



UNIVERSITY *of* HAWAI'I®

MĀNOA

**Research Continuity and
Planning for COVID-19 at UH Mānoa**

Research Working Team

Last updated Sept. 17, 2020

Note: This is a living document and may be updated as necessary.

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Overview

As a Carnegie R1 institution, research is an essential activity at UH Mānoa. Much of the campus' research activities have continued throughout the COVID-19 epidemic, with measures implemented by faculty investigators and unit deans and directors to ensure health and safety in research facilities and labs informed by the:

- [CDC Guidelines for Reopening Colleges and Universities](#)
- [CDC Guidance for Cleaning & Disinfecting](#) (Public Spaces, Workplaces, etc.)
- [CDC Considerations for Institute of Higher Education](#)
- [UH COVID-19 Guidelines](#)
- [Mānoa Moving Forward Health and Wellness Guidelines](#)

On March 16, 2020, the UH Office of the Vice President for Research and Innovation suggested that campuses “put in place specific measures now to reduce potential transmission of the disease within campus facilities, and also to begin to plan for the possibility of a significant disruption to normal operations”: [Research Continuity and Planning for COVID-19](#)

The websites above maintain updated information on:

- health and safety considerations
- human resources guidelines
- travel restrictions
- status of research support offices & services (e.g., ORS, ORC, EHSO, AVS, RCUH)
- planning for research continuity

This document, prepared by the UHM Research Working Team, provides additional guidance on research continuity specific to the following settings and activities:

- Research laboratories (wet, dry, equipment intensive laboratories, support shops)
- Behavioral, social, cognitive research
- Social science, humanities research
- Clinical research
- Field research
- Research at sea: ships, small boats, and diving
- Animal research

Guiding principles underlying these additional guidance are to ensure:

- health and safety of our UH Mānoa research community. To this end, we encourage research teams including faculty, students, and research support staff to keep informed of the University's

healthy and safety measures and practices publicly available at the following websites: [UH COVID-19 Guidelines](#) and [Mānoa Moving Forward Health and Wellness Guidelines](#)

- research is conducted on a voluntary basis. Adjustments should be made if faculty, student, and support staff have medical conditions that make them more vulnerable to COVID-19 infection or live with vulnerable family members or are uncomfortable for any reason due to COVID-19 related safety issues.

The Research Working Team acknowledges that given the wide diversity of UHM research activities on campus and off-campus, specific types of research, scholarship, and creative activities may not be addressed. Also, throughout this document, other guidance, checklists, and tools are referenced that may provide additional considerations for faculty, students, and staff.

Other Resources

A few of many other research guidelines and toolkits include:

- [The Research Corporation of the University of Hawai'i \(RCUH\)](#)
- [Council on Governmental Relations \(COGR\)](#)
- [University of Nebraska, Global Center for Health Security](#)
- [Occupational Safety and Health Administration \(OSHA\)](#)

Guidance for Specific UHM Research Settings and Activities

RESEARCH LABORATORIES (WET LAB, DRY LAB, EQUIPMENT-INTENSIVE AND/OR SUPPORT SHOPS)

The following guidance is intended to provide assistance to faculty in their specific preparations for bringing their research laboratories or support shops back online from a temporary shutdown or to evaluate continued research. As you restart or continue your research, please keep safety in mind and contact Environmental Health & Safety Office (EHSO) at labsafe@hawaii.edu with questions or for assistance with risk assessment, safeguards, or hazardous materials management. Only faculty, principal investigators, and laboratory/shop managers are qualified to evaluate their workplace safety status! Graduate and undergraduate students should follow the guidance of their faculty supervisors.

When reentering the laboratory or shop after a temporary shutdown or extended closure, enter the area with a sense of caution. Look through entry-door windows to see if any materials may have been damaged or if water or liquids are present on the floor or surfaces. Listen for any local alarms indicating a safety issue. Restarting operations after an extended shutdown could potentially introduce hazards that are not normally present.

For lab operations that have continued since the beginning of the pandemic, these considerations can be used as an ongoing evaluation of work practices.

In the event that a laboratory needs to be shut down, please refer to [Laboratory Ramp-Down Checklist](#).

