever reasonably practicable (i.e. ensure someone knows where you are and when you should be expected to return).
- All lone working must be covered by an ‘Out of Hours Risk Assessment’ authorised by the Safety Officer and the Principle Investigator responsible for Safety of the project and read and signed by all staff working out of hours or alone.

Working between 22:00 - 06:00 should be considered as strictly forbidden.

However, if circumstances dictate that work is UNAVOIDABLE between the hours of 22:00 and 06:00, the individual concerned should discuss the matter beforehand with their supervisor and the School Safety Officer (SSO) and obtain express permission. A risk assessment must be written and approved before the work is carried out. Campus cards will not work between these hours unless permission has been granted by the SSO.

OUT OF HOURS EMERGENCY CONTACT LISTS

For a current list of Out of Hours Emergency Contacts for BIO and BMRC please see Appendix II. For problems with individual pieces of equipment the user or owner should be contacted as indicated on the ‘Apparatus in use beyond normal hours’ card attached to the equipment. In the event of a general incident (e.g.: minor flood or power loss) or any laboratory based emergency refer to the “Need Help Out of Hours” lists displayed in BIO in the lobby / foyer of each floor opposite the lift or on main entrance doors to each floor in BMRC or contact The Security Lodge x2352 or x2222. A contact person and out of hours contact number is provided for each floor of BIO and for BMRC. For wide-spread incidents requiring fast response notify The Lodge x2352 or x2222 to initiate their call-out procedure.
Where a radiation contamination hazard is suspected, immediately contact the lodge and refer to the ‘need help out of hours’ list, the radiation protection officer / USS must be called. You must contact someone and not leave this unattended.

Out of Hours lists are for emergencies that require immediate action, only call these numbers in an emergency.

UNDERGRADUATES IN BIO & BMRC BUILDINGS

Undergraduates are only allowed to be in university buildings during ‘normal working hours’ except in exceptional circumstances. Any undergraduates in the laboratories must be supervised at all times. All undergraduates in the buildings must be authorised to be present by a senior member of staff and that member of staff must ensure that all local rules and safety procedures are observed at all times.

VISITORS TO BIO/BMRC – INSURANCE AND SUPERVISION

All short term (day) visitors / engineers to UEA must report in at reception on arrival. Any short term visitors in UEA buildings must be supervised at all times.

All temporary visitors, honorary appointees, voluntary workers or other visitors intending to use BIO or BMRC labs and offices must be registered onto the university’s insurance. To do this all visitors must be authorised to be present by a senior member of staff and that member of staff must ensure that all local rules and safety procedures are observed at all times. Visitors must be registered onto the UEA insurance by completion of an ‘Authorisation to work’ form (see BIO intranet pages under ‘New to BIO’ section). The form is to be completed in all cases where office space, laboratory space, computing or any other BIO or BMRC facility or equipment is to be used on a temporary basis.

Return completed form to head of school PA (BIO 0.22) at least 1 day prior to arrival of visitor.

BUILDING SECURITY

It is the responsibility of all staff to ensure building security is maintained at all times.

There are two different sets of ‘times’ which dictate the security level in BIO and BMRC buildings:

- **Open Access** – this is during normal working hours and on weekdays from 8.30am – 5.30pm.
- **Limited Access** – this is the security level during ‘out of hours’ access, before 8.30am weekdays and after 5.30pm weekday evenings and all day at weekends/holidays.

During ‘Open Access’ BIO’s main entrance doors on floors 01 and doors on floor 02 from the loading bay and to the North entrance by the teaching labs give open access to students and the public. All other doors have restricted access via card swipe at all times. During limited access only staff with limited access rights will be able to access BIO and BMRC buildings.

During limited access periods all persons already in or entering into the buildings must enter their name, location date and sign in time in the limited access log book appropriate to the building in which they will be. These are situated in the BIO atrium just to the right of the main BMRC entrance doors. These records are used so that emergency services would have a record of staff in the building in the event of an emergency and so failure to record in these logs accurately could put lives at risk. Please remember to sign in and out. During limited access periods please ensure that other people do not ‘tailgate’ you through entrance doors to gain access to the buildings. If you see ANYTHING suspicious in or out of hours please report it immediately to security on x2352. Please challenge anyone you do not recognise and in return please don’t take offence if anyone challenges you in the buildings. If you are still in doubt please contact security.

Labs with key locks should be locked at any time they are not occupied, especially out of hours.

NEVER exit through fire exit routes leaving unsecured doors behind you. If you ever come across an unsecured exit out of hours you must report this immediately to security.
GENERAL SAFETY INFORMATION

ELECTRICAL EQUIPMENT AND WIRING SAFETY
For UEA electrical regulations please see USS web pages. Electrical wiring should not be touched. Changing of fuses / plugs can be undertaken by any PAT trained technician, never do this yourself. Any other electrical equipment maintenance or repairs can only be carried out by a trained and assessed electrically competent person (see the Laboratory Manager to organise this). Any work on wired electrical supplies installed in buildings must be undertaken only by the Estates electricians or qualified contractors on site with approval from EST.
Every piece of portable electrical equipment (from new) should have a UEA electrical test sticker with an expiry date on it, it is the user’s responsibility to check this and alert your technician if you find an out of date piece of equipment. Any un-tested or out of date equipment should not be used. This also applies to any privately owned portable electrical equipment including laptops, radios etc.

Electrical Equipment Left on Overnight
It is the users responsibility to ensure any electrical equipment (including analytical equipment, fridges / freezers etc) which is to be left on overnight is safe and suitable for the task and that the area surrounding the item is free from combustible materials. All equipment left on overnight must display an ‘Equipment in Use Out of Hours’ form. This must include an out of hours emergency contact number for the equipment user. For a form contact your technician / laboratory manager.

MANUAL HANDLING
All persons expected to undertake manual handling operations during their work should take a training course on the correct manual handling technique. Manual handling courses are run by USS and you should contact them for training dates. Appropriate lifting equipment should be utilised when the appropriate training has been completed. Staff and students required to perform regular manual handling in the workplace should attend a manual handler’s assessor’s course, contact USS (x2763). Please see the USS intranet for booking instructions. Please note that trained assistance (the University portering department or other external professional removal companies) may be required to move heavy / awkward pieces of equipment.

PREGNANCY
If you are pregnant (or are planning to become pregnant) you must speak to Human Resources (Diane Whalen, D.Whalen@uea.ac.uk). A workplace risk assessment must be undertaken. In many workplaces at UEA there are risks which may affect the health and safety of new and expectant mothers and their child. Working conditions normally considered acceptable may require adjustment during pregnancy or while breastfeeding. The law requires employers to assess risks to new & expectant mothers in the workplace. See: https://intranet.uea.ac.uk/hr/intranet/policies/maternity

DISPLAY SCREEN EQUIPMENT (DSE) TRAINING
DSE training includes essential advice for all staff using visual display units (e.g. computers/monitors) and keyboards on how to avoid eyestrain and muscular problems when using DSE. This training is now available as a web-based course via Blackboard. All regular DSE users should complete this training. Please e-mail USS in order to be enrolled on this course.
FIELD WORK

There are specific procedures in place for employees and students undertaking fieldwork. Make sure you are fully aware of these before undertaking any work in the field. You must visit the BIO H & S and USS intranet for complete instructions and speak to your supervisor or line manager.

Note: Lone working is not permitted outside the UEA during fieldwork.

DRIVING FOR WORK

If you intend to use a car for work related trips (other than coming to and from work) you must ensure you are adequately covered by your insurance policy. You may find your normal vehicle insurance does not cover you for work related transport. The expenses you can claim for fuel for work related car use includes an amount for insurance, Cost of insurance premiums are not covered. See: https://intranet.uea.ac.uk/uss/intranet/safetysubjects/driving for more information.

PROCUREMENT PROCESSES IN UEA

All purchases for work related items require AUTHORISATION and a relevant GRANT CODE. Your PI will be able to direct you to the person responsible for this in your laboratory, or instigate you as an authorised user for the e-procurement system.

Please do not order and pay personally for items from shops or over the internet with the intention of claiming the funds back. If you need to do this for any reason speak with the Laboratory Manager first. It is not possible to purchase items for work from eBay or other auction sites.

The School has a limited number of commonly used items available stored within the school that can be purchased using a grant or other recharge code. This includes stationary items; paper, lab books, note books, pens, tissues, blue roll, gloves, foil, clingfilm and many more. Please speak to a technician if you are unsure if the items you need are already held in the School.

Many suppliers provide preferential pricing for universities. If you wish to find out more information contact a member of technical staff or laboratory manager who will be able to point you in the right direction. Always ask for quotes for larger items, list prices can nearly always be negotiated.

The CHE goods depot stocks many commonly used solvents (including acetone, acetonitrile, propanol, ethanol, methanol). Please speak with goods depot staff if you need to know how to access these (ext. 2006). You may not purchase more than 4 bottles at any time and must have appropriate solvent carriers to transport solvents. Volumes of stored solvents in all labs must be kept to a minimum (see ‘DSEAR regulations’ in section 3 below).

