Marine Biological Laboratory Safety Inspection Policy

Initiated by: MBL Safety Office Date: December 7, 2018

Revision: Revision 0

1.0 Purpose

The MBL Safety Office has the responsibility to inspect laboratories and facility areas for the safe and compliant use of hazardous material or equipment. These inspections cover a variety of topics including chemical and biological safety, chemical storage, engineering controls, administrative controls, personal protective equipment, general safety, hazard communication, electrical safety, and hazardous waste. These inspections are completed on an annual basis for all year-round laboratories and facility areas which contain physical hazards. Laboratories which are not year-round (those used by the Educational Courses or the Whitman Scientists), will be inspected as a unit under the Director of Education and Director of Research respectively. The MBL Safety Office will assist departments in providing an appropriate checklist and training to complete their own self-inspection.

2.0 Scope

This policy applies to all research and teaching laboratories at the MBL where hazardous materials are used. This policy also applies to facility areas where physical hazards are present.

This policy also provides guidance for the inspection, review and action plans for those laboratories using radioactive materials or lasers. However, the frequency of these inspections is dependent on the usage of radioactive isotopes or Class 3B or 4 lasers. Specific details of these inspections are covered in the Radiation Safety Manual and Laser Safety Manual.

3.0 Safety Inspection Checklists

The primary tools for accomplishing the inspections are the *Laboratory Inspection Checklist*, *Non-Laboratory Inspection* Checklist and the *Biosafety Laboratory Inspection Checklist* which will be completed by the MBL Safety Office. These evaluation records each contain over 50 individual check points which can be revised as needed or as regulatory requirements dictate. The checklist is used to record data gathered during the inspection process, to generate safety inspection reports, and collect data for statistical analysis reports. See checklists in Appendix A.

4.0 Safety Inspection Frequency

- 4.1 All year-round laboratories with hazardous materials and facility areas with physical hazards will be subject to a safety inspection at least once a year.
- 4.2 If a new hazard is introduced to the area, the MBL Safety Office must be made aware of the change. The primary source for understanding the introduction of new hazards to a laboratory is the resubmittal of the Research Safety Questionnaire by the researcher. If warranted by the Safety Office, the area will be inspected at that time.
- 4.3 If all hazardous materials and/or physical hazards are removed from a location, the area will no longer require an annual safety inspection.
- 4.4 For any newly established year-round laboratory, an inspection will take place upon completion of the MBL Research Safety Questionnaire, receipt of a chemical inventory by the MBL Safety Office and prior to the laboratory performing research work using hazardous materials.

5.0 Safety Inspection Notification

- 5.1 Each laboratory Principle Investigator (PI) or Department Manager will be notified by email with a minimum of a two weeks advanced notice for scheduling date/times when inspection is to take place.
- 5.2 The email will include the following information:
 - 5.2.1 Provide proposed dates for the safety inspection for the PI/Manager to accept or provide alternative dates.
 - 5.2.2 Information detailing items to be reviewed during the inspection (copy of the applicable checklists).
 - 5.2.3 Information as to how safety issues are reported to the PI or manager.
 - 5.2.4 Information on the escalation process for addressing any deficiencies.
- 5.3 If PI/manager does not reply to notification within 3 working days, an inspection will be scheduled for a date chosen by the inspector.
- 5.4 In preparation for the inspection, laboratory personnel will be encouraged to conduct self-inspections. Laboratory personnel are also encouraged to participate in the inspection.

6.0 Safety Inspection Procedures

- 6.1 A MBL Safety Manager will meet at the designated time at the laboratory. This inspector will provide their own personal protective equipment (safety glasses, laboratory coat and nitrile gloves) to be used as appropriate for area.
- 6.2 The inspector will have applicable safety checklist(s) on hand to review with PI/Manager or representative from the department. Generally, the inspector will review items in order as listed on the checklist.