Public Health Considerations

(Follow [UH COVID-19 Guidelines](#), [Mānoa Moving Forward Health and Wellness Guidelines](#), and [CDC Guidance](#))

- Follow UH guidelines for occupancy, staffing, and other requirements.
- Follow daily screening protocol for COVID 19.
- Maintain open communications between all personnel to avoid confusion about expectations.
- Develop a plan for physical distancing in the workplace. Identify maximum personnel for the workspace according to optimal density. Shared labs, support shops, and other core work areas will require coordination from multiple groups. Identify coordinators of these areas to help maintain open communication about work expectations.
- Implement a lab sign in/out system. Document work shifts/lab use times (especially important in shared or core labs) to aid in future contact tracing, if needed.
- Refer to the [UH Laboratory Face Coverings Flowchart](#) for guidance on face coverings.

- Work in shifts and include a period of time between shifts to eliminate overlap. Maintain 6' distance; visual cues, such as tape, between workspaces may be a helpful reminder.
- Avoid concurrent use of bench tops that face one-another.
- Use a shareable electronic calendar in order to maintain a visible schedule for staggered lab equipment sign-up and use.
- Physical distancing is important, but avoid working alone whenever possible, especially when working with hazardous materials.
- Wash hands upon lab / shop entry and upon departure.
- Develop disinfection protocols for the lab (disinfect high touch areas between shifts or more frequently as needed, clean equipment that has been used after each use, use disinfectant wipes on sensitive equipment, etc.) and plan for safe disposal of cleaning materials.

First Day Back and Entering the Lab or Support Shop

- Before you walk into your work area, do a mental hazard assessment of the hidden or invisible hazards such as compressed gases, vapor-producing chemicals, etc. that could have escaped containment. Think through how you would detect any problems and how to react before you enter the room.
- If you discover a hazardous condition that poses a threat to you or to others, such as a hazardous material release, isolate the hazard (e.g., close the door to the lab), notify occupants in the area, activate the appropriate incident response action, exit the building if required, and call the Department of Public Safety at 808-956-6911 to report the situation.
- Prior to restarting any research, perform a complete and thorough walkthrough of all spaces to check that nothing is obviously out of place, missing, damaged, or leaking.
- Ensure you have adequate personal protective equipment (PPE) available for near-term planned research.
- Ensure you have adequate hand-soap and towels for handwashing and disinfectant appropriate for cleaning lab / shop surfaces and equipment.
- Verify all emergency equipment is functional and accessible.
- Flush all eyewashes in your labs for 1 to 2 minutes if the eyewashes have a functional drain.
- Check fire extinguisher pressure gauges to make sure the indicator is in operating range.
- Verify emergency equipment, such as eyewashes, safety showers, sprinkler heads, fire extinguishers, and pull stations are visible and not obstructed.
- Check chemical containers for damage, leaks, pressure build up, etc. Request a waste pickup from EHSO if required.
- Power up electrical equipment slowly and one at a time. Potential exists to overload electrical circuits. Many support shops on campus have equipment that draw large amounts of power.
- Verify that the chemical fume hood is currently certified by checking the sticker issued by EHSO. Test the hood by raising the sash to the mechanical stop or 18-inch vertical opening and

that it does not go into alarm. If the hood does not have a flow monitoring device, check air flow by using a tissue or Kim Wipe to see if it is sufficiently drawing inward. Contact EHSO with questions at labsafe@hawaii.edu.

- Pour small amounts of water down dry traps/floor drains to mitigate sewer gas smells, which can be confused for natural gas leaks.
- As you begin starting active research again, keep plans flexible to accommodate changes.

