

MakeHaven Community Bio Room Safety Rules

Highlights:

- Members must earn the Bio Room Badge to access the Bio Room. Guests may enter with oversight of badged members. Specific tools in the room require separate badges.
- Biosafety Level 1 guidelines (low-risk microbes that pose little to no threat of infection in healthy adults) will be the limiting factor for projects, unless specifically noted otherwise.
- For workshops, projects, or activities where BSL 1 standards are unclear, you must consult with the Facilitator.
- No eating or drinking in the Bio Room.
- If you would like to bring any equipment into the space, you must consult with the Facilitator ahead of time.
- No human sampling or injecting of substances is allowed.
- Genetically modified materials need to stay in the lab in which they were developed, unless given express permission by the staff or facilitator.
- The Bio Lab should be cleaned after use, all tools put back, and any waste properly disposed of.
- All substances must be labelled appropriately.
- You are responsible for the safe and proper disposal of anything you bring in.
- Safety concerns are reported to safety@makehaven.org
- Accidents are reported at: <https://www.makehaven.org/report>
- Feedback of any kind submitted at: <https://www.makehaven.org/feedback>

Purpose

Community Bio Room Initiative MakeHaven has been working on a Community Bio Room, inspired by other bio makerspaces. The goal is to create more opportunities for the general public to experience advances in biotechnology and to facilitate entrepreneurial projects.

- **Facilitating Entrepreneurial Projects** The initiative aims to facilitate entrepreneurial projects within the makerspace, leveraging existing resources such as brewing, gardening, kitchen, workshop space, and machine shop for device fabrication.
- **Public Engagement and Education** Connect people with experiences to the public who are excited to do science education for the general public.
- **Collaboration and Resources** There's an interest in connecting with the larger biotech ecosystem in CT and at other makerspaces or DIY bio spaces in ways that benefit the world.

General Community Bio Room Policies

General MakeHaven Rules Apply

These rules are intended to specifically address issues and questions related to the community bio space, and do not supersede the rules in the membership agreement. If an apparent conflict exists, contact staff to determine the best course of action.

Types of Work

We require that all work in the lab:

- Be legal -- follow all relevant local, county, water district, state, federal laws
- Follow MakeHaven safety rules.

MakeHaven as an organization does not exercise editorial control over the science done in the lab. Specifically, we:

- Do not make judgement calls on whether an experiment is good science or not, or
- Whether it is ethical.

Access

Access to the Bio Lab is restricted to individuals who have completed the MakeHaven Bio Lab Safety badge, individuals taking part in a class (and therefore under the supervision of an instructor/MakeHaven facilitator), and guests observing work (not doing it) under the supervision of members who have taken the Bio Lab Safety badge. The door has a numeric pass code given to members with access and the door should be closed when not in active use.

Usage

Individuals with lab access may use all equipment in the lab, except for specially marked equipment requiring additional badges.

Personal Equipment

Equipment should never be placed in the lab or removed from the lab without permission. Moving equipment that is not properly decontaminated, either coming or going, is a serious safety issue.

Food/Drink/Cosmetics

The consumption or storage of food/drink is not permitted in the Community Bio Lab, nor may cosmetics be applied.

Lab Equipment/Glassware

Lab equipment and glassware should not be removed from the lab area. Glassware or other laboratory materials should never be used to consume food or drinks. Glassware may only be washed in the lab sinks, and may not be washed in the bathroom/slop or kitchen sink. Lab users are responsible for washing their own glassware; do not leave glassware in the lab sinks.

Clothing

Closed-toe footwear is required in the lab. Short sleeves and pants should be avoided. A lab coat or apron should be worn, particularly when working with corrosive substances (e.g. strong acids/bases) or other hazardous chemicals such as mutagens. Long hair should be tied back.

Personal Protective Equipment (PPE)

Eye protection is always recommended and protective eyewear is required to be worn whenever there is a splash hazard, such as working with liquid chemicals, mixing a buffer, or preparing or loading a gel. Gloves are recommended when working with equipment in the lab. They protect you from exposure to harmful chemicals and organisms. Act as if the previous operator contaminated everything. Gloves must be removed upon leaving the lab area – do not walk into the general work areas, kitchen or bathroom wearing gloves.

