NORWICH MEDICAL SCHOOL

Laboratory Audit / Laboratory Standards Monitoring

Key Information Table

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Author:	Laboratory Facilities Manager J. Waters				
Consultees:	FMH H&S Committee members				
Administrator:	Facilities Manager J. Waters		**Approval Committee:**		FMH H&S Committee

Version Control Record

Version	Date	Revision Description
1.0	03.11.2017	Initial Document
2.0	10.08.2018	Revised by J.Waters to add requirement for an Issue Log in order to monitor and record issues identified during lab checks and supervisory audits. As approved by Head of School during Biennial Audit, Aug 2018

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Laboratory Audit / Laboratory Standards Monitoring

Introduction

The Management of Health and Safety at Work Regulations (1999) requires the University, its Faculties, Schools and individual Principle Investigators to monitor and review its health and safety management arrangements. The Medical School monitors its compliance with these requirements within its laboratory facilities through the implementation of a programme of internal inspections and audit of laboratories as detailed below.

Inspections are a proactive way of monitoring whether health and safety risk is being adequately and effectively managed and provides a feedback loop to those responsible for managing health and safety, identifying where improvements can be made. Inspections are significantly beneficial because they:

- Identify good health and safety practice and promote its use across the University.
- Identify areas for improvement and promote appropriate action plans to facilitate this.
- Evaluate the adequacy of the Health and Safety Management Systems.
- Monitor compliance with legal obligations and University policies, rules and guidance in line with the requirements of International Health and Safety Standards.
- Provide detailed feedback for Executive teams on performance within the faculty with regards health and safety in laboratories.

There is an expectation that any reasonable requests for information or documentary evidence made by any inspection / audit team member to any member of staff should be met within a reasonable time frame and time resource should be allowed by any supervisor, sufficient to facilitate provision of that evidence.

Monitoring Process In Summary

To implement a regular programme of full inspections to all MED school laboratories to ensure standards are met would not be practicable as the time requirement would be inhibitive.

Therefore, a programme of checks have been prepared and are introduced in the following document. A tabular summary of the audit process (Appendix I), an Audit Timetable (*Appendix II)* and audit checksheets (Appendices III – V) can be found below. Briefly, this monitoring consists of:

- Quarterly internal group safety checks which must be carried out by a member of lab active staff within the group and concentrate on safety within the research group's working sphere.
- Biannual PI / supervisory self-audit and spot checks of areas for which the individuals are responsible must be carried out by each PI/Supervisor responsible for any laboratory based research every 6 months.
- Annual Inspections of general laboratory facilities, carried out by two members of senior laboratory / academic staff on a rotating basis supported by senior technical staff plus, where possible, an external (non-MED) member of laboratory staff / researcher.
- Biennial Audit / Inspection will include a review of the documentation from the past two years, review of all action points relating to issues arising and randomised spot checks of laboratory areas. MED Safety Officer, MED Faculty Manager and MED Laboratory Manager plus at least one other senior member of MED staff with appropriate laboratory background will undertake the biennial audit.

This programme of checks and audit processes will ensure laboratories are checked frequently and so should identify any safety issues early so they can be addressed in a timely fashion.

Monitoring Process in Detail

Quarterly Group Safety Checks:

At start of months I, IV, VII & X (as per timetable in *Appendix I*) one member of each lab active research group must complete a 'Laboratory Safety Check Sheet' (see *Appendix II* below).

This checklist must be completed, signed by the individual conducting the checks then signed by the PI. All laboratory active individuals should get involved in this process and should take turns to complete these checksheets.

These quarterly group checks are to:

- Ensure high standards of general good housekeeping are followed and to highlight any issues which may be arising around general lab practice and safety standards.
- Build an ethos of responsibility for health and safety throughout all staff from grass roots up
- To identify any safety issues as perceived by users, highlighting any potential procedural issues and encouraging individuals to voice any concerns
- Improve understanding of all lab active staff, with respect to safety management and use of appropriate control measures within the lab environment.

Details of any significant issues identified during quarterly safety checks must either be a) dealt with by individual PI at Checksheet sign off or b) identified to lab manager for inclusion in 'Issue Log' (appendix VI).

Biannual Supervisory Self – Audit:

Once every 6 months at the start of months I & VII (as per timetable in *Appendix I*) each PI / supervisor responsible for any laboratory based research will be required to complete a Supervisory Self-Audit form (see *Appendix III* below). Completion of this form requires a review of their groups' quarterly checks and they must also perform some randomised spot checks in their own lab areas. Any comments or issues arising from quarterly checks must be noted and addressed where possible. Where any issues remain unresolved these must be detailed by email to the Laboratory Manager (attaching a copy of the self-audit form) who will either resolve or escalate issues to MED Safety Officer / MED exec as appropriate.