General Guidance and Personal Protective Equipment

- Avoid engaging in startup procedures alone. Try to have at least two people present in case any issue arises. Have a general planned schedule of when certain processes should be back up and running. [Experiment In Progress Signs](#) will help notify lab members of equipment in use.
- Ventilation of your lab and building should be maintained properly. Avoid opening lab doors that are normally closed and avoid propping open outside doors to buildings.
- Use the opportunity of bringing processes back online to cross-train other members of your lab support shop.
- Restart cautiously and slowly as your research ramps back up. Incidents are more likely to occur if a lab rushes back into research.
- Reconsider beginning with certain experiments or research activity that rely on other facilities, are especially hazardous, or long-term in nature.
- Note that shared facilities, such as stockrooms or core labs, may be on different ramp up schedules or in more demand than during normal operation.
- Be aware that many lab items may be in short supply or have longer lead times, including gases, chemicals, and PPE.
- Schedule deliveries of research materials in smaller quantities and expect delays.
- Avoid sharing PPE if possible.
- Conduct a risk assessment to determine the appropriate level of PPE. Remind personnel about proper PPE donning and doffing methods to prevent accidental self-exposures.
- Disinfection may be problematic or impractical for some PPE that is commonly shared (e.g. laser glasses, cryo-gloves). Tasks requiring special PPE may be best designated to select individuals in order to manage public health considerations.
- If PPE can be disinfected, do so. Additionally, wash hands before and after use.
- Consider if items worn for public health considerations (e.g. cloth face coverings) may hinder safe use of PPE used to mitigate exposure to hazardous materials.
- Do not wear your lab gloves outside the labs. It will be common to see people in gloves outside labs, and it is best for it to be clear for everyone that anyone wearing gloves outside the lab is doing so for sanitary reasons only. (Under normal circumstances you should not wear PPE outside of the lab.)
- Check that all utilities such as house vacuum and natural gas are operational for your needs.

- Water connections: turn water back on slowly. Check connections for leaks. Do not leave the site right away as some connections may burst after a few minutes. Return to the equipment a short time later to confirm there are no leaks. Contact [Workplace Coordination Center](#) at 808-956-7134 to report any leaks immediately.

Biologicals

- Ensure any requirements set forth by the [Biological Safety Program](#) for ramp-up or continuation of research are in place.
- Verify that biosafety cabinets have not gone out of certification over the shutdown period.
- Ensure you have sharps containers available before beginning work.
- Ensure appropriate disinfectants for your biological work are available and not expired.
- Verify your CO2 supply (and other gases) before beginning use of incubators.

Chemicals

- Assess chemicals that may have become unstable during the shutdown and manage any expired, outdated, peroxide-forming, self-reactive, or other reagents with a limited lifespan appropriately. Also look for chemical containers that are bulging or have imploded. Submit a hazardous waste pick up for chemicals in these categories.
- Ensure you have hazardous waste containers available before beginning work.
- Maintain [separation of non-compatibles](#) as you get set up in the lab again (e.g. oxidizers and flammable gases, acids and bases, or flammables).
- Ensure all compressed gas cylinders are chained/secured.
- Consider leak testing compressed gas piping systems before using.
- Consult the EHSO website for support information or contact labsafe@hawaii.edu.

Radioactive Materials

- Verify all survey equipment are operating normally. Contact [Radiation Safety Program](#) for any survey equipment problems.
- Perform a survey of the lab before beginning work and contact Radiation Safety if contamination is found.
- Perform an inventory check and contact Radiation Safety if any material is missing.

Equipment

- Freezers and refrigerators may have stopped working during the shutdown. Check each by slowly opening the door (items may have shifted). If not functioning, close and take appropriate action. Consult EHSO or Biosafety if very moldy, a hazardous situation exists, or you need additional waste containers for cleaning out.

- Review manuals for equipment startup procedures.
- Verify that heat and/or pressure generating equipment is started up correctly. For example, check to be sure hot plates and ovens are “off” prior to tuning on central power.
- Do not daisy chain or use extension cords in attempts to reach emergency power.
- Verify “Laser In Use” lights, door interlocks, or other safety related controls still operate.
- Verify cryogen supply. Do not fill units alone. Contact cryogen suppliers to make any special delivery arrangements/changes necessary.
- Verify heat sources do not have damaged cords before reconnecting to power (includes, but not limited: hot plates, ovens, heat blocks, sterilizers, and water baths). Pay special attention to hot equipment and pressurized equipment on start up.

