Lab Inspection Checklist Guidance

Laboratory Locations

- Rooms where all work with biohazardous materials and/or recombinant materials is performed are listed in the Biosafety Protocol (e.g., room location of BSC, of autoclave, etc.).
- The Biosafety Protocol should list all rooms that are being used for your study. If not, protocol revision information can be found on the OBS webpage (https://ehs.wisc.edu/labs-research/biological-safety/biosafety-protocol-arrow/)and also Bio-ARROW - KnowledgeBase help (https://kb.wisc.edu/arrow/ibc/page.php?id=43188).

General Lab

- Doors should be kept closed (even for BSL-1 work). This is for security, containment of hazardous material, and proper room pressure. See also the UW-Madison Researchers' Biosafety Manual found on the OBS website (https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/08/UWMadisonResearchersBiosafetyManual.pdf) .
- Laboratories should be kept relatively uncluttered. We recognize that space is often at a premium, but a cluttered lab is difficult to disinfect and is more likely to lead to accidents. Also, pests can be more prevalent in a cluttered lab, particularly if corrugated cardboard is present.
- Cardboard cannot be properly disinfected and can harbor pests. Also, storage of cardboard close to the ceiling is considered a fire hazard.
- Surfaces that are not impermeable cannot be properly disinfected and may be more likely to be a potential fire hazard.
- Hand washing supplies should be readily available within the lab (i.e., sink, soap, towels, trash can). Hands are washed after activities and prior to exiting the lab.
- Food, beverages, cosmetics, gum, etc. should be kept out of the laboratory. Exposures can occur by ingesting or applying contaminated products.
- All containers in the lab (chemicals, reagents, water, disinfectants, etc.) need to be properly labeled to identify the materials inside.
- Appropriate materials to handle biohazardous spills should be prepared in advance, placed in strategic locations inside or outside the laboratory, and all laboratory personnel informed of the location(s). The items that are generally recommended include, personal protective equipment (PPE), absorbent materials, disinfectant(s), clean-up tools, and signage. More details on preparing a spill kit can be found on the Office of Biological Safety Website:

https://ehs.wiscweb.wisc.edu/wp-content/uploads/sites/25/2017/01/BioSpillKitGuide.pdf

- Plumbed emergency shower units should be available and unobstructed. Shower stations should be within ten seconds (or 55 feet) from the lab (potential hazard area) and should be clearly marked. Shower location(s) should be known by all personnel working in the lab. The emergency shower units are flushed at least yearly by EH&S (i.e., barcode indicates unit is in the EH&S database for yearly flushing). See also https://ehs.wisc.edu/shower-eyewash-stations/.
- Plumbed emergency eyewash units should be available and unobstructed. The eyewash stations should be within ten seconds (or 55 feet) from the lab (potential hazard area) and should be clearly marked. Eyewash location(s) should be known by all personnel working in the lab. See also https://ehs.wisc.edu/campus-health-safety/emergency-preparedness/shower-and-eyewash-stations/.
- Eyewash stations should be flushed weekly to prevent bacterial and/or mineral build-up. Instructions can be found at https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/08/Safety-Shower-Eyewash.pdf. Regulatory requirements are found under ANSI standard Z358.1-2014 Eyewash and Shower Equipment.
- For safe evacuation, exits and corridors should be free from obstructions. Lab aisle space are open at least 36-inches and hallways/corridors are open at least 44-inches for traffic. See also EH&S Exit & Evacuation, Emergency Preparedness (https://ehs.wisc.edu/campus-health-safety/emergency-preparedness/exit-and-evacuation/).

Signage

- Laboratory Emergency Information card should be posted outside of the lab. The card was developed in conjunction with campus emergency responders and should be updated regularly. Review, sign, & date signage at least annually. Laboratory Emergency Door Cards are now available as fillable PDF and can be found on the EH&S website at https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/09/LaboratoryEmergencyDoorCard.pdf
- Signage is an important part of hazard communication. In labs at biosafety level 2 and above, signs on the outside of the door should indicate biosafety level, agent(s), emergency contact information, and appropriate Personal Protective Equipment (PPE) required for entry. Contact OBS (263-2037) for signage options or see the EH&S webpage (http://ehs.wisc.edu/forms-manuals-signs/).
- All equipment used for biohazardous materials (e.g., freezers used for human cell line storage, liquid nitrogen cryogenic storage containers, incubators, centrifuges, etc.) should be properly labeled with biohazard stickers; Contact OBS at 263-2037 for additional stickers or for information on biohazard stickers. Order stickers at https://ehs.wisc.edu/resources/signage-order-form/.