- 6.3 During the inspection, the inspector will not interfere with any research or processes in progress. If any critical areas within the laboratory are not available for inspection, the inspector will return at a mutually agreed upon time.
- 6.4 As applicable, the inspector may engage with available staff in the laboratory to assess their understanding of MBL safety policies and to verify training has been conducted.
- 6.5 A safety inspection requires a minimum of 30 minutes for a small laboratory with few hazards and up to 90 minutes for a large laboratory with complex hazards or for a facility area with multiple rooms.
- 6.6 If the inspector deems a safety issue to be a risk of immediate danger to life, health or facilities during the inspection, the investigator will contact the PI/Manager or associates to resolve the issue. All work related to this safety issue will be discontinued until resolved.
- 6.7 After completing the checklist and at the inspector's discretion, a short verbal summary of any perceived deficiencies or recommendations may be provided to the attending representative(s).
- 6.8 A Safety Inspection Report will be sent to the PI/Department Manager by email within 5 business days from the date of inspection. This time frame may vary as needed. Alternatively, the inspector may set a date to meet with the PI or Manager to review the report.
- 6.9 The Safety Inspection Report will outline any deficiency and may include photographs of items of concern within report. Deficiencies have the following classifications:
 - 6.9.1 MAJOR ISSUE: Item with a potential high risk that is often non-compliant due to certification or a code violation. Major issues should be resolved as soon as possible; however, for those items which require longer than 90 days to rectify, a Safety Inspection Action Plan is appropriate for resolution (see section 7.4). Either the corrective action or an action plan to correct the issue must be provided within 30 days of receipt of the Safety Inspection Report. An example of a major issue would be a refrigerator blocking an electrical cabinet. The Fire Code requires a 36 inch clearance in front of an electrical cabinet. See Appendix B for a Safety Inspection Action Plan.
 - 6.9.2 MINOR ISSUE: Item with a low risk that is not compliant with general guidelines. Minor issues typically can be resolved within a 30 day period. A common example is a container not properly labelled, such as "ETOH" (short hand) instead of the required identification "Ethanol" on label.
 - 6.9.3 RECOMMENDATION: These items are compliant; however, they could be improved to reduce the potential safety risk. The report will include a specific recommendation for improvement. Examples are using more durable hoses for Bunsen burners or writing a Standard Operating Procedure for a task with potential hazards.

6.10 Upon review of report by the PI/ Manager, the Safety Inspection Report must be signed and dated by the PI/Manager and returned to the MBL Safety Department. A copy of this signed report by PI/Manager and Safety Manager will be returned to the PI/Manager. The original signed report will be kept on file in the MBL Safety Department.

7.0 Correction of Safety Issues

- 7.1 The Safety Inspection Report will highlight the deficiencies found in the laboratory and will -explain to the laboratory how to correct the deficiency. A 30 day follow up will be scheduled by the inspector from the date the report is signed by the PI/Manager. This follow up will check on the status of the deficiencies. If all the deficiencies are completed within 30 days, a final inspection report will be sent to the PI or Department Manager.
- 7.2 If the deficiencies remain uncorrected (or an action plan is not in place) at the time of the 30 day follow up, the inspector will send a findings report to the PI/Department Manager AND the Director of Research and/or Director of Education. If all the deficiencies are completed within 60 days of when the inspector or designee returns to the laboratory, a completed inspection report will be sent to the PI/Department Manager AND the Director of Research and/or Director of Education.
- 7.3 If deficiencies remain after the 60 days (or an action plan is not in place) the findings report will be escalated to the attention of the Chief Operating Officer and the Compliance Committee. After an additional 30 days (90 days from initial findings report), the inspector will perform a final review of the uncorrected deficiencies. A completed inspection report will be sent to the PI/Manager, Director of Research or Education, COO and Compliance Committee which will include either all deficiencies corrected or reference to an action plan for any unresolved deficiency (see 7.4).
- 7.4 Any item which is deemed to require more than 90 days to complete will be tracked through a **Safety Inspection Action Plan.** This action plan will:
 - 7.4.1 Describe the deficiency.
 - 7.4.2 Characterize the deficiency as "Low" or "High" Risk.
 - 7.4.3 List Owner/Title of individual responsible for implementing correction.
 - 7.4.4 Describe the Action Plan.
 - 7.4.5 Provide an estimated time for action plan completion.
 - 7.4.6 Sign-off by Owner and MBL Safety for agreement to plan.
 - 7.4.7 The plan will be summarized during the quarterly Safety Committee.