Training, Onboarding, and Compliance

- Contact EHSO about general [training requirements](#) for lab safety training, hazardous waste generator training, and respirator training.
- Review training records of everyone in the lab especially if you are asking personnel to do tasks that are not normally assigned to them.
- New and existing labs can benefit from reviewing the [Lab Safety - Onboarding Guide and Maintaining Compliance](#) document.

BEHAVIORAL, SOCIAL, COGNITIVE RESEARCH

The following guidance is intended to assist researchers engaged in human research involving face-to-face interaction. Faculty, staff and students conducting human research are advised to consult the [UH Human Studies Program \(HSP\)](#) website for updated UH IRB requirements. Also, the UH HSP requires researchers to review their active protocols and submit a “Modification form” including a Safety Plan Form (see [IRB requirements](#)).

Additional guidance and considerations for research practices are outlined below.

Facility startup requirements

Consult “Research Laboratories” section of this document as appropriate, especially in relation to behavioral, cognitive, and social research labs.

Daily startup requirements

Develop and implement a research safety plan describing how daily research protocol will minimize potential exposure to COVID-19, per IRB requirements.

Density of personnel and research participants

Wherever possible, maintain 6-foot distancing between people. Use signage and floor markings to inform people of physical distancing in the research space. Research personnel and participants are to follow IRB-approved research protocols.

Personal protective equipment and face covering

Per UH guidelines, “UH employees are expected to wear face coverings while at work when interacting with others, when indoors, when in common areas, and where physical distancing is not possible.” Face coverings should be replaced as soon as the relevant activity (e.g., recording) is completed or in compliance with IRB-approved safety plans.

Disinfection

Frequent hand-washing or sanitization among researchers and community participants is essential before and after interactions between researchers and participants. Research sites, including all common touched surfaces, should be disinfected before and after in-person interactions or in compliance with IRB-required safety plans.

Screening of personnel and research participants

Develop symptom screening protocol, per IRB guidelines.

SOCIAL SCIENCE, HUMANITIES FIELD RESEARCH (INCLUDING COMMUNITY-BASED RESEARCH)

Field research in and with communities is an integral part of UH Mānoa’s mission to “to serve the people of Hawai‘i, and our neighbors in the Pacific and Asia” and the university’s vision to support a “tradition of outstanding Asia-Pacific scholarship.” Preparation and planning for conducting safe social science and humanities research in these communities may present challenges because of travel restrictions, possible limited access to medical services, and involvement of potentially vulnerable populations.

Researchers engaged in community-based human research involving face-to-face interactions are advised to consult the [UH Human Studies Program \(HSP\) website](#) for updated UH IRB requirements. Also, the UH HSP requires researchers to review their active protocols and submit a “Modification form” including a Safety Plan Form (see [IRB requirements](#)). Additional guidance and considerations below can be used to assess research practices.

Daily startup requirements

Develop and implement a research safety plan describing how daily research protocol will minimize potential exposure to COVID-19, per IRB requirements. Community-based research is inherently risky due to possible high rates of COVID-19, and/or lack of adequate medical care, testing, and contact tracing. Various communities (e.g., many Pacific Island states) may have yet to experience a COVID-19 outbreak but remain extremely vulnerable due to their remoteness, lack of access to medical care and testing, and high number of at-risk individuals. As such, principal investigators are encouraged to seek guidance from their respective project sponsors (funding agency) and community-based colleagues.

Also, before returning to the field, researchers should consider whether remote interaction can produce equally quality data. When feasible, remote virtual assessments and interviews should be conducted. Researchers should be cautioned that virtual interaction tools may present privacy concerns and require modification of informed consent.

Density of personnel and research participants

Maintain 6-foot distancing between people. Use signage and floor markings to inform people of physical distancing in the research space. Research personnel and participants are to follow IRB-approved research protocols and safety plan.

Personal protective equipment and face covering

Where face covering or masks are not practical—such as when making audio recordings— participants should observe social distancing guidelines and consider if the specific setting requires shields or plexiglass partitions. Face coverings should be replaced as soon as the relevant activity (e.g., recording) is completed or in compliance with IRB-approved safety plans.