These biannual Self-Audit checks are to:

- Ensure there is follow up of any issues identified in the quarterly internal safety checks.
- Ensure that all new staff have been given clear guidance from the group PI to ensure continuity of the safety culture in an environment with high staff turnover rates.
- Ensure the PI is aware of the activities, training needs and competency of members of their group
- Facilitate production of new and regular review of existing risk assessments in a fast paced research environment.
- Show leadership of a good safety culture.

Details of any significant issues identified during biannual supervisory self audits which are not dealt with immediately by individual PI must be identified to lab manager for inclusion in 'Issue Log' (appendix VI).

Annual Laboratory Area Inspections:

Every year during December (as per timetable in *Appendix I*), two MED school lab active research staff will be requested, on a rotation basis, to assist in general laboratory inspections of MED laboratory areas.

All areas to be inspected on a rotation but the exact location of these inspections will be directed by the laboratory manager. These inspections may be directed more frequently to 'problem' areas whilst visits to areas with historically less issues may occur on a more irregular basis. However, the rotation pattern must

ensure all areas are visited as a minimum every 5 years. These inspections may also be targeted to review any issues arising from monthly / quarterly monitoring checks.

As part of the Annual Laboratory Inspections, a member of the technical support team will also check the 'Lab Safety Register' for documentation update requirements (dates when updates are due are displayed in front of General Laboratory Safety Folder).

These Annual Inspections are to:

- Ensure standards of multi user laboratory areas are maintained
- Ensure that quarterly/ biannual safety checks are being completed as per audit programme
- Follow up on any issues identified in the quarterly/ biannual safety checks as identified on the 'Issues Log'
- Ensure that all lab facilities are fit for purpose, meet user requirements and are compliant with health and safety policies
- Ensure that generic safety advice is current and appropriate for activities ongoing in lab areas.

Any significant issues highlighted during the annual inspections or ongoing unresolved issue identified in the 'Issues Log' must be identified and summarised in writing to the School Safety Officer for submission to the School Executive Committee for attention and action.

Biennial Laboratory / Safety Management Audit

Biennially during August, the MED school Safety Officer, MED Faculty Manger, MED Laboratory Manager and where possible, one additional member of laboratory active academic staff, will undertake a paperwork audit of the management arrangements for the MED school's laboratory facilities. This audit should include a general overview of what safety paperwork is in place and may include a 'potential scenario / incident' picked at random with subsequent paperwork review. At least a part of the audit should include observation of working practice within MED school lab facilities.

These Biennial Audits are to:

- Ensure health and safety arrangements are being suitably implemented across the School's facilities
- Ensure risks associated with work in laboratory environments across the School are appropriately identified, managed and mitigated where possible.
- Meet UEA requirements for Local Departmental Safety Audit.
- Ensure any significant outstanding risks are highlighted to the Head of School and School Exec and are recorded and monitored as appropriate within the School's Risk Register.

A summary of the Biennial Laboratory / Safety Management Audit will be provided to the School Executive committee. Any non-conformances will be highlighted and passed to the School Executive Committee for attention and action.

All safety monitoring paperwork must be filed in Lab Audit & Inspection folder on completion.

MED Laboratory Health and Safety Audit Program

Quarterly

Group Quarterly Laboratory Check Sheets

When: Every 3 months (see audit dates)

Who: A suitably experienced member from each research group identified by the PI/supervisor.

Task: Individual will complete and submit to PI, a Laboratory Safety Check Sheet reviewing general laboratory safety and housekeeping in group lab area.

Follow up: Check sheets signed off by PI and filed in Audit & Inspection folder. Any issues raised and not completed before signoff, or any recurring issues should be identified by PI during biannual audit and reported to Lab Manager.

Ongoing

Safety Observation Card System

An ongoing anonymous hazard reporting system which, while standalone to the auditing programme, will feed back into the audit documentation. Any identified outstanding issues will be logged by Lab manager.

Audit Documentation

Paperwork from Quarterly Laboratory Safety checks and Biannual Self-Audit activity will be stored after assessment in the appropriate group's safety folder. Details of any issues arising along with documentation must be stored in MED school H&S Audit folder under the appropriate tab. Paperwork from all audit sources will be archived and stored for 10 years.