The UEA has purchasing regulations relating to large purchases. Purchases for items anything over £5k per item come under these rules. Please see Finance website for more information: (https://intranet.uea.ac.uk/fin/purchasing)

Large Equipment Purchasing

All large equipment purchases must be discussed with the Laboratory Manager PRIOR to purchase.
SECTION 2 – BIO/BMRC LABORATORY SAFETY

GENERAL LABORATORY SAFETY INFORMATION

- Introduction
  - Before Starting Work in BIO/BMRC Laboratories
- Personal Protective Equipment (PPE)
  - Labcoats
  - Gloves
  - Eye/face protection
  - Personal attire

HAZARDOUS SUBSTANCES / EQUIPMENT AND RISK ASSESSMENTS

- Control of Substances Hazardous to Health (CoSHH)
- Other specific Registrations / controlled use:
  - Genetically Modified Organisms
  - Human Cells, Tissues and Body Fluids
  - Microbiological organisms
  - Radioisotopes
  - Drug Precursors
- Use of Flammable Solvents and Flammable Storage limitations (DSEAR)
- Transportation of Samples etc within and outside of UEA
  - Transporting or Shipping Chemicals & Dangerous Substances outside of UEA
  - Transporting Experimental Equipment, Samples & Chemicals in & around BIO
    - Double Containment Practice
    - Transportation Risk Assessment
- Spills Procedures
  - In the event of chemical spill
- Specialist equipment / procedural hazards
  - Special instructions for handling cryogens
  - Air Flow Safety Equipment
    - Fume Hoods
    - Microbiological Safety Cabinets (MSC’s)
    - Laminar Flow Cabinets
  - Autoclaves & pressure systems regulations
  - Use of Naked Flames in Laboratories
  - Use of Compressed Gases
  - Electrophoresis Safety
  - Microwave Ovens Use in Laboratories
  - Needle stick injury and sharps
LABORATORY WASTE

- Laboratory Waste Procedures
  - Hazardous / Toxic Chemical Waste
  - Liquid Waste via Sinks / Drains
  - Biological Waste
    - Yellow Box Waste
  - General Laboratory Waste
    - General Laboratory Waste bins
    - Glass waste
    - Hand wash towel bins
    - Sharps Disposal

LABORATORY HOUSEKEEPING

- Communal Areas in Labs
- Glassware Washing - Coloured Box System
- Labelling of Chemicals / Samples
- Storage Limitations
- Mobile Phones, laptops and other small personal portable devices in labs
- E-mail lists

APPENDICIES

Appendix I – ‘THE SAFETY DECLARATION’ sign off sheet
Appendix II – Out of Hours Contact List
Appendix III – BIO & BMRC Waste Disposal SOP
In accordance with health & safety law primary responsibility for health and safety lies with those who create the risks and those who work with them. This means that in the lab environment, principle investigators have primary responsibility for the safekeeping of the staff, students or visitors who work in their laboratories in an academic capacity, including for the undergraduate students they teach in Teaching Laboratories. This responsibility includes ensuring that appropriate safety paperwork is in place (including CoSHH, GM, Microbiological or other appropriate risk assessments & human tissues registrations relevant to the work ongoing in the lab).

**BEFORE STARTING WORK in BIO/BMRC LABORATORIES**

It is essential that you:

- Undertake a laboratory safety induction – contact your laboratory manager
- Read and sign relevant Risk assessment forms and CoSHH forms with your supervisor, if there are no risk assessments / CoSHH already in place for the work you will be doing; you will need to write these.
- Ensure you are aware of any special risks associated with the work you are going to do.
- Read BIO and BMRC Code of Practice sections 1 & 2
PERSONAL PROTECTIVE EQUIPMENT (PPE)

Spills and splashes occur even during the most conscientious of movements / activities, so the School insists on the wearing of laboratory coats, eye protection where defined by risk assessment and appropriate footwear to ensure adequate protection of staff, students or visitors at all times in labs.

Labcoats
Howie style (high neck, cross breasted) laboratory coats MUST be worn when working in all Class 2 laboratories. The lab coat should be fastened at all times and sleeves rolled down to protect arms. Please ask your technician about laundry arrangements. Your laboratory coat must be removed on leaving the lab. Laboratory coats must not be worn in any ‘non laboratory’ environments.

Gloves
When working at the bench and undertaking laboratory work, appropriate gloves must be worn. Users should be aware some glove types are not protective against phenol, chloroform or other chemicals and ALL glove materials have a ‘break through’ time. Gloves should be changed regularly or if spills on them occur. Further guidance and advice on selection of the best glove type can be found on the BIO H & S intranet. All laboratory staff must read this advice prior to working in BIO/BMRC labs. Glove type information specific to procedures in the labs should be included on your CoSHH risk assessment. Gloves MUST be removed before leaving the laboratory. When wearing gloves remember not to touch your face / personal items (mobile phones) etc.

  Latex glove policy: Powdered latex gloves are forbidden in the University. Non-powdered latex gloves should only be used where a risk assessment (relating to potential latex protein exposure) has been carried out and no other glove will offer adequate protection from the substances being handled. Latex exposure can cause allergies of varying severity and this can be cumulative with the effects not seen until years after the initial contact.

Eye / face protection
There are various reasons for the use of Protective glasses / visors, this may include to protect from an eye irritant, UV protection, impact protection or splash protection. Some eye protection is suitable for chemical splashes only and is not impact resistant. Please ensure you have appropriate safety spectacles and a visor available for use. You should seek assistance in obtaining eye protection from your technician. You should ensure you have eye and face protection immediately available before commencing work in the laboratory. All users must ensure they understand WHY as well as WHEN face protection must be worn as this may define the type of protection necessary. Eye protection must be worn when:

  • Working with toxics, strong acids / alkalis – Chemical protectant glasses or goggles dependent on procedures involved and level of splash risk defined by risk assessment.
  • Using UV light - UV protectant visor
  • Use of Cryogenics eg liquid nitrogen, dry ice – impact resistant visor or glasses dependent on level of risk and volumes involved defined by risk assessment.
  • Whenever chemical splashes to eyes could occur – chemical protectant glasses, goggles or visor dependent on procedures involved and level of splash risk defined by risk assessment.

This will cover the majority of activities in the laboratory.

Note: If you wear contact lenses, be aware that these carry particular dangers. Chemicals splashed in the eye can quickly move behind the lens by capillary action and be trapped behind the lens against the cornea and this prevents effective washing.

Eye wash stations are available in all the laboratories. Please ensure all staff know of their location.

Personal Attire
Long hair should be tied back in the laboratory.
Footwear which encloses and protects the foot should be worn at all times in the laboratories; sandals and open toed footwear should not be worn in laboratories.
HAZARDOUS SUBSTANCES / EQUIPMENT AND RISK ASSESSMENTS

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH)

All work with hazardous substances is covered by the Control of Substances Hazardous to Health Regulations (1999) (COSHH). The COSHH regulations cover the assessment of risk, prevention and control of exposure to substances hazardous to health. A substance 'hazardous to health' is any substance (solid, liquid, gas, fume, vapour) or biological agent that can present a hazard to health through being absorbed, injected, inhaled or ingested. The main objectives of the COSHH regulations are to reduce accidents and occupational ill health by ensuring that all use of these substances are adequately and accurately risk assessed and to ensure that control measures are put in place to protect those working with or those who could be exposed to these substances.

The UEA has in place a formal risk assessment procedure for CoSHH, it is the responsibility of all lab staff to ensure that, for each procedure performed which involves any hazardous substance, an associated CoSHH risk assessment has been submitted. COSHH assessments must be prepared by the Supervisor and the Participants and the detail should be agreed by all. The formal record of the COSHH Assessment must be done on the most up to date version of the COSHH form available on the BIO H&S intranet. The completed form must then be submitted by email to bio.safety@uea.ac.uk. Each lab group must have their own CoSHH folder where all of the groups CoSHH forms are filed. Each CoSHH form must have an authorisation number and be registered with the safety officer (official copies will be stated as authorised and dated by the current safety officer). The official lab copy must also be signed by your PI. These folders must be in the lab and all lab members must know where this is at all times.

Where CoSHH forms are found to be lacking or where new procedures are planned and CoSHH forms have not previously been held, work must not be started until a CoSHH assessment has been submitted. Individual workers must read and once understood, sign their name on the front of all CoSHH forms relevant to their work (please also read any additional information from any links listed in the CoSHH form).

OTHER SPECIFIC REGISTRATIONS / CONTROLLED USE:

The university is bound by legal requirements to register or control use of some other specific potentially hazardous substances / organisms use in the labs. These include:

- Genetically Modified Organisms
- Human Cells, Tissues and Body Fluids
- Microbiological organisms
- Radioisotopes
- Drug Precursors
- Carcinogens

Specific information, UEA local rules or registration forms for use of all of the above can be found on the UEA USS web pages (if you can’t find the page referring to these please contact your technician, laboratory manager or USS).

Please be aware that NO GMO’s, Microbiological organisms, Human tissues or radioactive substances must be brought on site without the necessary risk assessments and related paperwork in place. To do so is an offence. Procedures to put this paperwork in place can take a few weeks so please ensure that you speak with your line manager, the Laboratory Manager or USS if you plan to work with these.

Please take time to familiarise yourself with all the relevant rules for your experiments.
USE OF FLAMMABLE SOLVENTS AND FLAMMABLE STORAGE LIMITATIONS (DSEAR)

There are regulations surrounding the use and storage of flammable solvents in laboratories, these are called DSEAR (Dangerous Substances and Explosive Atmospheres Regulations 2005). The aim of these is to raise awareness of the dangers of having too great a volume of flammables stored and to ensure stored and in use flammables in the lab are risk assessed (see USS intranet pages for more information). This does not involve an additional risk assessment but the DSEAR regulations should be considered when preparing CoSHH for any procedures in which flammables are used and should include risks associated with storage of flammables. Research workers are subject to limits on storage of 500ml of each flammable solvent on their lab bench. Most solvents are available from the Goods Office so that large stocks purchased externally are not necessary. If you wish to purchase these please make sure you take a secondary containment vessel to the goods office for containment on return to your lab. Your floor technician will help you locate one if you are not sure where your laboratory stores these. Decanting of flammable solvents from storage vessels into working bottles should be done in a fume hood.