Disinfection

Frequent hand-washing or sanitization among researchers and community participants is essential before and after interactions between researchers and participants. Research sites, including all common touched surfaces, should be disinfected before and after in-person interactions or in compliance with IRB-required safety plans.

Screening of personnel and research participants

Develop symptom screening protocol, per IRB guidelines.

CLINICAL RESEARCH

This guidance is intended to assist researchers engaged in clinical research involving face-to-face interaction with research participants. Researchers are advised to consult the [UH Human Studies Program \(HSP\)](#) website for updated UH IRB requirements. Also, the UH HSP requires researchers to review their active protocols and submit a “Modification form” including a Safety Plan Form (see [IRB requirements](#)).

Researchers conducting biomedical laboratory research are advised to consult the “Research Laboratories” section of this document.

Density of personnel and research participants

Strictly maintain 6-foot distancing in rooms and waiting areas.

Personal protective equipment and face covering

Face shields should be used by research staff and participants. Gowns are to be used by staff for biologic contacts. Researchers must follow research protocol and safety plans approved by UH IRB.

Disinfection

Frequent hand-washing or sanitization among researchers and participants is essential before and after interactions between researchers and participants. Rooms, waiting areas, and common spaces should be disinfected before and after in-person interactions or in compliance with IRB-required safety plans.

Screening of personnel and research participants

Develop and follow symptom screening protocol, per UH IRB requirements and UH COVID-19 Guidelines. Researchers are advised to pre-screen staff and subjects in advance and at presentation. Reschedule testing for a later date if participants present symptoms.

Remote contact

Consider length of time a participant is exposed and use remote contact for aspects of the research that do not require face-to-face interaction.

FIELD RESEARCH

This guidance is for UHM researchers engaged in off-campus field work. Researchers may wish to incorporate parts of this guidance into their own operating or safety procedures as part of plans developed using the form fillable [Field Safety Plan](#) per the [UHM Field Safety Guidelines](#), depending on their needs. It is not intended to be a complete protocol as each project may have its own requirements. To create a safe work environment for supervisors and supervisees, you are encouraged to utilize the [Optional Risk Assessment worksheet](#) for each individual project.

This information is intended for projects that are not in the field for more than several days consecutively and that have access to medical attention within 24 hours. This is not intended for projects with extensive contact with the general public or others during field work (surveys, cooperative efforts). A section at the bottom of this guide discusses the possible use of quarantine before remote, extended field operations.

A key to successful field research procedures is education about the virus and an open discussion of risks. As with all field operations, individuals may refuse to participate if they feel they are unsafe.

General Precautions for Field Research

- Assume everyone may have COVID-19, including yourself.
- No one should come to work when sick with cough, fever, headaches, loss of sense of taste or smell, or contact within six feet for an extended period of a sick person in the last two weeks.
- The main defenses for field work are physical and behavioral: face masks, social distancing, washing hands, not touching the face, and when necessary quarantine and testing. Water is often limited so hand gels and wipes become important.

Health Guidelines for Field Research

- If appropriate, supervisors should keep a log of all field activities in terms of who, when, where and what to aid in contact tracing.
- Each employee should monitor their personal health through active self-screening, and should provide daily status updates to their supervisors.
- Any employee who feels sick, has flu symptoms or COVID-19 symptoms should stay home until they meet guidance for safe return to work.
- If an employee has a confirmed case of COVID-19, they will report this to their supervisor immediately and will not return to work until cleared to do so.
- Supervisors will maintain situational awareness of their employees' confirmed and recovered COVID-19 cases and follow guidance to clear them to return to work.

Outside Spacing

- Maintain a distance of at least 6 feet between team members.

- ❑ When outside fieldwork requires close proximity for short durations (<6 feet) face masks should be worn (face masks may not be necessary if >10 feet apart, but spacing should be greater during strenuous activity such as hiking when exhalations may carry droplets farther). For outside activities that normally require close proximity work for longer durations, supervisors should carefully plan mitigation factors including modification of the activity, where possible, or use of additional PPE.

Field Equipment and Water Bottles

- ❑ Arrange and plan so that these items are not shared. If equipment must change hands, it should be wiped down between users. For frequently used items, purchase one for each team member if possible.