Appendix A: Inspection Checklists

Annual Laboratory Safety Inspection Checklist Department: Inspector: PI/Manager: _____ Date: Bldg/Room: **Administrative Controls** No N/A Ye S Laboratory Placard is posted on the main entrance of laboratory and current. Laboratory door is closed when unoccupied or working with highly П П hazardous material. A Chemical Hygiene Plan is available. Safety Data Sheets (SDS) are available for all chemicals present in the laboratory. Standard Operating Procedures (SOP) are available. All personnel have completed and current with all required training. All personnel have completed and current with all laboratory-specific required training. Chemical Inventory is available. П П **Emergency Contacts List is available.** "No Food or Drink" signs must be posted on laboratory refrigerators and freezers.

Emergency Equipment	Yes	No	N/A
First Aid kit is available and properly stocked.			
Spill kit is available and properly stocked.			
Fire extinguishers are readily accessible and serviced annually.			
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Fire alarm pull stations are unobstructed and clearly identified.			
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Emergency safety shower is available, unobstructed, and tested regularly.			
Emergency safety eyewashes are available, unobstructed, and checked			
regularly.			
Engineering Controls	Yes	No	N/A
Chemical fume hoods are certified annually.		Ш	
Fume hood sash is kept at or below the certification height.	Гп		Гп
Tame nood such to kept at or below the continuation height.			
Fume hood is properly functioning.	Τ□		
No excessive storage in the fume hoods certified for chemical use.			
Biosafety cabinets are certified annually.			
Personal Protective Equipment (PPE)	Yes	No	N/A
PPE appropriate for the hazards present in the laboratory is available.			
PPE is worn correctly, in good condition, and when appropriate.			
If recognizators are present laboratory personnel have been trained fit tested			
If respirators are present, laboratory personnel have been trained, fit tested, and medically cleared.			
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Appropriate laboratory attire is worn in the laboratory.			
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Chemical Storage	Yes	No	N/A
Chemical containers are stored safely and free of contamination.			
Chemical containers are kept off the ground or in secondary containers.			
Chemicals are properly segregated according to chemical class compatibility.			
Chemicals are stored below eye level.			
All chemical containers are properly labeled.			
No old, unlabeled or expired chemicals present.			
Flammable storage outside of a flammable cabinet is minimized.			
Companies about all are stored in accordance and in accordance			
Corrosive chemicals are stored in secondary containment or in a corrosive cabinet.			
Flammable chemicals are stored in refrigerators and freezers approved for			
flammable storage.			
Gas cylinders are properly restrained and stored upright away from extreme			
temperatures.		ш	
Gas cylinders are capped when not in use.			
Hazardous Waste	Yes	No	N/A
All chemical waste is properly labeled.			
Sharps are properly disposed in a puncture resistant container.			
			L
No hazardous waste found in nonhazardous waste streams.			
			l
Broken glass is disposed in the appropriate container.			
	ı		

Hazardous Waste in Satellite Accumulation Area removed when full.			
Hazardous waste is in secondary containment and properly segregated.			
General Safety	Yes	No	N/A
Aisles and doorways are kept clear.			
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No food, drinks, or cosmetics are present in the laboratory.			
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No excessive storage of chemicals or equipment on tables or laboratory benches.			
Storage is kept 18-24" from the ceiling.			
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Overnight or high hazard operations are adequately communicated.			
Personnel use soap and water for hand washing after handling hazardous			
chemicals.			
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Laboratory equipment is properly shielded, and guards are present.			
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Gas hoses are appropriate for the gas and in good condition.			
Cood housekeeping is present throughout the Johardton.			
Good housekeeping is present throughout the laboratory.		Ш	
Electrical panel is accessible and secured			
Electrical panel is accessible and secured.			
Electricals cords are in good condition and do not present an electrical or trip	Гп		
hazard.			