Containment Equipment

- Biological safety cabinets (BSCs) require annual certification to ensure they are functioning properly and airflows are balanced. Submit any certification or service requests at https://wiscready.assetworks.cloud/ready. Contact the BSC Certification Program for questions at 262-1809 or bscservices@fpm.wisc.edu.
- For proper function, containment equipment should be placed in a location with minimum disruption of its airflow patterns. The ideal placement is away from doors, room supply air registers, fans, other containment equipment (e.g., fume hood), and foot traffic. Doors to rooms, incubators, refrigerators, and freezers should open away from BSCs. There should be a minimum of 6 inch clearance to the sides of the BSCs and 6 inch clearance to the top of the BSC.
- The BSC should be kept free of clutter with items at least 4 inches away from the front grate, and the front grate kept clear in order to help ensure proper function.
- The UW-Madison Manual for Biosafety Cabinets, Animal Transfer Stations, and Clean Air Devices (https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/11/EHS-BIO-GUI-013_V01.pdf) provides information on the use of these containment equipment.
- Heat from heat-generating devices such as Bunsen burners do affect the air flow in BSCs and can compromise containment leading to human exposure and/or increased contamination. In addition, a Bunsen burner is an explosive hazard. For these reasons, the IBC has recently revised their IBC policy to include an approval process to use heat generating devices inside BSCs. Guidance on alternatives to Bunsen burners can be found at https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/11/EHS-BIO-GUI-012-V01.pdf. Please contact Kathy Krasny (Kathy.Krasny@wisc.edu) if you would like more information regarding the approval process.
- Chemical fume hoods require annual certification. Contact the Physical Plant Customer Service (PPCS) at 608-263-3333 if certification or recertification is needed.
- The chemical fume hood should be kept free of clutter to help ensure proper function and should not be used for bulk chemical storage.

Other Laboratory Equipment

- Centrifugation containment (e.g., seal rotors, buckets or safety cups) are recommended due to aerosol generation when centrifuging biohazardous materials. Additional practices may be needed (e.g., opening rotor in a BSC, checking the integrity of the centrifugation containers, opening and filling centrifugation containers in a BSC, and surface disinfection of the centrifugation containers.
- Vacuum lines in the lab and in BSCs should be protected with liquid trap and an in-line High Efficiency Particulate Air (HEPA) filter to prevent contamination of the pump or house vacuum system as per the National Institutes of Health (NIH) - Biosafety in Microbiological and Biomedical Laboratories (BMBL), current version

(https://www.cdc.gov/labs/pdf/CDC-BiosafetyMicrobiologicalBiomedicalLaboratories-2020-P.pdf). Contact your building manager, equipment manager, or contact OBS at 263-2037 for further information or assistance.

- If used for disinfection of biological waste, autoclaves should undergo regular (at least monthly) testing using biological spore strips/vials or chemical indicators (autoclave tape is not an effective indicator) to ensure proper function and thorough disinfection of the load. It is important to verify that conditions adequate for killing microorganisms have been reached inside the material. For more information on autoclaves, see the EH&S webpage (https://ehs.wisc.edu/labs-research/biological-safety/autoclaves/).
- A log of the efficacy test results should be readily available and contains results, date and tester initials. The log should be posted at the autoclave. If log is kept in another location, the location of the log should be posted at the autoclave.