Enclosed Areas

- ❑ Plan ahead for any expected enclosed areas. These range from tents and cabins to vehicles, and helicopters. The smaller the space, potentially the more danger of transmission.

Tents

- ❑ Utilize one tent per person.
- ❑ If one tent per person, face masks are not needed inside the tent.
- ❑ Ensure hands are washed/sanitized before entering.

Cabins and Weatherports—These are usually small and have communal uses like cooking, eating, data management, and shelter from inclement weather.

- ❑ Maintain a six-foot perimeter.
- ❑ Consider shift use of these spaces when adequate spacing is not possible.
- ❑ Use face masks at all times except when eating or drinking.
- ❑ Provide increased schedule for cleaning of surfaces, communal equipment, and doors.
- ❑ Food preparation could take two forms:
 - Everyone uses their own utensils and food and cooks and eats separately.
 - Or one person is designated for food preparation, distribution and cleaning to limit chances of transmission.
- ❑ Individuals should be responsible for cleaning their own plates and utensils. If water is limited, consider using disposable plates and utensils.

Vehicles—Where possible, projects should restrict only one passenger to a vehicle when transmission risk is high, but this may be inefficient and use of private vehicles may not be possible over rough roads. When transmission risk is apparently low, with few local cases reported and no signs of disease symptoms, two or more people may be in a vehicle, dependent on its size. Project teams should avoid using public transportation.

- Consider the same work cohort for field expeditions.
- Vehicle occupants must wear facemasks and be seated diagonally with one passenger per row of seats and maintain seat assignments to and from the field destination.
- Windows should be open for cross ventilation when possible (open rear passenger windows or a rear window to draw air away from the front cab and out of the vehicle)
- Vent systems should be set in non-recirculated mode to maximize air exchange or should be turned off.
- Each individual should be responsible for wiping down the seat back in front of them, their seat, door knobs and window controls. Encourage passengers to refrain from touching surfaces within the vehicle (this may not be possible on rough terrain, but encouraged while on smooth roads).
- Common vehicle touch points (door handles, etc.) should be wiped down before and after use.
- Occupants should minimize eating and drinking in vehicles.
- Maintain a log of shared rides and vehicles used by multiple groups to aid in contact tracing, if cases occur.

Scientific Diving

- Follow COVID-19 guidelines established by the [UH Diving Safety Program](#) prior to any scientific diving operations.

Helicopters—Social distancing is difficult and can be expensive for these operations. It may be problematic if multiple lifts occur into a landing area as cleaning may be limited or nonexistent because of rapid turnarounds.

- Determine and follow training requirements, rules, and guidelines of the helicopter company or agency.
- Discuss if the helicopter will be operated with doors on or off.
- Face masks should be worn if allowed by the helicopter operator (securely in place so they do not fall and become a hazard in flight), with helmet visors down.
- Ensure the helicopter company sanitizes aircraft before and after all flights. This includes all of the touch points in the aircraft (seat belts, press-to-talks, handles, etc.).
- Helmet use should be considered as they should not be swapped between flights.
- Determine if they need to be cleaned after flights and who will do this (helicopter company or passenger).
- If individual helmets are not assigned, they should be “rested” for several days between heliops.
- Consider purchasing helmets for each staff member.

Extended field operations--Additional considerations beyond those provided here will need to be considered for extended field operations (i.e., field operations that extend beyond 2-3 days). In general, where field personnel will be in remote, extended field conditions and access to medical care is limited,

employees may need to quarantine for two weeks before an operation. Testing for COVID-19 prior to extended field operations may also be indicated. If followed, these steps would eliminate the need for social distancing and face masks in the field.

Working with other organizations

- Discuss and document COVID-19 procedures to ensure these meet or exceed those of UHM before joint field work with other organizations.
- Discuss and document agreements on which organization's procedures should be followed and ensure all participants are informed.
- Clarify that individuals may refuse to participate if they feel they are unsafe.

High Risk Populations--When considering field research tasks and assignments, supervisors should consider and account for members at high risk for serious complications from COVID-19, and those who request telework or leave flexibility to protect vulnerable household members who are at higher risk for serious illness from COVID-19.