Labeling

Anything placed into MakeHaven incubators, refrigerators or freezers must be labeled with:

- Your name
- The substance/cell line
- Date placed in incubator/freezer/storage
- Expiration date (maximum of one year)

Plates and chemical containers over 10 mL must be individually labeled with all above fields. Smaller tubes such as eppendorf or PCR tubes may be placed in larger labeled containers, rather than be individually labeled with all fields. Bundled plates may be labeled just once. Unlabeled plates and containers will be discarded. Expired items will be discarded

Room Cleanliness

The room should be left clean, with all equipment put away, glassware cleaned and put away, waste disposed of, and autoclave emptied. Surfaces should be wiped down, and any surfaces that were contaminated should be cleaned with 10% bleach or 70% isopropanol.

Biological Capabilities

General

MakeHaven is a BSL1 facility. According to CDC:

Biosafety Level 1 is suitable for work involving well-characterized agents not known to consistently cause disease in immunocompetent adult humans, and present minimal potential hazard to laboratory personnel and the environment.

That is a broad definition open to interpretation. Because we don't expect everyone to be biosafety experts, and there are additional safety and regulatory requirements beyond the basic BSL1 classification, we have created these more precise policies. If you have questions as to whether a specific experiment is permitted, or would like to do something beyond our current

capabilities, please ask the Facilitator or email safety@MakeHaven.org prior to beginning your experiment and obtaining samples.

Microbes

Culturing and manipulation of well-characterized bacteria and yeast strains that are known not to be pathogenic to immunocompetent adults (e.g. lab E.Coli K12 strains) is permitted at MakeHaven. Well-characterized means you must have a well-known source for these microbes, such as obtaining them from another laboratory or commercial provider.

Samples from nature may not be **cultured** in the Community Bio Lab. Such samples are by definition not well characterized, therefore doing so requires a BSL2 facility. Indeed such samples are often pathogenic, and while may not cause disease in the quantities found in nature, can become dangerous when cultured.

Samples from nature are permitted for **analysis** (e.g. examining under a microscope), provided that there is no reason to suspect the sample to be pathogenic, and it is not cultured.

Note that no microbes, microbial cultures, or microbial products are allowed to leave the facility without Facilitator permission. Genetically engineered (GE) microbes require special precautions to prevent escape or environmental release.

Live cultures should be kept in the lab space, and once finished all microbial products and growing media must be treated as biowaste.

- **Viruses:**
Only non-pathogenic viruses with specific approval are allowed. Approved viruses will be added to this document.
 - Coliphage ϕ X174 has been determined appropriate for BSL1 use.
- **Plants:**
Plant cells that are toxic or genetically modified may require additional precautions, so please check with the Facilitator regarding these.
- **Fungi:**
Only BSL 1 (Risk Group 1) fungi are allowed in the space.
- **Animals:**
Experimenting on live animals or working with animal tissue/fluids is permitted for the following organisms. Approved animals will be added to this document:
 - C. elegans
- **Mammalian Cells:**
The culturing of mammalian cells is not permitted at this time. Exceptions may be made for cell lines explicitly listed as a BSL1 cell line, please consult with the Facilitator.

- **Human Samples:**

Working with human samples is generally a BSL2 activity, and is not allowed at MakeHaven, other than the following exception regarding buccal/saliva samples.

- Buccal/Saliva Samples: Human buccal and saliva samples may be processed and the DNA analyzed, so long as, to the best of their knowledge, the provider of such samples is not infected with a disease/virus which would present a hazard to the lab. Samples must be processed for DNA extraction immediately once brought into MakeHaven, and may not be stored and/or incubated.
- Autologous Cells: Working with autologous cells (i.e. your own cells) can be hazardous, especially if they are cultured or manipulated. Working with autologous buccal/saliva samples is permitted so long as they are expediently analyzed, and not permitted to incubate/culture.
- Blood and other human fluids: Working with blood or other human fluids is not currently permitted.

- **Recombinant DNA:**

In general, the manipulation and recombination of DNA and/or RNA is permitted at MakeHaven. Certain restrictions on organisms and origin of genetic material apply.

Restrictions include:

- You may not deliberately work to create organisms that would be pathogenic to humans or destructive to the environment, or that fall outside CDC BSL1 guidelines.
- You may not work with DNA and DNA sequences obtained from organisms on the US Select Agents list (<http://www.selectagents.gov/Select%20Agents%20and%20Toxins%20List.html>)
- You may not remove engineered organisms from the lab without prior permission. It is your responsibility to ensure these procedures are followed for any breeding or genetic engineering work at MakeHaven. Failure to do so will result in termination of membership, as well as trigger release reports to the community and appropriate regulatory agencies.

Chemical Capabilities / Hazards

Any VOC producing chemicals can only be used in the Biological Safety Cabinet (which has a carbon filter on top).