PPE

- PPE should be readily available to anyone entering the lab and properly worn by everyone working in the lab to ensure effectiveness as described in the approved biosafety protocol. Typically, a lab coat and eye protection are worn regardless of the biosafety level with gloves, respiratory protection, face protection, etc. as required for specific procedures. See the UW-Madison Researchers' Biosafety Manual found on the OBS website (https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/08/UWMadisonResearchersBiosafetyManual.pdf) .
- PPE should be removed upon exiting the laboratory since PPE can potentially be contaminated. If transporting research materials outside of the lab, exterior surfaces of the transport containers should be surface disinfected so that PPE is not needed to transport materials. Even if PPE is clean or new, they should not be worn in public areas as the public can perceive the PPE differently. Personnel should be trained in proper PPE removal procedures in order to help prevent contamination.

Laboratory Practices

- Any potential aerosol generating activity should be performed in containment, as appropriate (e.g., BSC, sealed centrifuge rotors/cups) and in accordance with the lab's approved Biosafety Protocol. This includes tasks such as opening sealed centrifuge rotors or pop-top tubes. See also the National Institutes of Health (NIH) - Biosafety in Microbiological and Biomedical Laboratories (BMBL), Section III—Principles of Biosafety (https://www.cdc.gov/labs/BMBL.html).
- Spill/exposure/release plans should be available and familiar to everyone in the lab. Customizable spill protocols can be found on the EH&S Spill Information webpage (https://ehs.wisc.edu/labs-research/biological-safety/biological-spill-protocols/).

- All personnel listed in the Biosafety Protocol should have annual (or more frequent) lab specific training. This training is described in the biosafety protocol and documented. This training may include handling biological spills, hazard communication and, if applicable, information on additional precautions or special exposure response procedures.
- Potentially hazardous materials being transported outside of the lab should be in secondary containment that is durable, leak proof, labeled, and surface disinfected. When transporting liquid, enough absorbent material to contain the spill in the event of a breach of primary containment should be included. The container should also include a sticker or label on the outside as to who to contact in case of problems or emergency during transport. A biological spill kit should accompany the transport. OBS and EH&S strongly advise against individuals transporting hazardous materials in a personal vehicle, as your personal insurance may not cover incidences occurring while moving these materials (materials include but are not limited to pathogenic specimens, dry ice, liquid nitrogen, chemical preservatives or other laboratory chemicals). It is also recommended that hazardous materials are not transported via taxi, city bus, bicycle or scooter either on or off campus by personnel. See also Guidance Document: Biohazardous Materials Transport on UW Campus (https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/09/BioOnCampusTransp2020.pdf.
- All laboratories that work with chemicals are required to implement a Chemical Hygiene Plan (CHP) as per the Chemical Safety Office policy. For information and contacts regarding the CHP go to https://ehs.wisc.edu/chemical-hygiene-plan/.

Biohazardous Materials and Waste

- Sharps should not be left out and needles should never be recapped (unless the one-handed method is used).
- All sharps should be discarded in an appropriate sharps container and when full (2/3 to 3/4 full), the container should be taken to MERI barrel or drop-off location. **Note: Custodians usually do not handle or dispose of Sharps containers.**
- Biohazardous materials are disinfected according to your approved biosafety protocol.
- Biohazard receptacles should be used whenever biological toxins or potentially infectious material are disposed. This includes contaminated PPE. Biohazard trash should be decontaminated/disposed of properly; this may be done by your lab, the buildings central autoclave group, or by an outside vender. Contact OBS at 263-2037 for additional "OK to Trash" stickers or order stickers at https://ehs.wisc.edu/resources/signage-order-form/.
- A display poster that summarizes sharps and glass disposal is available at https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/09/Sharps_Disposal_Poster_2018.pdf