Emergencies

- Integrate COVID-19 related considerations into any written emergency plans and procedures for the project.
- First aid kits should be fully stocked and align with the expedition's needs.
- Consider having a non-contact thermometer in the first aid kit.
- Always ensure that teams have the ability to call for emergency assistance (cell phone with coverage, satellite phone, etc.), if needed.

Daily Conditions Decisions

- Integrate COVID-19 related considerations (including health screening) into any written daily go-or no-go daily conditions checklist/Job Hazard Analysis for the project.

RESEARCH AT SEA

Research at sea, whether diving, and/or using small boats and/or larger research vessels, is a particular form of field research that should comply with the general guidelines for such, as well as with some additional requirements specific to the platforms used. **All essential research at sea shall be conducted on a voluntary basis.** Any faculty/student/ staff may “opt out” if they have medical conditions that make them more vulnerable to coronavirus infection or live with vulnerable family members or are uncomfortable for any reason due to COVID related safety issues.

Ships

On May 28th the U.S. Navy issued new fleet-wide guidance intended to leave COVID-19 on the pier and maintain a “clean bubble” around its ships. The new requirements prior to deployment include a health screening, a minimum of 14 days in “sequestered status,” and adherence to preventative measures like masks and hand-washing while underway.

The screening includes an assessment of each sailor's COVID-19 exposure history, a temperature check, a check for COVID-19 signs and symptoms, a review of any past COVID- 19 testing, and an evaluation of the individual's risk factors. Every day, sailors will be screened again with a questionnaire and temperature check.

Ship-riders, support personnel and any other outside visitors are also expected to spend 14 days in sequestration before boarding. In the event that an outside visitor must come on board at short notice, commanders are expected to apply case-by-case measures to “safeguard... their commands bubble.” Any transfer between two bubbles — for example, two properly-sequestered ships — must be executed with care.

The Navy noted that testing is the only way to identify asymptomatic cases of COVID-19 - but even lab testing cannot guarantee that coronavirus is not on board, because the gold- standard RT-PCR test misses a significant percentage of positive cases. This means that after all of the pre-deployment prevention work, each ship still has to assume that COVID-19 could be present and deploy standard public health measures - including social distancing, deep cleaning and face coverings - in order to minimize the potential cumulative viral load and infection spread rate.

The University of Hawai'i operates the US Navy-owned R/V Kilo Moana as part of the US Academic Fleet (UNOLS). UNOLS fleet operations were broadly suspended until July 1st. The UH Marine Center has developed a Pandemic Response Plan consistent with CDC, Navy, and UNOLS [guidance regarding COVID-19](#). It was last updated June 1, 2020. Likewise, the [UNOLS guidance for mitigating risk of a COVID-19](#) outbreak onboard combines a strict 14-day self-isolation, health screening and conducting multiple RT-PCR tests. Each operator and vessel within UNOLS has such a plan. UH researchers scheduled to use vessels other than R/V Kilo Moana should consult the specific plan for that vessel/operator.

Proposed overnight and multi-day boat operations should establish a risk mitigation plan that follows the CDC, Navy and UNOLS guidelines, including health screening, a minimum of 14 days in “sequestered status,” and adherence to preventative measures like social distancing, deep cleaning, face masks and hand-washing. Principal investigators (PIs) should complete the [Optional Risk Assessment worksheet](#) to help them evaluate measures to mitigate the risks of specific activities – as it is not possible to guarantee complete disinfection.

There are times when some operations at sea, if they are to occur, will be unavoidably at close quarters. Over-the-side shark tagging is just one relevant example. Operators, PIs, and participants should anticipate and plan ahead with risk mitigation measures, including adherence to standard preventative measures like deep cleaning, face masks, and hand-washing. In lieu of 6’ social distancing, this may also include a minimum of 14 days in “sequestered status” and a voluntary “buddy system” whereby two participants distance themselves from other teams and others not involved in the close quarters work. Principal investigators should complete the [Optional Risk Assessment worksheet](#) to help them evaluate measures to mitigate the risks of specific activities – as it is not possible to guarantee complete disinfection.