TRANSPORTATION OF SAMPLES ETC WITHIN AND OUTSIDE OF UEA

Transporting or Shipping Chemicals & Dangerous Substances outside of UEA

There is often the need to for staff to arrange the movement / shipping of potentially hazardous materials / samples to and from campus. Many samples which may seem fairly innocuous are often still classified by law as ‘dangerous goods’. Dangerous goods for transportation are required by law to be classified, packed and documented by suitably trained people, your shipping technician can help you to classify your shipment and complete the appropriate paperwork. For more information on UEA’s shipping rules and shipping technician contacts please see the SCI goods office website: https://intranet.uea.ac.uk/sci/goodsoffice/parcels

It is illegal to transport chemicals, samples or any dangerous goods in your car on public roads. Under no circumstances must any chemical or sample be removed from or sent away from BIO/BMRC unless:
   a) There has been official authorisation from a member of academic staff / senior technical staff
   b) Your shipping technician has been consulted and involved in shipping procedures

Transporting Experimental Equipment, Samples & Chemicals in & around BIO

Transportation of samples and solutions between labs / schools on UEA campus should be kept to a minimum where possible; equipment should be made available within labs where practicable to avoid unnecessary transport, however at times it is unavoidable and so the following practices must be followed:

Double containment practise: All staff should ensure that they have suitable vessels for any laboratory samples, equipment, chemicals etc during transportation to be carried within a second container e.g. clip lid box or bottle carrier to ensure safety. This should help to contain spills and reduce accidents and cross contamination. Trolleys should also be used for transportation of all but the smallest samples to reduce risk of drops and spills.

Transportation Risk Assessment: All staff transporting lab materials around buildings / between labs must complete a Transportation Risk Assessment. Contact a technician or the Safety Officer for a template risk assessment for transportation. All staff members of each group who transport items should read and sign the risk assessment which should outline guidelines for safe transportation as well as spillage procedures.
SPILLS PROCEDURES

It is important that all staff ensure they are aware of the location of the eyewash station, emergency shower, first aid kit, spill kit and fire extinguishers nearest to their usual work locations.

All working risk assessments for lab activities should include a spill procedure. Anticipate the possibility of a spill occurring and take sensible precautions. Where appropriate use double containment / spill catchment trays. All staff should know where the nearest spill kit is located which should contain appropriate absorbent materials. Chemical Spill Response Kits are located in BIO in the East and West corridors on all floors of the building and also on floor 2 in the C/T room, in 2.47 with the shakers and on floor 1 in 1.16 (with the shakers). Spill response kits are located in BMRC to either end of the main labs on both floors. Staff should be aware of the location of spill kits in all areas in which they work. In all cases where a spill results in personal contamination, unless detailed otherwise in risk assessments, wash with copious water and summon help.

In the event of a Chemical Spill:
Assess the risk remembering to always put safety first. Summon help if appropriate but keep bystanders away from the area and if necessary activate a fire alarm to evacuate the building. If it is safe to do so act quickly to contain the spill by donning the protective equipment and lying pads, booms and / or granules over the spill. Clean up the spill using the chemical spill kit contents and carefully place into a waste bag and label it for disposal. Follow the relevant CoSHH forms regarding ‘what to do in the event of a spill’. After every spill incident it is likely the spill kit will need to be replenished, it is the responsibility of whoever uses the spill kit to ensure technical support staff are aware of what has been used.

After any spill, complete an Incident Report Form and report the incident immediately to a Laboratory manager, Chief Technician or your Supervisor. Some hazardous incidents are reportable to the Health and Safety Executive and so reporting the spill is important as the UEA may have a legal obligation to report to HSE.

SPECIALIST EQUIPMENT / PROCEDURAL HAZARDS

Where specialised equipment is being used there will inevitably be associated hazards. It is each individual’s responsibilities to be aware of the specific hazards associated with their work. However, individual technicians will identify and where necessary deliver training in specific relevant areas relevant to equipment available on that floor. For training on specific equipment on other floors, individuals should seek advice from the relevant floor technician regarding equipment they may require training for and the special precautions that should be taken when operating these devices. Some specific equipment/procedures are covered below:

- Special instructions for handling cryogens
- Fume cupboards and Microbiological Safety Cabinets (MSCs)
- Autoclaves & pressure systems regulations
- Use of Naked Flames in Laboratories
- Use of Compressed Gases
- Electrophoresis Safety
- Microwave Ovens Use in Laboratories
- Needle-stick Injury and Sharps
Special instructions for handling cryogens

If you intend to use or come into contact with liquid nitrogen you MUST have a risk assessment/CoSHH in place that you have read and signed and you must have read the document relating to Cryogenic materials on the BIO H&S intranet. Use only containers that have been specifically designed for use with cryogenic substances.

Main risks associated with use of cryogenics are from cold burns or asphyxiation from gases evolved from liquid or solid cryogenic substances (particularly nitrogen gas from liquid nitrogen where small volumes of liquid vaporise to give large volumes of gas).

When dispensing and working with liquid nitrogen dry insulated non-absorbent gloves, laboratory coat, adequate foot protection and face/eye protection must be worn (be aware that vials stored in liquid nitrogen can explode on removal from storage so eye protection is extremely important AT ALL TIMES). Ensure a secondary container is used when first removing vials from liquid nitrogen.

In the event of burns - Remove any restrictive clothing but not any that is frozen to the tissue. Flush area with tepid water (not above 40°C) to return tissue to normal body temperature. **DO NOT** apply any direct heat or rub affected area. Cover with loose, sterile dressing and keep patient warm. All burns must be referred to a medical practitioner.

DO NOT allow cryogenic substances to vaporize in enclosed areas (including fridges, cold rooms, sealed rooms etc) Cryogenic substances should only be used and stored in well ventilated areas. Never travel in a lift with liquid nitrogen.

In the event of suspected asphyxia – **DO NOT** enter the affected area alone. If someone becomes dizzy or loses consciousness while you are there move them and yourself to a well-ventilated area immediately. Obtain medical assistance.

**IN THE EVENT OF LARGE SPILLAGE OF LIQUID NITROGEN – OPERATE NEAREST FIRE ALARM POINT, EVACUATE AREA IMMEDIATELY, WARN PEOPLE OF AFFECTED AREA.**

You MUST speak to your floor technician or laboratory manager before transporting liquid nitrogen for the first time. The key that locks off the lift to prevent others entering at the same time as a filled dewar can be obtained and then immediately returned to the teaching technical staff on floor 02 (02.15, teaching prep room).

Air Flow Safety Equipment – Fume Hoods & Safety Cabinets:

*Fume-hoods* of different classes (class I, II or III) are designed to provide different levels of protection to the user against hazards from toxic, dangerous or obnoxious materials by dragging airflow away from the user and so preventing harmful vapours being inhaled or otherwise ingested. Ensure that the class rating of the fume cupboard you intend to use is appropriate for the nature of the chemicals being used. For further information on fume hoods in BIO buildings see BIO H&S intranet under 'Fume Cupboards; Risk assessment. All users should read this risk assessment prior to using fume hoods.

*Microbiological Safety Cabinets (MSC’s)* provide a similar function but dependent on class of MSC (class I, II or III) will protect not only the user but will also protect the work from contamination from the user or from external contamination. Users must ensure the unit being used is appropriate for the work planned and that adequate protection is provided, if in doubt please speak to your technician / laboratory manager.

*Laminar flow cabinets* provide work protection only, the flow of clean air is from the back of the cabinet forwards over the work. A laminar flow cabinet offers no user protection.

Remember; in any air cabinet, **work tidily**, a full or congested cabinet will provide less protection than expected. Air flow can be interrupted by people standing or walking close behind you while you...
work. Ensure the shield/door of the hood is pulled down to the indicated level before you start work. You must not lean into any fume / MSC hood. All fume hoods or MSC cabinets used in class 2 laboratories must be tested and serviced every 14 months minimum (dependent on type of use – please check with your laboratory manager).

**Autoclaves & Pressure Testing Regulations**

Autoclaves are potentially dangerous instruments. All staff who will use autoclaves must be trained in their use and all users must have read the BIO autoclave safety notes available on BIO H&S intranet (see ‘Autoclave Safety’). All autoclaves come under the HSE Pressure Equipment Regulations 1999 which states that all pressure systems must be regularly pressure tested by a trained engineer. If you have any autoclave / pressure cooker in labs, this must be registered with the laboratory manager and testing must be performed. All staff using autoclaves must have training in safe use of autoclaves and all users must have this training documented in individual training records.

**Use of Naked Flames in Laboratories**

Whilst use of naked flame burners in laboratories must be restricted as far as reasonably practicable, there may still be need for use of naked flame burners (individual small gas cylinder naked flame bunsen style burners) for bacterial work to provide an as close to sterile environment as possible and for pull sealing glass tubes/pipettes. In all situations where reasonably practicable, an alternative to use of naked flames will be used. If use of a naked flame is necessary it must be supported by a risk assessment which should be submitted to the Safety Officer. The risk assessment should highlight the following recommendations:

- A designated area must be marked and care taken to position this away from building fire detectors.
- Reduce clutter in designated area, no flammable liquids or carbonaceous materials (wood, paper etc)
- Appropriate personal protective equipment must be worn at all times, to include labcoat, suitable gloves (heat resistant gloves in the event of holding glass to be warmed), eye protection should be used at all times.
- All equipment (burners and cylinders) must be in good working order & be visually inspected on every use.
- Pressurised cylinders must be no more than one year old or have been fully inspected and tested within the past 12 months
- All staff must be aware of first aid principles in case of burns. All heat burns wherever possible must be immediately cooled under running water FOR AT LEAST 20 MINS

**Use of Compressed gases**

It is important that compressed gases are used and handled correctly. Cylinders must always be properly secured by bench clamps or other device. Ensure the cylinder is located so that the valve can be isolated (turned on/off) easily in an emergency. Always transport cylinders on purpose made trolleys. Regulators are only authorised for use up to 5 years after manufacture. This date must be displayed on the cylinder and regulators must not be used after expiry. Please do not attempt to move or connect gas cylinders unless you have been shown how to do this by your technician or supervisor. All users of gas cylinders must read the advice given on the USS intranet prior to use (under ‘Compressed Gasses and Pressure Systems’).