Safety Inspection Checklist (Non-Laboratory)

Department:	Inspector:			
Manager:	Date:			
Bldg/Room(s):				
Administ	rative Controls	Ye s	No	N/A
Area hazard signs are visible, legible regulations.	e, understandable and in compliance with			
Sign for emergency numbers, routes	s, and evacuation plans are posted.			
A Hazard Communication Plan is av	ailable.			
Safety Data Sheets (SDS) are availal department.	ole for all chemicals present in the			
Standard Operating Procedures (SO	P) are available			
Standard Operating Procedures (50	i) are available.			
All personnel have completed and c	urrent with all required training.			
All personnel have completed and c training.	urrent with all job specific required			
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Chemical Inventory is available.				
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Emergency Contacts List is available	e.			
"No Food or Drink" pigns must be a				
freezers.	osted on applicable refrigerators and			
Emorgo	ncy Equipment	Ye	No	N/
Emerger	ісу Ециіріпені	S	NO	A
First Aid kit is available and properly	y stocked.			
Spill kit is available and properly sto	ocked.			

Exits marked, free of debris and readily accessible at all times.			
Fire alarm pull stations are unobstructed and clearly identified.			
Emergency safety shower is available and unobstructed.			
Emergency safety eyewashes are available, unobstructed, and checked regularly.			
Personal Protective Equipment (PPE)	Yes	No	N/A
PPE appropriate for the hazards present in department is available.			
		1	
PPE is worn correctly, in good condition, and when appropriate.			
If respirators are present, personnel have been trained, fit tested, and medically cleared.			
Appropriate attire is worn in the department.			
Ladders are in good condition with no structural damage.			
Areas clearly marked as "Hearing Conservation" area, as needed.			
Fall protection provided, certificated annually, maintained and used properly (safety harness, lanyard).			
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Chemical Storage	Yes	No	N/A
Chemical containers are stored safely and free of contamination.			
Chemical containers are kept off the ground or in secondary containers.			
		1	1
Used oil collection containers properly identified and labeled with "Used Oil".			

Chemicals are stored below eye level.			
All chemical containers are properly labeled.			
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No old, unlabeled or expired chemicals present.			
Flammable storage outside of a flammable cabinet is minimized.			
Gas cylinders are properly restrained and stored upright away from extreme temperatures.			
Gas cylinders are capped when not in use.			
Sharps are properly disposed in a puncture resistant container.			
No hazardous waste found in nonhazardous waste streams.			
Broken glass is disposed in the appropriate container.			
General Safety	Yes	No	N/A
Aisles and doorways are kept clear.			
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Floor surfaces are clean, dry, level, not slippery or stick and in good			
condition.			
No excessive storage of chemicals or equipment on tables or benches.			
No excessive storage of chemicals or equipment on tables or benches. Storage is kept 18-24" from the ceiling.			
No excessive storage of chemicals or equipment on tables or benches.			
No excessive storage of chemicals or equipment on tables or benches. Storage is kept 18-24" from the ceiling. Personnel use soap and water for hand washing after handling hazardous chemicals.			
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Good housekeeping is present throughout the department.		
Electrical panel is accessible and secured.		
Electricals cords are in good condition and do not present an electrical or trip hazard.		
Extension cords used only for temporary wiring applications (60 day max).		
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BIOSAFETY INSPECTION CHECKLIST

AUDITOR:	DATE:
PRINCIPAL INVESTIGATOR:	
DEPARTMENT:	BUILDING & ROOM(S):
LABORATORY SUPERVISOR	PHONE:

ITEM	YES	NO	N/A	COMMENTS
BIOSAFETY APPROVALS AND RESOURCES				
Biological Registration complete.				
Biological research protocol approved by IBC (provide approval date).				
Any amendments to IBC approved research protocol is updated and reviewed by IBC.				
Laboratory specific biosafety manual and SOPs available.				
Laboratory safety training current for all laboratory personnel.				
STANDARD MICROBIOLOGICAL PRACTICES				
Access to laboratory is restricted.				
Laboratory door has proper biohazard signage including contact information, emergency numbers provided by EHS, and contact with updates.				
Hands washed after working with samples and before leaving the laboratory.				
Eating, drinking, storing food/drinks, applying cosmetics, and tobacco use are prohibited in laboratory areas.				
Mouth pipetting is prohibited.				