Annually

Annual Laboratory Safety Inspection

When: Every 12 months (see audit dates)

Who: BCRE Senior laboratory technician, 1 external (non-BCRE) member of staff with laboratory background + two senior BCRE laboratory staff (PI or RA).

Task: To inspect on a rotating basis general areas of MED school laboratories, to include:

- BCRE Tissue culture and BAF labs (214/1.26-1.28, 1.24/5) & warm/cold rooms (214/1.47, 1.49, 1.50)
- All small BCRE specialist labs branched from main corridor (214/1.29- 1.32, 1.37, 1.38, 1.40, 1.41, 1.43, 1.44, 1.45, 1.46) & Main lab (214/1.42)
- CL2+ lab & other lab support areas on ground floor (0.37-0.39, 0.48, 0.23, BCRE external specialist stores).
- BMRC 01.04 01.05, 01.07, 01.17 & BIO 02.05

Follow up: Any group specific feedback must be provided to the PI associated and all reports submitted to laboratory manager. Any outstanding issues not remedied before the annual inspection must be fed into annual audit report.

Biannually

Supervisory /PI Safety Self-Audit

When: Every 6 months (see audit dates)

Who: PI / Supervisor of each lab active group

Task: Complete Quarterly Supervisory Self-Audit Form. Any ongoing or significant issues raised in monthly checks must be addressed. Signed off to identify safety policies are being followed, that all staff are appropriately briefed in relevant group H&S paperwork and appropriate training needs are met.

Follow up: Completed Self-Audit sheets filed in group safety folder following assessment. Any unresolved issues must be reported to Laboratory Manager and details fed into the annual audit.

Biennially

Biennial Laboratory / Safety Management Audit

When: Every 24 months (during August in 'odd' numbered years see audit dates)

Who: MED school Safety officer, MED Laboratory Manager & MED Faculty Manager. One other senior staff member (PI or RA) with appropriate laboratory background where possible / as appropriate.

Task: Review and document any action plan relating to outstanding issues from the past year's quarterly / biannual inspections and distribute to all PI's. Randomised observation or test scenario of working practices to ensure local health and safety policies are being implemented and are effective in identifying and minimising risk.

Any outstanding issues will be reported to Executive Team for consideration alongside School Risk Register update.

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Appendix I - MED Lab Health and Safety Checks, Inspections & Audit – Annual Timetable

Date	Type of Audit process	Who involved
1st Week of Jan	Quarterly Laboratory Safety Check (complete checklist appendix II)	Any suitably experienced group member on rotation
January	Biannual Supervisory Self-Audit (complete form appendix III)	Each Supervisor / PI responsible for lab activity.
1st week of Apr	Quarterly Laboratory Safety Check (complete checklist appendix II)	Any suitably experienced group member on rotation
1st Week of July	Quarterly Laboratory Safety Check (complete checklist appendix II)	Any suitably experienced group member on rotation
July	Biannual Supervisory Self-Audit (complete form appendix III)	Each Supervisor / PI responsible for lab activity.
August every other year (all years with odd numbered dates 2019, 2021 etc)	Biennial Laboratory Audit – Review all documentation from inspections to date. Document any action plan relating to outstanding issues highlighted during inspections.	MED School Safety Officer, MED Faculty Manager. BCRE Lab Manager, one additional senior staff member with laboratory background.
1st week of Oct	Quarterly Laboratory Safety Check (complete checklist appendix II)	Any suitably experienced group member on rotation
December	Annual Laboratory Area Inspections (complete form, appendix IV)	2 x senior BCRE lab staff (PI or RA), BCRE Senior Tech & 1 x suitably experienced non MED staff member

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Appendix II - Laboratory Safety Check Sheet**:**