**Electrophoresis Safety**

Due to the nature of electrophoresis and the use of volumes of liquid and high voltage electricity, electrophoresis carries its own specific risks in the laboratory. Precautions for safely operating electrophoresis apparatus and to prevent electrical shock during use are described on the BIO H&S page ‘Electrophoresis Safety’. All users must read this advice. Care should be taken to ensure the gel running equipment and the electrical current supply remain as detached as possible, preferably keeping the power pac on a shelf above the gel running equipment ensuring that any leaks cannot affect the electrical power.
Microwave Ovens Use in Laboratories

All microwave oven users should read the ‘Microwave Oven Safety’ guidance provided on the BIO H&S website. Items placed in microwave ovens MUST ALWAYS be covered (lightly – not sealed). Heat resistant gloves and eye protection must be used when handling items from the oven. Be aware of risk of ‘superheating’ where apparently non-boiling liquid can be removed from a microwave but when the container is moved it ‘boils’ violently causing potential splashing of boiling hot liquid. Microwave ovens used in labs should be tested annually for microwave leakage.

Needle-stick Injury and Sharps

Providing you are following safe working practises, the chance of a needle-stick injury should be highly unlikely, remember prevention is always better than cure! As such:

- Treat any procedure where you may come into contact with blood or body fluids as high risk.
- Use appropriate personal protective equipment e.g. needle resistant gloves. Any broken exposed skin must be protected with a waterproof dressing prior to commencing work.
- NEVER re-sheath needles.

Ensure you are aware of where to seek advice should exposure occur, and if it does;

- Flush the wound under running water whilst encouraging bleeding (do not suck the wound).
- Cover damaged area of skin with a waterproof dressing.
- Report the incident to your PI and on an accident report form to USS
- Contact UEA’s Occupational Health services for a risk assessment to be undertaken. Treatment or follow up bloods may be required.
LABORATORY WASTE

LABORATORY WASTE PROCEDURES

For a more detailed list of how to deal with any sort of waste which you may need to dispose of whilst at UEA (both lab based and non-lab waste) please see Appendix III.

Hazardous / Toxic Chemical Waste

Disposal of all chemical waste is controlled by the Environmental Protection Act 1990. The producer of the waste, be it a member of staff or a student, has the initial responsibility for providing accurate information about the chemical waste he/she has produced and ensuring it is disposed of safely. Waste products and chemicals must comply with the above Act and be fully documented before being passed on to the waste disposal technician for eventual disposal by a contracted external company. Arrangement for your laboratory’s waste to be receipted by the waste disposal technician is your responsibility. Your floor technician, Laboratory Manager and the School chemical waste technician responsible for waste chemical collections will be willing to help and advise on your waste disposal setup. You should not assume that your waste will be dealt with by someone else. See APPENDIX III for more comprehensive chemical disposal advice.

Liquid Waste via Sinks / Drains

The Local Authority periodically monitors waste that is disposed of via the UEA drainage system and state that the sink and drains should not be used as a waste disposal unit. If any person seeks to evade his/her responsibility by disposing of unauthorised waste down a laboratory sink and it is subsequently detected, the University and the individual will be liable to prosecution. Hazardous and / or toxic chemical waste should be disposed of in accordance with local procedures detailed in CoSHH and the BIO/BMRC Waste Disposal SOP (see Appendix III). NEVER put chemical waste into the mains drainage, always check your CoSHH and ask your floor technician about the correct and safe disposal route first. Be aware that although constant review of existing CoSHH forms should be undertaken, some forms do become out of date regarding waste disposal.

Please note that it is not acceptable to allow chemical waste to build up in laboratories or to store it in fume hoods for extended periods.

Biological Waste

Microbiological & Genetically Modified Organism waste should be disposed of in accordance with the specific risk assessment associated with the organism / microbe (often via the ‘Yellow Box Route’, see below). Animal cell culture waste should also be disposed of via the ‘Yellow Box Route’ (see below) unless otherwise stated in specific risk assessments. All human tissue and fluid waste should be disposed of via the incineration route in accordance with appropriate Human Tissues Scheme of Works specific to the project and Human tissues, cells and fluids waste disposal SOP (see links in section on human cells, tissues & body fluids above for more information). It is YOUR responsibility to ensure you are aware of all appropriate routes of disposal for all specific waste you will generate.

‘Yellow Box Waste’ – All hazard group I and hazard group II waste where detailed on specific risk assessments or in CoSHH risk assessments specific to the work (Micro, GMO, Tissue Culture) is disposed of via the Yellow Box route; Yellow boxes are for waste that requires steam sterilisation prior to disposal. The type of waste you will include in a yellow box must be detailed on a CSS risk assessment form by each lab producing this sort of waste (see BIO H&S intranet for blank risk assessment form and CSS risk assessments).

Waste is segregated into individual yellow boxes by type:

- **Glassware contaminated by live cultures** for make-safe and washing for re-use; these should be no more than ½ full and must not include obviously broken glassware or sharps.
- **Single use plastic or glass waste contaminated by live cultures and tissue culture waste** (as detailed in CoSHH / risk assessments) for make-safe and disposal; these should be no more than ½...
full and waste must be contained in a single autoclave bag which must not be sealed (top may be folded over only)

- **Compost and plant material** for make-safe and disposal; these should be no more than 1/3 full and waste must be contained in a single autoclave bag which must not be sealed (top may be folded over only)

During handling and transport all yellow boxes must be closed with a fitted lid marked with a small piece of autoclave tape carrying the room number. Yellow box waste must carry a Biohazard sign. Boxes will be collected in line with Yellow Box Risk Assessment (see the BIO Health and Safety intranet under ‘waste disposal’). Collection is at the discretion of the operators. Reasons for rejecting boxes may include:
  - Box over filled
  - Autoclave bags sealed or tied
  - Lid not fitted or not marked correctly
  - Obviously broken glassware or sharps
  - Mixed load type
  - Glassware covered with tape

**General Laboratory Waste**

*General Laboratory Waste bins* - laboratory waste bins lined with black bin liners are for general non-hazardous / non-toxic laboratory waste e.g.: plastic or paper-based waste not contaminated with cultures and other non-hazardous waste from the laboratory. When full (NOT overflowing) the black bags should be removed from the bin and the tops should be tied. These are then disposed of in the blue wheelie bins in the BIO yard. There may be a smaller wheelie bin on your floor which can be used for disposal of your black bin bags, however if these are full they should be taken out and emptied in the BIO yard, do not pile bin bags beside a full wheelie bin. The cleaners do not do this. If your bin is full please take it to the yard.

*Glass Waste* - The Broken Glass bins (clearly labelled in each laboratory) are for RINSED non-contaminated glass ONLY. When full (not overflowing) these should be emptied directly into the blue wheelie bins in the BIO yard. When emptying these bins eye protection must be worn.

*Hand Wash Towel Bins* - The small round bins by the hand wash sinks are for paper towels ONLY. These are the only ones emptied by the cleaners.

*Sharps Disposal* - Sharps boxes are provided for ALL sharps. Please do not overfill sharps boxes and speak to your floor technician if you need a replacement sharps box. For disposal of full sharps bins contact your waste disposal technician, these MUST NOT be put into other waste streams.

**If in doubt about waste disposal, ask a floor technician and read your CoSHH.**
LABORATORY HOUSEKEEPING

Housekeeping in BIO & BMRC is everyone's own responsibility. No-one is here to clear up after you! Everyone, regardless of status is expected to clear up after themselves and take some responsibility for laboratory chores.

COMMUNAL AREAS IN LABS:
You will no doubt, have been allocated your own lab work area. Common sense should tell you to keep this area clean and tidy to reduce risks of cross contamination. However, there are many communal areas in labs that you will utilise from time to time and as such, you should make every effort to ensure these areas are kept clean and tidy. Ensure communal waste pots are emptied BEFORE they become overfull, tidy and wipe down surfaces with towel after every use. Anyone found to be misusing communal areas may be stopped from using them.

GLASSWARE WASHING - COLOURED BOX SYSTEM
The Green boxes are for thoroughly rinsed general glassware and empty tip boxes which are for washing up. These then go back to the glassware store or are recycled / reused. The Red boxes are for glassware belonging to a specific lab group. These are then cleaned, dried and returned to the appropriate laboratory (e.g. Duran bottles). These boxes should be clearly marked with the PI’s initials and laboratory number.
Do not put the wash up staff at risk by putting contaminated glassware in the red and green boxes, rinse them thoroughly.