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Needles are never reused, recapped, bent or broken before disposal.			
Plastic ware is substituted for glassware whenever			
possible.			
Procedures involving aerosol or splash generation are			
minimized			
Work surfaces are decontaminated after completion of			
work.			
Samples put in a durable, leak-proof container for			
storage or transport.			
Biohazard stickers on all equipment involving			
biohazards.			
Spill kit available.			
WASTE PROCEDURES AND PRACTICES			
Bench paper properly disposed of after each use.			
Biological waste (e.g., cultures, stocks, media,			
tissues, plates) is properly decontaminated before			
disposal			
Biological waste is in a secondary container for			
storage and transport.			
Biological waste and sharps containers are not			
overfilled.			
No biohazards in regular trash or in non-hazardous			
glass waste containers.			
Needles, syringes, and other sharps are disposed of			
in a plastic biohazard sharps container.			
Non-contaminated broken glassware is disposed of in			
cardboard glass waste container.			
PRIMARY CONTAINMENT BARRIERS AND PPE			
Proper PPE is worn while working with biohazards			
(minimum requirement is gloves and laboratory coat;			
additional PPE may be required depending on agent or procedure).			
Mucous membrane protection is worn when aerosol			
generation is possible.			
No open-toe shoes worn in laboratory.			
Biological Safety Cabinet is currently certified (annual			
certification).			
Biological Safety Cabinet is clean and free of clutter.			
PPE is not worn while handling personal devices (cell		+ +	
phone, computers, iPods, etc.)			
Chemical fume hood is currently certified (annual		1 1	
certification).			
Chemical fume hood is not used to process biological		1 1	
process with a group	1 1		

materials.			
Centrifuges, vortex mixers, incubators, shakers, etc.			
are clean and in good working condition.			
LABORATORY FACILITIES			
Laboratory has sink and soap and for hand washing.			
Eyewash station readily available (10 seconds,			
walking).			
Emergency shower readily available.			
Benchtops are impervious to water and easily			
cleaned.			
No cloth furniture or carpets present.			
Gas cylinders are secured with chain to wall.			
If windows can open, they are fitted with screens.			
BSL-2 SPECIAL PRACTICES			
All personnel completed BSL-2 training.			
Procedures involving aerosol or splash generation are			
minimized and otherwise performed in a biosafety			
cabinet.			
Equipment is routinely decontaminated.			
No animals or plants unrelated to research are			
present.			
Biosafety cabinet away from heavily traveled areas			
(doorways, etc.).			
Vacuum lines properly setup with clean HEPA filters			
and disinfectant.			
Centrifuges used with safety cups to reduce aerosol			
hazard.			
Personnel familiar with post-exposure evaluation and			
follow-up.			
BLOODBORNE PATHOGENS (i.e., HUMAN CELL			
LINES, BODILY FLUIDS, TISSUES)			
MBL Exposure Control Plan available.			
Personnel have completed annual BBP training.			
Personnel have been offered Hepatitis B vaccination			
or signed declination form.			
SHIPPING BIOLOGICAL MATERIALS			
Personnel have completed biological shipping training			
within the past 2 years.			
CORRECTIVE ACTIONS:			
DECOMMENDATIONS.			
RECOMMENDATIONS:			
Signature:		Date:	
	_	Date	

Appendix B:

Safety Inspection Action Plan

Issued by:		Date Issued:	
Title:		Reference Number:	
Deficiency			
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Characterization:	Low Risk	High Risk	
PI/Manager:		Title:	
Action Plan			
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Expected Complete	tion Date:		
PI/Manager Signature:		Date:	
Safety Signature:		Date:	