Review Items:	**YES**	**NO**	**Any Comments**
Tidiness and rubbish			
Are passageways in the lab clear of tripping hazards e.g. cables, stock, rubbish, etc.?			
Do you have sufficient space to store stock safely?			
Are rubbish bins, polystyrene boxes and green boxes emptied regularly & not overflowing?			
Are yellow box and clinical waste disposed of regularly & not overflowing?			
Are lab benches uncluttered and provide enough space to allow good, safe working practice?			
Are the tops of all refrigerators and freezers free from any clutter or combustible materials?			
Chemicals / Biologicals			
Are all chemicals, prepared buffers, etc. clearly labelled and easily identified, and displaying any hazard symbols where appropriate?			
Are all reagents and solvents in appropriate vessels, stored in suitable cupboards / cabinets / shelves and correctly segregated?			
Is all chemical waste kept in appropriate vessels and stored in suitable cupboards / cabinets / shelves and correctly segregated?			
Is all biohazard & clinical waste disposed of in accordance with the appropriate BCRE Clinical Waste / 'Yellow Box' SOP's?			
Is a request for removal of chemical waste made to the technical team by users BEFORE pots of chemical wastes are overfilled, is any request made, actioned promptly?			
Are appropriate spill kits available for the volumes and type of work your group undertake? Are all of the group aware of their location and appropriate use?			
Personal Protective Equipment (PPE)			
Is personal protective equipment, e.g. lab coat, eye protection, gloves, respirators etc. available as appropriate and always used relevant to the hazard and identified in the COSHH assessment?			
Are lab coats and other PPE stored appropriately when not in use, away from hazardous substances?			
Hygiene control			
Are all staff aware of and adhere to rules that outdoor coats and bags must not enter labs?			
Are staff aware of the potential for cross contamination carried on themselves, their paperwork or other items which are transferred between lab and office environments and do all staff take steps to mitigate this?			

Name:_____ **Signature:**_____ **Date:**_____

Responsible PI Name:_____ **PI Signature:**_____

Once completed all copies of this Check Sheet should be filed appropriately in Lab 'Audit and Inspection' folder

Supervisor/PI Name: _____ Date: _____

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Appendix III – Laboratory Supervisory Self-Audit Form**:**

Current Lab Users: List all names	
New Starters: List all staff incl visitors/ temps	
Leavers: List all staff incl visitors/ temps	

Checklist	**YES**	**NO**	**Any Actions / Further Details or Notes**
All ongoing / significant issues identified in quarterly check sheets have been addressed – please give detail:			
Are copies of the School Safety Policy, CoSHH forms and Micro / GM or Human Tissues risk assessments available? Have all new staff been shown the location of the above and have they read and signed all appropriate safety forms?			
Has any new work / changes in procedures indicated a requirement to review / change / add to any risk assessments (if so please give detail)?			
Are any risk assessments due for review and if so have reviews been completed? If so please give detail.			
Have all staff (including new starters) received safety induction and appropriate training on the equipment they use? Have any new training requirements been identified (please detail)? Have all staff training / competency records been reviewed / updated?			
Are new staff accessing facilities 'out of hours' authorised to do so and do they know how to act in the event of an accident or emergency during these times? Where appropriate, is all equipment or access restricted to authorised / sufficiently trained persons only?			
Have the labs been checked by PI on a regular basis to ensure quarterly check sheet responses are appropriate and accurate? Are all members of the group equally contributing?			
Additional comments			

Signed (Supervisor/PI): _____

Once completed all copies of this form should be filed appropriately in Lab 'Audit & Inspection' Folder.

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Appendix IV – Laboratory Area Safety Inspection Check List**:**

Laboratory(s) inspected (room no.) **:**	**Type of Lab** (general / specific use) **:**	**Date of Inspection:**

Personal Protective Equipment* *Suitable types should be available, used appropriately, stored appropriately & in good condition.	Issues identified	Comments
Labcoats	Y / N	
Safety gloves	Y / N	
Eye / face protection	Y / N	
Ear / hearing protection (checked & in date)	Y / N	

Emergency / Safety Equipment	Appropriate	Available	Accessible	In Date
Fire Extinguishing Equipment				
First Aid Box				
Eye Wash Station / Bottle				
Spill Kits				
Notices / Emergency Contact Information				
LEV / Fume / Microbiological Safety Hoods				
Notices / Emergency Contact Information				

Laboratory Layout and General State	Issues identified	Comments
Equipment locations / layout	Y / N	
No. occupants / overcrowding	Y / N	
Appropriate ventilation, heating & lighting	Y / N	
Furniture appropriate & in good condition	Y / N	

Housekeeping	Issues identified	Comments
Aisles, doorways and exits clear of clutter	Y / N	
Benches offer appropriate workspace	Y / N	
No cardboard boxes / excess packaging stored	Y / N	
Leg space under bench (where stools provided)	Y / N	
Shelves & storage (no overfilled storage, heavy / large items or glass not stored on high shelves)	Y / N	
Waste bins – general and sharps / specialist bins (appropriate signage, provision & use)	Y / N	
Ceilings and ceiling vents clear from dust	Y / N	
Freezers, Fridges & Coldrooms (items labelled and appropriately stored, clean, defrosted regularly)	Y / N	

Chemicals	Issues identified	Comments
Amounts stored	Y / N	
Inventory up to date	Y / N	
Labelled	Y / N	
Floor or bench standing chem / solvent vessels appropriately bunded / secure	Y / N	
Appropriately stored / segregated	Y / N	