PI’s will need their operational and risk mitigation plans reviewed and approved by the appropriate authorities (Vessel Operator, Dean/Director, Diving Control Board).

Small Boats

Day-time small boat operations for research have continued through the pandemic, with increased social distancing and health measures.

General Precautions: Should research activity be approved and take place, it is important to employ all of the following measures including those guidance referred to in this document (e.g., [UH COVID-19 Guidelines](#) and the [Mānoa Moving Forward Health and Wellness Guidelines](#)).

- Any scheduling of essential/critical operations must happen in a manner that considers all risk variables and the potential for exposure to COVID-19 for each individual person well in advance.
- Each team member/participant must communicate their understanding and acceptance, and be offered the opportunity to not participate without any undue pressure or concern for reprisal.
- All research requiring in-person social interaction must be conducted with social distancing in mind. If you are sick, or have reasonable cause to believe you have been exposed to COVID-19, you must remain home and monitor your symptoms; possibly up to 14 days.
- All operations must be conducted under the assumption that at least one member of the operations is currently asymptomatic, infected, and contagious.
- During all aspects of the operation, adequate interpersonal distancing must be maintained unless appropriate PPE are employed. Minimum surface interpersonal distances must not be less than 6 feet. It must be recognized that the 6-foot distance is generally specified for indoor,

land-based conditions. In a windy and moisture- laden environment such as on a boat, downwind positions require greater distancing.

- At a minimum all personnel while on the surface must wear a covering over their mouth and nose in order to reduce respiratory droplet dispersal from coughs and sneezes into the air and onto vessel surfaces, and discourage inadvertent face touching. If standard PPE equipment is not available, all team members must use the best available substitute, such as sunglasses, and balaclavas, neck gaiters/buffs, etc., that cover the mouth and nose.

All dive equipment and vessels used must be properly disinfected according to [CDC prescribed procedures](#) before and after use.

Hawai'i Institute of Marine Biology (HIMB) small boat and dive operations: Any proposed project activity under HIMB auspices must have special approval, on a case by case basis, with a proper endorsement from the HIMB Marine Safety Officer. In some cases, and with any diving activities, approval must also come from the Director and/or the Dean and/or the Diving Control Board.

Upon completion of Vessel Operations please fill out [Boating Activity Report Form](#). Also, contact your supervisors, managers and your HIMB Marine Safety Officer (Jason Jones: jason.jones@hawaii.edu / 808-554-4495) with any questions and for specific guidance to help maintain critical functions involving any boating and diving operations.

Diving

For detailed information regarding approval and procedures for diving operations, consult UH Diving Safety Program's [COVID-19 Pandemic Diving Advisories](#).

ANIMAL RESEARCH

While Animal Research has continued through the pandemic, the University of Hawai'i (UH) is seriously concerned for any researcher, staff member, and support personnel involved in animal-related research or instruction and impacted by COVID-19. Animal Veterinary Services (AVS) has maintained updated guidance on the UH Office of Research Compliance website, [UH Animal Care COVID-19 Preparedness Checklist](#).

The NIH Office of Laboratory Animal Welfare provides guidance at the [COVID-19 Pandemic Contingency Planning for Animal Care and Use Programs](#).

Additional guidance and considerations for research practices are outlined below.

Facility requirements

For specific vivarium requirements, please [consult AVS](#). Follow [CDC COVID-19 How to Protect Yourself and Others](#) guidance.

JABSOM and UH Cancer Center administration notify [AVS](#) if staff who need access to the vivarium are under self-quarantine. AVS will temporarily restrict access into the vivarium until AVS receives the all clear from JABSOM or UHCC.

Density of personnel

Strict maintenance 6-foot distancing.

Personal protective equipment

Location-specific PPE requirements as per usual practice. Face masks, booties, and dedicated lab coats are required for entry into the vivariums.

Disinfection

As per standard AVS guidance, disinfect common surfaces 3 times per day.

Screening of personnel

Develop and follow symptom screening protocol, per [UH COVID-19 Guidelines](#).