Biosafety Protocol

- All work with biohazardous and recombinant materials being conducted should be covered in a current, approved biosafety protocol. The biosafety protocol should be updated to reflect current activities.
- Protocol revision information can be found on the OBS webpage (https://ehs.wisc.edu/labs-research/biological-safety/biosafety-protocol-arrow/)and also Bio-ARROW - KnowledgeBase help (https://kb.wisc.edu/arrow/ibc/page.php?id=43188).
- The Biosafety Protocol should list all rooms that are being used for your study. If not, protocol revision information can be found on the OBS webpage (https://ehs.wisc.edu/labs-research/biological-safety/biosafety-protocol-arrow/)and also Bio-ARROW - KnowledgeBase help (https://kb.wisc.edu/arrow/ibc/page.php?id=43188).
- Laboratory personnel should know how to access the biosafety protocol in Bio-ARROW and be familiar with its contents. This will help to ensure that the protocol is followed and that the research is performed accurately.
- Research at UW-Madison involving human-derived cell lines and/or other human tissues or bodily fluids is subject to the OSHA Bloodborne Pathogens Standard. Please contact OBS at 263-2037 if you have any questions regarding Bloodborne Pathogens (BBP) or to get enrolled in to the BBP program, as applicable. The BBP plan is part of the online biosafety protocol in Bio-ARROW. Also see the EH&S Bloodborne Pathogens webpage (https://ehs.wisc.edu/labs-research/biological-safety/bloodborne-pathogens/) for additional information.

Recordkeeping:

- A log of the autoclave efficacy test results should be readily available and contains results, date and tester initials. The log should be posted at the autoclave. If log is kept in another location, the location of the log should be posted at the autoclave.
- Flushing and maintenance of the eyewash station should be documented. Eyewash logs can be found at https://ehs.wisc.edu/wp-content/uploads/sites/1408/2020/08/EyeWashLog.pdf.
- The Federal Select Agent Program does not regulate certain Select Agent (SA) toxins if the amount under the control of a PI does not exceed, at any time, the amounts indicated on their website (https://www.selectagents.gov/permissibletoxinamounts.html). UW-Madison requires that PIs maintain an accurate inventory of SA toxins and secure the toxins in their laboratory. Inventory reports should be submitted semi-annually (every 6 months) to the Office of Biological Safety (biosafety@fpm.wisc.edu).
- Records are kept for training including laboratory specific training and any training through Learn@UW.

Training

- All personnel listed in the Biosafety Protocol must undergo the mandatory biosafety training (i.e., “Biosafety Required Training”) available through Learn@UW. This training expires after 5 years. Information on required Biosafety training is found on the OBS Biosafety Training webpage (https://ehs.wisc.edu/training/).Training records for required courses can viewed in ARROW by going to your "Protocol Workspace" page, under My Activities, and select "View Study Team Training." Please note that we have recently combined Biosafety 101, Biosafety 104, and Biosafety 201 into one course called “Biosafety Required Training.” If you completed Biosafety 101, 104, and 201, you do not have to complete the new course until you are due for renewal.
- If laboratory has a Bloodborne Pathogen Plan, then personnel who will have access to or handle human-derived materials and those with potential exposure must complete annual Bloodborne Pathogen training. See EH&S website for additional information and BBP program requirements (https://ehs.wisc.edu/bloodborne-pathogens/). If individuals complete annual BBP training through another entity (e.g., UWHC, VAH), please contact us to see if this training can replace their requirement to complete Biosafety 102: Bloodborne Pathogens for Laboratory and Research.
- All personnel listed in the Biosafety Protocol should have annual (or more frequent) lab specific training. This training and how the training is documented is described in the biosafety protocol. This training may include hazard communication and, if applicable, information on additional precautions or special exposure response procedures.
- Annual training for animal caretakers is performed by laboratory staff. This training should include hazard communication, waste handling including decontamination procedures, agent, or material specific information, and, if applicable, information on additional precautions or special exposure response procedures.
- All personnel should be familiar with the First Report of Biological Exposure or Release Event form (https://ehs.wisc.edu/first-report-of-biological-exposure-or-release-event/).The report form should be used within 24 hours of a potential exposure or release of recombinant DNA or other potentially hazardous substances.
- For a training seminar on liquid nitrogen handling and use, see the Cryogen Safety Training on the EH&S Training webpage (https://ehs.wisc.edu/training/)). Also, contact EH&S at 608-265-5000 for additional information and/or recommendations on main cylinder storage and proper ventilation.
- Serious injuries may occur if autoclaves are not used properly. In addition to training by experienced users on the specific model(s) used, we recommend the online training Biosafety 106. https://ehs.wisc.edu/training/?topics%5B%5D=23