Electrical Equipment	Issues identified	Comments
Visually safe / appropriate	Y / N	
PAT testing in date	Y / N	
Strain relief on electrical cables	Y / N	
Floor Trailing Cables, protected / secured	Y / N	
Mains Distribution Boards (secured, loaded appropriately & not daisy chained?)	Y / N	

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Laboratory(s) inspected (room no.) :	**Type of Lab** (general / specific use) :	**Date of Inspection:**

Other Laboratory Equipment (tested & training / user controls where appropriate)	In Use	Comments / Issues identified
Centrifuges (trained users)		
Gas Cylinders (Secure, well sited, regulators marked & in date)		
Lasers (registered, shielded, carries warnings)		
Microwave Sources (shielded, tested, carries warnings)		
Ovens		
Pressure Vessels including Autoclaves (tested, serviced, trained users)		
Radioactive Isotopes (restricted access, trained users, good practice evident, dosimetry in use)		
Sonicating devices (appropriate PPE / signage, carries warnings)		
Trolleys (suitable, safe, checked, weight marked)		
UV sources (registered, shielded, carries warnings)		

Laboratory Safety Sheets - Update Check		
Updates to Lab Safety Sheets Required / Due:	Updates Completed (date)	Initials

Name / Signatures of Inspection Team:

Lead Auditor :

Name: _____ Signed: _____ Date: _____

Auditor 2 :

Name: _____ Signed: _____ Date: _____

Auditor 3 :

Name: _____ Signed: _____ Date: _____

Auditor 4 :

Name: _____ Signed: _____ Date: _____

Auditor 5 :

Name: _____ Signed: _____ Date: _____

Once completed all copies of this Inspection Sheet should be filed appropriately in Lab 'Audit and Inspection' folder

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Appendix V – MED Biennial Laboratory / Safety Management Audit**:**

Audit Criteria	Suggested activity
Are UEA policies & guidelines being followed and are those responsible taking actions to ensure procedures are being followed appropriately. Are local procedures in place and are they effective to prevent accidents, to educate staff / students and to avoid any unnecessary risk Are there appropriate Risk Assessments (CoSHH / Micro / GM / Human Tissues) in place for all of the activities carried out by the research lab groups? Are appropriate controls in place to protect lone & out of hours workers from unnecessary risk	Review of PI / Supervisory Biannual Self – Audit and Annual inspection reports from previous years. Ensure action points have been addressed. **Either**: Speak to one member of group staff, identify what procedures they are currently undertaking, follow through their procedures and steps and ensure appropriate risk assessments are in place. Are the RA's current, appropriate, reviewed within a reasonable timeframe. **Or**: Define a potential scenario: Pick on a realistic procedure or possible event and audit all associated paperwork to ensure that safety procedures are in place and up to date and that risks are appropriately managed / mitigated. Scenario's may include: Accident with Micro / GM Accident with Human tissues samples Working outside of normal hours / lone working Inappropriate use or failure of specific equipment Loss of documentation or leak / breach of confidentiality / research integrity Accident, fire, terrorist attack or any event falling under definition for 'disaster plan' activation. Accidental or intentional release / loss of chemical, sample or other.

Audit Method (give details)	Comments / Findings of the audit team:

Name / Signatures of Audit Team:		
Lead Auditor :		
Name: _____	Signed: _____	Date: _____
Auditor 2 :		
Name: _____	Signed: _____	Date: _____
Auditor 3 :		
Name: _____	Signed: _____	Date: _____
Auditor 4 :		
Name: _____	Signed: _____	Date: _____

Once completed all copies of this Audit Documentation should be filed appropriately in Lab 'Audit and Inspection' folder

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Appendix VI – MED Laboratory Area Assessment and Audit – ISSUE LOG

Most issues identified during 3-monthly lab checks and 6-monthly supervisory self-audits should be dealt with immediately within the lab group. Any issues identified which are not resolvable by the PI or serious issues and so worthy of specific note must be detailed in the 'Issue Log' below with full details of mitigating actions.

Issue identified during which type of Audit / Inspection (delete as appropriate)?			
3 monthly lab safety check	6 monthly PI check	Annual Inspection	Biennial Audit
Issue identified by (name):	……	Responsible PI (where applicable)	……
Description of Issue:			
Proposed Resolution:			
Resolution Actioned by:	……	Date Issue Closed:	……

Once completed all copies of this Audit Documentation should be filed appropriately in Lab 'Audit and Inspection' folder