LABELLING OF CHEMICALS / SAMPLES
All chemicals or solvents are purchased in appropriately labelled containers which will clearly state the identity, concentration (where applicable) and any specific hazards of the contents. The supply containers are also constructed of appropriate material to appropriately contain that substance. At ANY time when chemicals or solvents are decanted into alternative containers or these are used as an ingredient to prepare samples/buffers as part of an experiment, it is the users responsibility to ensure that all containers are appropriate for the chemicals involved and for the sorts of exposures and storage they will undergo (centrifugation, freezing etc). Also it is the user’s responsibility to ensure that ALL bottles, tubes, samples etc are appropriately labelled giving details of not only the chemicals but the concentration and any specific risks or hazards. For volumes of any chemical stored on users benches, use labelling in accordance with the GHS (globally harmonised system) to identify risks (hazard pictogram stickers should be used where appropriate).
When using lab glassware / other vessels during preparations of buffers etc the user MUST ensure that EVERY receptacle is clearly labelled with details of its contents and user identification. If a beaker of unknown contents is found in the lab, if it is not possible to identify the contents it will be treated as potentially dangerous. Costs for disposing of such a substance are great. PLEASE LABEL ALL CONTAINERS AT ALL TIMES – THIS IS YOUR LEGAL RESPONSIBILITY (in accordance with Health & Safety at Work Act 1974 Section 7(a)).
All experimental samples that are stored must also be CLEARLY labelled with the researchers name, the date and its exact nature. All appropriate sample logging procedures must be followed (logging systems in freezers / coldrooms etc). Prior to finishing research at UEA all staff must review their stored items and dispose of any samples which can be discarded appropriately.

STORAGE LIMITATIONS:
There is VERY limited storage availability throughout BIO. As such, it is your responsibility to periodically check and tidy up cupboard space, fridges and freezers. There is no point in asking for the purchase of new storage units when existing units are full of out-of-date/rarely used items or
consumables. The limited storage capacity is also directly related to fire risk, full and cluttered rooms are not only a fire hazard due to large amounts of combustible items but also increase the risk of starting fires by hiding wiring, causing heat build-up where paperwork etc is piled up. If you need to purchase consumable items and it is cheaper to purchase in bulk please consider the storage implications of this, see if you can share stocks with other people or groups.

**MOBILE PHONES, LAPTOPS AND OTHER SMALL PERSONAL PORTABLE DEVICES IN LABS**

THINK about use of personal items / equipment in laboratory environments. Their use is permitted in research laboratories however please do not use your mobile phone, music player etc at the laboratory bench (this includes using it as a calculator) and never use any of these devices whilst wearing gloves. Mobile phones or laptops are not permitted in the school’s teaching laboratories (unless special dispensation is given for exceptional circumstances, speak to teaching technical staff). With respect for your colleagues around you consider having these items on silent whilst in a lab environment. Consider the risks of cross contamination when taking these items in and out of labs, particularly items (eg a laptop) which you may put down on your lab bench. Ensure you have designated ‘clean’ areas for any items used on the bench and consider wiping items down with dilute disinfectant when removing them from labs. As previously stated in this code of practice, users must at all times be able to hear emergency alarms or noises / warning sounds associated with laboratory equipment above any personal device/ear phones.

**EMAIL LISTS**

There are e-mail lists associated with each School at UEA. As a member of staff for a specific school you will be automatically added to your school mailing list. There are however other e-mail lists which it may be beneficial / important that you are registered to relative to a specific building you occupy, a specific facility you use or specific procedures which you use in your work or it may be appropriate for a facility / area manager/technician to have your e-mail address as a registered user (eg BMRC users, floor specific e-mails, DMU users, centrifuge facility users, fermentation suite users etc). It is a user’s responsibility to ensure they are registered for the various email lists specific to the areas in which you work – speak to your technician or person responsible for facilities to ensure that you have been registered to all those which are appropriate. You may miss important messages and information until you do this.
APPENDIX I – ‘THE SAFETY DECLARATION’

SCHOOL OF BIOLOGICAL SCIENCES
HEALTH AND SAFETY CODE OF PRACTICE

As part of the School of Biology’s commitment to Health and Safety, all staff who will work in BIO or its associated buildings / facilities are required within TWO DAYS of arriving at UEA to have read this ‘School of Biological Sciences Health and Safety Code of Practice’.

All staff working in school buildings but NOT working in the schools laboratories or research facilities are required to read SECTION 1 of the Code of Practice only.

All staff working in school buildings INCLUDING working in the schools laboratories or research facilities are required to read SECTION 1 AND SECTION 2 of the Code of Practice.

Please complete only ONE section below, please indicate by score outs which section is appropriate.

Any member of staff / PG student will not be granted card or coded access to any part of the school until this form is received. The form will then be held on file by the school*.

INDIVIDUAL STAFF SAFETY RECORD

FULL NAME (Please print) : ………………………………………………………………………………………………..

SUPERVISOR / LINE MANAGER: ……………………………………………………………………………………..

ROOM NUMBER (most common location at UEA) : ……………… SCHOOL: ………………….

START DATE : ………………………. CONTRACT END DATE (if applicable): …………………

Please cross through the statement below not applicable to you and sign the appropriate one:

Staff working in school buildings but NOT working in the schools laboratories or research facilities:

I hereby acknowledge receipt of a copy of the School of Biology Health and Safety Code of Practice. I have read and understood all of ‘Section 1’ of this code and agree to adhere to requirements laid out in this document.

Signed: ………………………………………………………   Date: …………………………………

Staff working in school buildings INCLUDING the schools laboratories or research facilities

I hereby acknowledge receipt of a copy of the School of Biology Health and Safety Code of Practice. I have read and understood all of ‘Section 1 and Section 2’ of this code and agree to adhere to requirements laid out in this document.

Signed: ……………………………………………………….  Date: …………………………………

Signed declarations must be returned to the BIO general Office within two days of arrival at UEA

*NB a replica copy of this form is provided on the back sheet of this code of practice booklet for tear off & completion


**APPENDIX II – CURRENT OUT OF HOURS CONTACT SHEET**

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**NEED HELP OUT OF HOURS?**

1. For problems with individual pieces of equipment the user or owner should be contacted as indicated on the ‘Apparatus in use beyond normal hours’ card attached to the equipment.
2. In the event of a general incident (eg minor flood or power loss) the following persons may be contacted according to the floor where the problem originates.
3. For wide-spread incidents requiring fast response notify The Lodge x2352 to initiate their call-out procedure. Call out those on the secondary list as required in the event of a major incident.
4. If there is a radiation hazard follow the posted instructions from University Safety Services.

**Primary list:**

<table>
<thead>
<tr>
<th>Floor</th>
<th>Name</th>
<th>Phone 1</th>
<th>Phone 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor 02</td>
<td>Mrs Kathryn Mason-Barrie</td>
<td>01953 452824</td>
<td>07557 510496</td>
</tr>
<tr>
<td></td>
<td>Mr John Patnell</td>
<td>01603 440770</td>
<td>07941 554116</td>
</tr>
<tr>
<td>Wolfson Fermentation Suite</td>
<td>Dr Andrea Hall</td>
<td>01603 451703</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mr Sebastian Runkel</td>
<td></td>
<td>07909 157820</td>
</tr>
<tr>
<td>CEF</td>
<td>Mr Simon Deakin</td>
<td>01508 531201</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mrs Kathryn Mason-Barrie</td>
<td>01953 452824</td>
<td>07557 510496</td>
</tr>
<tr>
<td>Floor 01</td>
<td>Mr R. Evans Gowing</td>
<td>01953 851708</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prof Andrew Bourke</td>
<td></td>
<td>01603 457017</td>
</tr>
<tr>
<td>Floor 0</td>
<td>Dr Andrea Munsterberg</td>
<td>01603 491259</td>
<td>07527 817750</td>
</tr>
<tr>
<td>Floor 1</td>
<td>Ms Elaine Patrick</td>
<td>01603 439476</td>
<td></td>
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<tr>
<td></td>
<td>Dr Caroline Pennington</td>
<td></td>
<td>07725 405949</td>
</tr>
<tr>
<td>Floor 2</td>
<td>Verity Lyall</td>
<td>01603 613698</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr Andrea Hall</td>
<td>01603 451703</td>
<td></td>
</tr>
<tr>
<td>Bluebell Road Glasshouses</td>
<td>Dr Colwyn Thomas</td>
<td>01603 765068</td>
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<td>Dr Caroline Pennington</td>
<td></td>
<td>07725 405949</td>
</tr>
<tr>
<td></td>
<td>Pam Wells</td>
<td></td>
<td>07852 280819</td>
</tr>
</tbody>
</table>

**PTO for BMRC contacts**

---
BMRC

BMRC Labs
Jasmine Waters 07788560477
Andrew Loveday 07708144140

CL3
Jasmine Waters 07788560477
Kevin Tyler 01508 471017 07950400783

DMU
Simon Deakin 01508 531201 07770867614
Richard Croft 07960002626

Secondary list:

For general support and assistance, and if the above are not available

Lab Manager Dr Caroline Pennington 07725 405949
School Safety Officer Dr Andrew Hemmings 01603 479679
Deputy SSO Dr Paul Thomas 01284 764699
Head of School Prof. Dylan Edwards 01603 452626 07799 878188

IN EMERGENCY CALL 2222 OR USE THE EMERGENCY PHONE
do not refer to the phone number opposite the BIO lift at each level.
BIO & BMRC WASTE HANDLING AND DISPOSAL PROCEDURES

<table>
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<tr>
<th>Laboratory Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Responsible Personnel for Safety</td>
<td>Laboratory staff generating waste</td>
</tr>
<tr>
<td></td>
<td>Appropriate PI for lab group</td>
</tr>
<tr>
<td></td>
<td>Laboratory Manager &amp; Safety Officer</td>
</tr>
<tr>
<td></td>
<td>Head of School</td>
</tr>
<tr>
<td>Responsible Personnel for Waste</td>
<td>Day to Day: Waste Disposal Technicians</td>
</tr>
<tr>
<td>Chemical Collection</td>
<td>Overall : Laboratory Manager</td>
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Document history:

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<th>May 2013</th>
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<td>May 2013</td>
</tr>
<tr>
<td>Date of Next Review:</td>
<td>No later than 12 months from date of creation or last review/revision</td>
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Version 1.0 Final draft passed for review & approval June 2013
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1 INTRODUCTION

The purpose of this Standard Operating Procedure is to outline the basic procedures for management and disposal of non-hazardous, chemical, and bio-hazardous laboratory waste from the laboratories of the School of Biological Sciences and Biomedical Research Centre (BMRC). This document also identifies sources of more detailed information, and points of contact in the event of any queries concerning waste management.