Any chemicals stored in the space must be labeled, and any relevant MSD sheets should be stored in the MSDS Binder. If the chemical is for personal use it must also be labelled with your name, and can be kept in the space for no longer than one year from the date it was put in. You are responsible for disposing of your personal materials/chemicals, please consult with a Facilitator if unsure of how to do this properly. The label must also include:

- Material name
- Date placed in storage

There are three places to store chemicals. The shelves on the wall are for chemicals that pose

no risk, the Acids and Corrosives Cabinet is for acids, bases, or otherwise corrosive substances, and the Flammables Cabinet is for anything flammable. These cabinets should be left with the doors firmly closed.

The following types of chemicals are prohibited:

- Explosives or precursors
- Highly toxic gases or volatile substances (e.g. chlorine gas, HF)
- Controlled substances or reagents needing a DEA license
- Radioactive materials
- Anything prohibited by local or state regulations

Policies related to hazardous materials are detailed in the [MakeHaven Membership Agreement Hazardous Materials section](#).

It is your responsibility to ensure these procedures are followed for any materials you bring or ship to MakeHaven, and that materials not specifically approved are not brought into MakeHaven. Failure to do so is grounds for the termination of membership.

Waste Disposal

What Waste is Biohazardous?

MakeHaven treats the following waste as biohazardous:

- Any cells incubated or experimented on in the laboratory
- Any human samples/fluids used in laboratory procedures/experiments
- Any waste materials in contact with said cells/samples (i.e. gloves, pipette tips, centrifuge tubes, incubation plates, swabs, etc)
- Any waste that has the appearance of being biohazardous, even if it is not contaminated. This includes noncontaminated gloves, pipette tips, centrifuge tubes, incubation plates
- When in doubt, treat it as biohazardous.

Waste generated outside of MakeHaven may not be brought to MakeHaven for disposal.

Disposing of Dry Waste

Users of the lab are responsible for autoclaving and disposing of all biological waste in a safe and appropriate manner.

Disposing of Liquid Waste

Liquid waste should be autoclaved or diluted 1:10 with bleach (such that the solution contains 10% bleach), and left to sit for 10 minutes. After 10 minutes, the solution may be flushed down the drain with running water. If the container is disposable (and thus waste), it should be disposed of as dry biohazardous waste. Liquids that are corrosive or flammable should not be autoclaved.

Disposing of Hazardous Chemical Waste

MakeHaven cannot currently dispose of hazardous chemical waste, it is therefore the user's responsibility to do so. Hazardous chemical waste includes waste that meets certain criteria for ignitability, corrosivity, reactivity, and toxicity (including waste containing heavy metals, halogenated organics, greases, and oils). Therefore hazardous waste which cannot legally be disposed of down the drain or in the municipal trash must not be generated on site. If you are unsure of whether your waste would be considered hazardous, please consult with the Facilitator.

The following chemicals are hazardous waste and down-the drain disposal is therefore prohibited. This is only a brief list of common hazardous chemicals, and is not meant to be exhaustive:

- Ethidium Bromide (GelGreen/Red and SYBR Safe are ok)
- Acrylamide
- Organic solvents (ethanol, methanol, etc)

Note: Ethanol may be used in the lab in small quantities, but may not be disposed of down the drain at ignitable concentrations (typically 24% or higher).

Disposing of Sharps Waste

Sharps include needles, pointy glass pipettes (such as glass Pasteur pipettes), pointy wooden skewers, etc. All sharps should go in the sharps container, contaminated sharps should be autoclaved first. Broken glassware should be autoclaved if contaminated and then put in a cardboard box for disposal.

Policy Changes

This document will be updated and it is the responsibility of members to periodically review and familiarize themselves with any changes.

If something is not expressly permitted, you should ask the Facilitator or email safety@makehaven.org prior to beginning work in the lab and obtaining materials for use in the lab.

If you would like to do something beyond our current capabilities, please email safety@makehaven.org, explain what your goals are, and suggest an amendment to the safety rules. MakeHaven staff may draw on knowledge from members, external advisors, and lab professionals who contribute their expertise to the organization and can speak to what best practices are in various fields.

Safety concerns

Should be reported to safety@makehaven.org

Accidents

Must be reported at: <https://www.makehaven.org/report>

Feedback

Can be submitted at: <https://www.makehaven.org/feedback>

Emergency Procedures

Participants must be familiar with biohazard spill and other emergency procedures as [outlined in the membership agreement](#), and available by the first aid kit in the main room.

Donating Equipment

If you have donations of equipment for us to consider you first submit at donations@MakeHaven.org or <https://www.makehaven.org/item-donation-inquiry>