2 GOOD PRACTICE & LOCAL PROCEDURES

It is the responsibility of all laboratory users, irrespective of status, to be responsible for cleaning their work area and disposing appropriately of any waste generated. Investigators should also be aware of their responsibilities under the Environmental Protection Act (1990), insomuch as the producer of controlled waste is responsible for its production and safe disposal, including provision of accurate information about the waste to those undertaking disposal.

Reference should be made to the School of Biological Sciences (BIO) Health and Safety Intranet, in particular the Waste Disposal section for further information on local procedures. Material Safety Data Sheets/MSDS supplied with laboratory reagents should provide guidance on correct methods of disposal, and many MSDS can be accessed through supplier websites (see ‘References’ section 7 below).

Any queries regarding chemical waste disposal should be addressed to ‘Waste disposal Technicians’ in the first instance (see contacts section 6). Further queries should be made to Chief Technician or Laboratory Manager.

3 DISPOSAL OF WASTE TO MAIN DRAINS

Disposal of waste via laboratory sinks must not be undertaken unless it is certain that this is the correct method of disposal for the substance(s) in question. Particular care should be taken with CoSHH forms that recommend disposal of a substance in copious amounts of water, as such information may be outdated. A list of substances prohibited in laboratory waste discharged to main drains can be found on the Laboratory Waste discharged to main drains section of the BIO Health and Safety Internet, and is summarised in Appendix 1 of this document. Under no circumstances should outdoor drains be utilised for the disposal of any waste.
Laboratory waste should be disposed of according to the type of waste produced, as detailed in the following sub-sections. A simplified waste handling flow diagram for laboratory boxes/bins is provided in Appendix 2 of this document, and a comprehensive chemical waste disposal summary is attached in Appendix 3.

4.1 NON-HAZARDOUS & NON-TOXIC WASTE (INCLUDING RECYCLING)

General, non-hazardous, non-toxic laboratory waste should be disposed of in laboratory bins (lined with black bin bags), which must never be filled to overflowing. When the bin bag becomes full, it should be removed and the top tied, and the bag placed in the yellow or blue wheelie bins located in the designated area on each floor in BIO or BMRC. If these blue or yellow bins are full, their contents should be emptied into the large blue wheelie bins in the BIO main yard; non-recyclable containers (for example polystyrene) should also be disposed of in these blue wheelie bins in the BIO yard.

Small quantities of flat folded cardboard for recycling can be placed in the lift top recycling bin by the main laboratory entrance on each floor of BMRC or in recycling bins in the foyer areas on every floor in the main BIO building or taken straight to the BIO yard; larger amounts should always be placed directly in the large green wheelie bins in the BIO yard. Confidential waste paper should be disposed of in the blue shredding bin in BIO reception.

Blue plastic pipette boxes with purple inserts can be recycled (provided they do not carry any chemical / biological contamination). These can be placed into green glassware boxes in labs (as for section 5.4 ‘Glassware’) for collection.

4.2 CHEMICAL WASTE

As noted in Section 4, chemical waste must not be poured down laboratory sinks, unless confirmation has been obtained that this method of disposal is currently correct. It is possible for some low-hazard aqueous waste to be disposed of in this manner, but clarification should be sought in the event of any doubt.

It must also be noted that autoclaving (sterilization with steam under pressure) is not a suitable disposal route for waste which has come into contact with chemicals (for example disposable gloves, pipette tips etc), as autoclaving will not destroy these chemicals. Such materials can be disposed of in laboratory bins (section 5.1) unless the contamination is caused by direct exposure to toxic and/or high concentrations of chemicals. Where chemical contamination has occurred, material waste should be collected as solid waste for the contaminating substance (see below). Again, clarification should be sought in the event of any uncertainty as to the appropriate method of disposal.

In BMRC specifically: One fume hood & associated vented cupboard is used as a waste disposal area for specific chemicals, a list of waste which can be left in each waste hood/cupboard is posted beside the hood (see appendix 3 below). Vessels are clearly labelled on the neck of the flask with an identification number (this is only for fast location – please check the label is correct for the waste you are to dispose of before adding waste to any bottle). New waste disposal labels are supplied in the draw out cupboard beside each fume hood bank.

BMRC Floor 02 East Fume Hoods: The left hand fume hood (E1, next to the analytical area) must always be kept clear for solvent extraction; the right hand hood and associated vented cupboard to the right is used for waste processing/storage including EtBr solid and liquid waste (see summary below).
BMRC Floor 02 West Fume Hoods: The right hand fume hood (W1) must always be kept clear; the left hand hood is used for some waste processing/storage.

BMRC Floor 01 East Fume Hoods: The left hand fume hood is used for Ethidium Bromide waste processing/storage. The right hand fume hood is used as a WORKING CLEAR HOOD, keep waste pots and clutter to an absolute minimum (Gluteraldehyde, Osmium, DAB in H2O2 waste and a sharps bin are provided in this hood).

BMRC Floor 01 West Fume Hoods: The right hand fume hood is used as a working hood, keep clutter to an absolute minimum. The left hand fume hood and associated vented cupboard to the left is the main waste disposal hood for this floor. See appendix 3 below for details.

In BIO labs a suitable system to deal with the volume and types of waste generated in each individual lab should be implemented (if fewer waste types are generated it is appropriate to have a simple labelling system clearly identifying individual waste bottles with appropriate information.

Please note vessels in which chemicals were originally supplied can be used as appropriate waste containers (metal containers should not be used; nor should a vessel which originally contained a solid substance be used as a waste container for a liquid).

All vessels used to hold chemical waste must be clearly and appropriately labelled using the BIO Waste Disposal Stickers. Label information must include user name, full chemical name(s) and approximate concentration of each component. Where appropriate toxic/hazard information relating to waste including chemical risk and safety phrases or specific risks must be included. Please see example waste label below for further explanation. Please notify Waste Collection Technician or Chief Technician when any container is full and ready for disposal.

Waste Disposal Label explanation:

<table>
<thead>
<tr>
<th>CONTENTS:</th>
<th>Give as much description as you have including concentrations of components</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME:</td>
<td>Your name &amp; Location</td>
</tr>
<tr>
<td>RISK/SAFETY PHRASES:</td>
<td>Give appropriate ‘R’ or ‘S’ numbers if you have them.</td>
</tr>
<tr>
<td>UN NUMBER: (if you know this give, it is on MSDS, if not ask)</td>
<td>HAZARDS: Use pictorial safety warning symbols where possible Give details of any particular hazards associated with this waste (e.g., harmful by inhalation etc.)</td>
</tr>
</tbody>
</table>

It is NEVER appropriate (even for a few minutes) to leave any waste or any vessel in a laboratory unlabelled.

Existing waste vessels should be checked before a new one is created, in case compatible waste can be added to an existing container.

Waste must be stored appropriately, thus flammable solvent waste must be stored with the flammables, acid waste with the acids, and so on. Further notes on the fume hood system are given below.
Some potential suggestions of ways to manage some common chemical wastes:

- **Ethidium bromide** (EtBr) **liquid waste** – a flask is provided containing a carbon ‘tea bag’. When the liquid in the flask reaches the full level, the liquid should be stirred overnight and on the following day the liquid can be poured down the sink and the tea bag placed in a solid waste pot.

- **EtBr-contaminated agarose gel waste** – gels should be laid in trays overnight to dry, then placed in solid EtBr waste bag (please note that gels should not be left to accumulate) The waste bags should be sealed when full, and the chief laboratory technician informed. Keep contaminated blue roll disposal to a minimum, this waste is costly to dispose of so please reduce solid EtBr waste wherever possible.

- **Acrylamide waste** – acrylamide gels should be laid in trays overnight to dry, then placed in the solid acrylamide waste bag/pot. Liquid acrylamide waste should be polymerised prior to disposal via solid acrylamide waste route.

- **Other Toxic / hazardous Liquid waste** bottles – any buffers/solutions containing any solvents or substances NOT safe for disposal down lab drains should be poured into an appropriate waste pot in the fume hood (see appendix 3) and stored in vented storage or as appropriate. Pots must be clearly labelled and when a pot is full a new pot must be found and labelled. Arrange for disposal of full bottles with waste disposal technicians.

- **Other Toxic / hazardous Solid waste** - solid waste bins (for plastics contaminated with toxic / hazardous substances) should be stored in the fume hood. When these are full (but not overflowing), the bag/pot should be sealed and replaced with a fresh LABELLED bag/pot. Arrange for disposal of full bag/pot with waste disposal technicians.

- **Phenol waste** – liquid waste and solid contaminated waste should be collected as for ‘other toxic waste’ above.

- **Flammable Solvents** – Any buffers or waste solutions containing more than 10% flammable solvents must be collected and disposed of via chemical waste disposal route. Waste should be poured into appropriately segregated and labelled flammable waste pots in fume hoods (different solutions should be segregated where possible, cost for disposing of individual flammable solvent waste, eg Methanol waste, Ethanol waste, Acetone waste etc is cheaper than mixed flammables).

- **Dry Ice** - any non-contaminated dry ice contained within packaging of externally ordered reagents can be recycled in BIO dry ice bins (found in the liquid nitrogen dewer storage area, next to the BIO lift). Dry ice should not be discarded in sinks as it may crack sinks or pipes. Excess dry ice for disposal should be evaporated in a fume hood.

To seek advice as to how any wastes should be labelled and documented and in all cases when bags/pots are full to arrange disposal from the laboratory, contact the chemical waste technician.
4.3 BIOLOGICALLY-CONTAMINATED WASTE

Biologically contaminated waste from the general laboratory (bacterial / viral waste etc) should be disposed of in yellow boxes. For all contaminated disposable plasticware etc each yellow box should be lined with an autoclave bag. When the bag is ¾ full (not overflowing), the top of the bag should be folded, and a clip on white plastic lid attached to the box. The lid must be labelled with a piece of autoclave tape marked to indicate lab number and where appropriate(HG 2 waste), a biological hazard sticker. For disposal of glassware (bottles, flasks, glass dishes etc) contaminated with biological waste, these should be placed directly into the box and filled less than half-full to prevent the box becoming too heavy before having lid placed on and labelled as above.

All full & appropriately labelled yellow boxes should be placed on the red trolleys or as agreed with CSS staff in the laboratory for collection by CSS (Central Support Services) staff.

- **Human Tissue / Blood Waste** - Special procedures apply to the collection and disposal of human tissue specimens (for example blood, urine etc.) and materials which have been in contact with such specimens. Please refer to Standard Operating Procedure ‘Human Tissue Waste Disposal’ for full details of disposal procedures and equipment required. All human tissues work must be authorised via the UEA Human Tissues Safety Officer.

- **Tissue Culture Waste** - All Tissue Culture laboratory waste should be disposed of in yellow boxes. Each yellow box should be lined with an autoclave bag and treated as above for biological waste. The lid must be labelled with a biological hazard sticker and a piece of autoclave tape marked with and the appropriate lab & building identification. Local procedures apply to contaminated waste solutions in the tissue culture laboratory. Waste media should be either dispensed into 10% trigene (using containers in tissue culture hoods, or aspirated using the vacuum lines in the tissue culture suite). For flasks/plates containing cells to be discarded, liquid should be disposed of as above and flasks/plates placed directly into yellow box waste.

4.4 GLASSWARE

For used general glassware (items usually stocked in BIO glassware store), the glassware should be rinsed thoroughly and placed in the green boxes in the laboratory for collection by CSS (Central Support Services) staff.

For specialist glassware (for example duran bottles), glassware should be rinsed thoroughly and placed in red boxes in the laboratory, labelled with the initials of the principal investigator & lab number to facilitate return of items.

Separate and clearly labelled Glassware bins should be used to dispose of non-contaminated glass waste. There is also a blue bin for broken glass located in the BIO glassware store.
5 CONTACTS

Waste Disposal Technicians  Andrew Loveday (a.loveday@uea.ac.uk)
Graham Northwood (g.northwood@uea.ac.uk)

BIO Laboratory Manager  Caroline Pennington (C.J.Pennington@uea.ac.uk)
UEA Safety Officer  Andrew Hemmings (a.hemmings@uea.ac.uk)
Human Tissues Safety Officer  Mark Williams (m.r.williams@uea.ac.uk)

6 REFERENCES

Control of Substances Hazardous to Health/CoSHH (http://www.hse.gov.uk/coshh/index.htm)
List of symbols, abbreviations, risk and safety phrases (http://www.hse.gov.uk/chip/phrases.htm)
UEA BIO Health and Safety Intranet (https://intranet.uea.ac.uk/bio/intranet/hands), also specific sections on waste disposal (https://intranet.uea.ac.uk/bio/intranet/hands/waste) and discharge of waste to drains (http://www.uea.ac.uk/bio/ueanetwk/safety/2005/Laboratory%20waste%20to%20main%20drains.pdf)

Free MSDS online:
Fisher Scientific MSDS: (http://www.fisher.co.uk/index.php/en/msds-search#msdsSearch)
Sigma-Aldrich UK website: (http://www.sigmaaldrich.com/safety-center.html)
WASTE TO MAINS DRAINS – NB It is the **USERS RESPONSIBILITY** to identify what can / cannot be disposed of via drains

有些低危害水基废弃物可以倒入水槽**。通过排水系统可以稀释到污水处理系统的最恰当方法。**然而**，一些化学品禁止进入排水系统（见上述任何废物的详细列表，或禁止列表，或任何化学品在批准的运输单（http://www.uea.ac.uk/bio/ueanetwk/safety/waste/Approved%20Carriage%20List%20Short%20version.pdf）中列出的任何化学品。任何列出的物质必须通过化学废物处理路线（见https://intranet.uea.ac.uk/bio/intranet/hands/waste）。

**IF IN ANY DOUBT DO NOT PUT ANYTHING DOWN SINKS – ASK FIRST**

**Some Prohibited Substances, which MUST NOT be disposed of in the general waste bins or down the sink:**

- **Organo-halogen compounds** incl chloroform, chloromethane
- **Flammables** including ethanol, methanol, acetone, petroleum spirit
- **Toxic or Harmful substances / solutions** (check hazard labels and MSDS forms)
- **Heavy metals irons / solutions** including Mercury and compounds, Silver, Zinc, Nickel, Tin, Copper, Lead, arsenic, barium, cadmium, chromium, osmium, selenium
- **Drugs or precursors & pesticides** including atrazine, DDT, potassium permanganate
- **Greases oils or fats** >200mg/l
- **Triton-X** note this detergent is ecotoxic and so must not be disposed of to mains drains

**Other Lab waste:**

**General solid laboratory waste** is essentially low hazard waste and should be placed in lab waste bins (black bin liners). This stream **must not contain glass, 'sharps', chemical waste or biological waste** and **must not be heavily contaminated with hazardous materials.** It is likely to comprise paper tissues, filter papers, used gloves, pipette tips, vials, decontaminated waste from biological areas.

**Chemically contaminated solutions / plasticware.** Wherever chemical contamination or waste is of toxic or harmful nature (see MSDS for individual chemicals) or for any waste identified as requiring collection in MSDS forms, these must be collected and disposed of via the chemical waste disposal route (see https://intranet.uea.ac.uk/bio/intranet/hands/waste for disposal forms and further details)

**'Sharps'** such as hypodermic needles (and attached disposable syringes if removal is inadvisable), small shards of broken glass, scalpel blades and other small sharp items (as long as biological and/or chemical contamination can be rendered harmless disposable glass Pasteur pipettes can be disposed of as waste glassware). If there are any items with biological and/or chemical contamination, the nature of the contaminant should be detailed on the outside of the bin. Sharps bins are treated as clinical waste no matter from where they originate. Prior to collection Sharps bins must have their closures secured and the tops secured with adhesive tape. They are disposed of via the ‘special chemical waste’ route. (Do not use for pipette tips, slides etc as these fill bins very fast and are a costly route of disposal for these items)

**Other Clinical waste** (animal and human) is collected in special bags provided by laboratory managers which should be placed in yellow boxes purchased by the researcher. Disposal of these are then arranged via DMU waste stream for incineration (contact chief technician/lab manager)
8 APPENDIX 2 – SIMPLIFIED WASTE HANDLING FLOW DIAGRAM (LABORATORY BINS/BOXES)

Chemically contaminated waste (with toxic and/or high concentrations of chemicals) → Solid waste container for specific chemical (appropriately Labelled)
9 APPENDIX 3 – EXAMPLE OF LABORATORY CHEMICAL WASTE DISPOSAL SYSTEM (AS USED IN BMRC)

This is an example system for waste disposal (as used in BMRC labs). A similar but reduced system can be adopted in all labs to make disposal easier and clearer for all users but this will need to be set up suitably by a lab member or contact your technician for assistance (BMRC has many users and so many different chemical wastes and so few labs will produce a similar range/quantity of chemical waste so this system can be modified to suit).

Clearly labelled waste bottles for all of the below waste groups are provided in fume hoods. Please identify an appropriate bottle from the below table for your waste. If you cannot find a suitable waste pot then please make a new bottle and use a waste label from the cupboard beside hoods to fill in as much detail as you can as to the content of the waste.

When bottles are full alert waste disposal technician to arrange collection of full bottles. New bottles and stickers for labels can be provided by waste disposal technicians. Bottle numbers are purely to assist location of appropriate bottle – please check label to confirm appropriate contents for your waste.

<table>
<thead>
<tr>
<th>BOTTLE NUMBER</th>
<th>WASTE CONTENTS</th>
<th>FURTHER DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• 100% ACETONE</td>
<td>• 100% Acetone waste</td>
</tr>
<tr>
<td>2</td>
<td>• 100% METHANOL</td>
<td>• 100% Methanol waste</td>
</tr>
<tr>
<td>3</td>
<td>• NON-CHLORINATED SOLVENTS, FLAMMABLE LIQUIDS</td>
<td>• Isopropanol • Ethanol • Methanol • Acetone • Toluene • Benzene, • Acetonitrile • Also solutions of these in water.</td>
</tr>
<tr>
<td>4</td>
<td>• TOXIC AND CORROSIVE FLAMMABLE LIQUIDS</td>
<td>• Mixtures containing: Methanol • Ethanol • Acetone • Isopropanol • Acetic acid • Coomassie Blue.</td>
</tr>
<tr>
<td>5</td>
<td>• NON-CHLORINATED ORGANIC ACID WASTE</td>
<td>• Acetic acid • Citric acid • Formic acid • propionic acid • Solutions of these organic acids in water.</td>
</tr>
<tr>
<td></td>
<td>Liquid Waste Description</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>TRANSFER BUFFER&lt;br&gt;Western blot Transfer buffer liquid waste containing ethanol and methanol.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>FIX WASTE&lt;br&gt;Formaldehyde and formaldehyde with Glutaraldehyde liquid.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>MIXED QIAGEN BUFFERS&lt;br&gt;*Except any containing thiocyanates&lt;br&gt;P1, P2, P3, QF, QC, QBT</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>TRITON X-100 WASTE&lt;br&gt;Triton X-100 waste 0.25% V/V</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SODIUM AZIDE&lt;br&gt;Sodium Azide in buffers etc</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>PHENOL CHLOROFORM LIQUID&lt;br&gt;Phenol Chloroform liquid waste, RNA extraction waste etc</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>B-MERCAPTOETHANOL&lt;br&gt;B-mercaptoethanol waste</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>XYLENE&lt;br&gt;Xylene waste</td>
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<tr>
<td>14</td>
<td>GUANIDINIUM THIOCYANATE&lt;br&gt;Guanidinium thiocyanate waste including Qiagen buffers N3 and PB</td>
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</tr>
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<td>15</td>
<td>ELISA WASTE&lt;br&gt;ELISA waste</td>
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<td>16</td>
<td>BCA ASSAY WASTE&lt;br&gt;BCA assay waste</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>HISTOCLEAR WASTE&lt;br&gt;Histoclear waste</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>VANADIUM TRICHLORIDE&lt;br&gt;Vanadium trichloride 50mM in 1M HCL</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>TCA WASTE&lt;br&gt;Trichloroacetic acid solution</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>METHYLENE BLUE WASTE&lt;br&gt;Dimethyl-methylene blue waste</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>HEPES SOLUTION&lt;br&gt;50mM HEPES, 1mM DTT, 1M HCL</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>HISTOLOGICAL STAIN&lt;br&gt;1% Alcian Blue, 0.1M HCL, 6M Guanidine</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>EOSIN WASTE&lt;br&gt;Eosin-Y waste</td>
<td></td>
</tr>
<tr>
<td>Type of waste</td>
<td>Disposal route</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>Spent Batteries</td>
<td>Use small pedal bin outside old BIO stores</td>
<td></td>
</tr>
<tr>
<td>Blades (scalpel, razor etc)</td>
<td>Use yellow plastic Sharps bins (see Hypodermic needles waste below)</td>
<td></td>
</tr>
<tr>
<td>Broken glass (non contaminated or decontaminated prior to disposal)</td>
<td>Red Glass bins in labs (emptied to general waste wheelie bins in BIO yard)</td>
<td></td>
</tr>
<tr>
<td>‘Clean’ Cardboard</td>
<td>Use recycling bins (green/grey) or green bins in BIO yard</td>
<td></td>
</tr>
<tr>
<td>Other Chemical waste</td>
<td>See ‘Chemical Waste Disposal Summary’ below. If you are still unsure what to do with any chemical waste refer to Chief Tech / Lab manager for advice.</td>
<td></td>
</tr>
<tr>
<td>Human Clinical waste</td>
<td>Bag waste (bags from lab manager). Use incineration route via DMU (see appropriate Human Tissues/Cells Scheme of Works).</td>
<td></td>
</tr>
<tr>
<td>Confidential waste paper</td>
<td>Shredding wheelie bin in BIO reception</td>
<td></td>
</tr>
<tr>
<td>Electrical equipment / fridges &amp; freezers</td>
<td>Speak to laboratory manager / chief tech</td>
<td></td>
</tr>
<tr>
<td>Flammable Solvents</td>
<td>Flammable Waste Solvent Bottle (see ‘Chemical Waste Disposal Summary’ below)</td>
<td></td>
</tr>
<tr>
<td>Furniture</td>
<td>Speak to laboratory Manager</td>
<td></td>
</tr>
<tr>
<td>Lab Glassware for disposal (rinsed / decontaminated)</td>
<td>Red glass bins in labs (emptied to general waste wheelie bins in BIO yard)</td>
<td></td>
</tr>
<tr>
<td>Glass bottles / Jars suitable for recycling (non lab)</td>
<td>Small black glass recycling wheelie bin in BIO yard</td>
<td></td>
</tr>
<tr>
<td>Gloves (unless biologically contaminated or grossly contaminated with chemicals)</td>
<td>Lab waste bins (black bin liners), emptied to general waste wheelie bins in BIO yard</td>
<td></td>
</tr>
<tr>
<td>Hypodermic needles in labs</td>
<td>Yellow plastic Sharps bins, when contents level with ‘full’ indicator inform chief tech for disposal via chemical waste route.</td>
<td></td>
</tr>
<tr>
<td>Ink cartridges (both empty ones and those removed from printers)</td>
<td>Take to BIO post room, place in green tray (behind door) for recycling</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Disposal Method</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Bulbs / UV lights / fluorescent</td>
<td>Contact EST (Fluorescent tubes and some bulbs contain mercury so must not be</td>
<td></td>
</tr>
<tr>
<td>tubes (including microscope bulbs)</td>
<td>disposed of in glass bins).</td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td>Contact Lab manager</td>
<td></td>
</tr>
<tr>
<td>Clean Paper (from offices etc)</td>
<td>Recycling bins, emptied to recycling wheelie bins in BIO yard</td>
<td></td>
</tr>
<tr>
<td>Plastic drink / milk cartons</td>
<td>Recycling bins, emptied to recycling wheelie bins in BIO yard</td>
<td></td>
</tr>
<tr>
<td>rinsed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biologically Contaminated Plastics</td>
<td>Use Yellow Box Disposal Route (except human bloods / tissues)</td>
<td></td>
</tr>
<tr>
<td>Chemically contaminated Plastics</td>
<td>Where chemical is a collectable waste, collect plasticware and use identified</td>
<td></td>
</tr>
<tr>
<td></td>
<td>‘Chemical Waste Disposal’ route ([<a href="https://intranet.uea.ac.uk/bio/intranet/hands/waste">https://intranet.uea.ac.uk/bio/intranet/hands/waste</a>])</td>
<td></td>
</tr>
<tr>
<td>Pipettor tips, plastic</td>
<td>Lab waste bins (black bin liners)</td>
<td></td>
</tr>
<tr>
<td>(uncontaminated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposable Lab Plasticware</td>
<td>Lab waste bins (black bin liners)</td>
<td></td>
</tr>
<tr>
<td>(uncontaminated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5Ltr Glass Winchester (Empty)</td>
<td>Rinse in water &amp; dry, recycle as glass</td>
<td></td>
</tr>
<tr>
<td>2.5Ltr Plastic Winchester (Empty)</td>
<td>Rinse in water &amp; dry, return to CHE stores for recycling.</td>
<td></td>
</tr>
<tr>
<td>Radioactive waste</td>
<td>Refer to the University Safety Services / Radiation Protection Officer ([<a href="https://intranet.uea.ac.uk/uss/intranet/safetysubjects/radiation">https://intranet.uea.ac.uk/uss/intranet/safetysubjects/radiation</a>])</td>
<td></td>
</tr>
<tr>
<td>'Special' Chemical waste</td>
<td>See disposal summary below and ([<a href="https://intranet.uea.ac.uk/bio/intranet/hands/waste">https://intranet.uea.ac.uk/bio/intranet/hands/waste</a>])</td>
<td></td>
</tr>
<tr>
<td>Thermometers (no mercury)</td>
<td>Red Glass bins in labs (emptied to general waste wheelie bins in BIO yard)</td>
<td></td>
</tr>
<tr>
<td>Thermometers (mercury)</td>
<td>Dispose of via Chemical Waste Disposal ([<a href="https://intranet.uea.ac.uk/bio/intranet/hands/waste">https://intranet.uea.ac.uk/bio/intranet/hands/waste</a>])</td>
<td></td>
</tr>
</tbody>
</table>
**APPENDIX I – ‘THE SAFETY DECLARATION’**

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**SCHOOL OF BIOLOGICAL SCIENCES**

**HEALTH AND SAFETY CODE OF PRACTICE**

As part of the School of Biology’s commitment to Health and Safety, all staff who will work in BIO or its associated buildings / facilities are required within TWO DAYS of arriving at UEA to have read this ‘School of Biological Sciences Health and Safety Code of Practice’.

All staff working in school buildings but **NOT** working in the schools laboratories or research facilities are required to read **SECTION 1** of the Code of Practice only.

All staff working in school buildings **INCLUDING** working in the schools laboratories or research facilities are required to read **SECTION 1 AND SECTION 2** of the Code of Practice.

Please complete only ONE section below, please indicate by score outs which section is appropriate.

Any member of staff / PG student will not be granted card or coded access to any part of the school until this form is received. The form will then be held on file by the school*.

---

**INDIVIDUAL STAFF SAFETY RECORD**

FULL NAME (Please print) : …………………………………………………………………………………

SUPERVISOR / LINE MANAGER: …………………………………………………………………………

ROOM NUMBER (most common location at UEA) : ……………… SCHOOL: ……………………

START DATE : ………………………. CONTRACT END DATE (if applicable): …………………

Please cross through the statement below **not** applicable to you and sign the appropriate one:

**Staff working in school buildings but NOT working in the schools laboratories or research facilities**:

I hereby acknowledge receipt of a copy of the School of Biology Health and Safety Code of Practice. I have read and understood all of ‘Section 1’ of this code and agree to adhere to requirements laid out in this document.

Signed: ………………………………………………………   Date: …………………………………

**Staff working in school buildings INCLUDING the schools laboratories or research facilities**

I hereby acknowledge receipt of a copy of the School of Biology Health and Safety Code of Practice. I have read and understood all of ‘Section 1 and Section 2’ of this code and agree to adhere to requirements laid out in this document.

Signed: ………………………………………………………   Date: …………………………………

*Signed declarations must be returned to the BIO general Office within two days of arrival at UEA*