



NATURAL DISASTER PREPAREDNESS FOR JABSOM LABORATORIES

Hurricanes, tsunamis and other natural disasters can threaten the safety and operation of research laboratories. Plans should be developed well in advance of these events to ensure the preservation of life and property. For general emergency preparedness information please go to the **UH Manoa Emergency Management** website at <http://manoa.hawaii.edu/dps/emergency.html> and <http://manoa.hawaii.edu/dps/emergencyplan.html>.

In order to properly plan a course of action in research laboratories using hazardous materials, it is important to understand the difference between an advisory, watch and a warning. Refer to the agencies listed at the end of this document for accurate and current information.

CONTINGENCY PLAN:

Note: This contingency plan does not encompass all hazards in a lab.

1. **Once a Watch is issued the following should be implemented in your research areas.**

a. **Experiments:**

Complete all running experiments and do not begin any new experiments that would require attention during an evacuation period or while a warning is in place.

Note: Even with backup generators available, researchers should protect their valuable materials in case power, water, gas, electrical security features, communication utilities and HVAC (air conditioning and ventilation) are out of service for an extended period of time. Special arrangements may need to be made to protect animals and protect and prevent release of hazardous materials.

b. **Hazardous Materials (chemical, biological, radiological):**

- Ensure all hazardous material and waste containers are clearly labeled and sealed. Hazard Warning labels are critical during post disaster response.
- Materials that are volatile, toxic, infectious, or pose a respiratory hazard must be stored in tightly sealed impervious and impact-resistant containers which are secured.
- Move all chemicals to appropriate storage locations (i.e., in cabinets and shelves away from windows).
- Store water reactive chemicals in tightly sealed, waterproof containers.
- Place flammable materials in approved flammable cabinets.
- Remove chemicals from upper shelves and limit storage on bench tops.
- Ensure gas cylinders are capped and secured to a permanent fixture using a cylinder strap or chain.
- Prevent the release of hazardous biological materials. Inactivate all cultures that could possibly enter flood waters. Relocate all stock cultures to areas that are not at risk of flooding. Note: If the power and/or gas are out: the boilers are down and therefore the autoclaves are down.
- Prevent the release of research animals.
- Secure radioisotopes.
- Consider moving hazardous materials to locations that are not at risk of flooding.

c. **Chemical Fume Hoods and Biosafety Cabinets:**

- Remove all hazardous materials from fume hoods and BSCs and secure in appropriate storage areas.
- Close sashes completely. If the building experiences a complete loss of power, fume hoods and BSCs will become inoperable.



d. Equipment:

- Unplug all non-essential equipment (hot-plates, magnetic stirrers, heat mantles, etc.).
- Consider protecting sensitive equipment in the event of a power surge.
- Move equipment as far from windows as possible.
- Back-up critical computer files.

e. Security:

- Close and lock all laboratory doors.
- Avoid blocking exits and hallways.
- Ensure emergency contact information is updated and posted on the outside of the laboratory door.

f. Personal Safety

Above all else, personal safety is the number one priority. Follow all evacuation commands and do not enter buildings on campus until an all-clear is given by the proper authorities.

Here are some tips to help your lab prepare your plans:

- Update your emergency contact information. Update lab personnel office, pager, home, and cellular phone numbers. Post this outside of your lab and request staff to “carry” this information with them at all times.
- Be prepared to protect lab notes, research documentation, computer hard drives, and any other materials that you cannot afford to have damaged.
- You are responsible for protecting your laboratory and research. Plan ahead and implement your plan as soon as a hurricane or tsunami watch is issued. Annually perform a laboratory drill to test your laboratory specific emergency response/evacuation plans, including meeting locations, accounting of all staff, communication trees, timelines, designation of responsibilities, continuity of operations, etc.

WATCHES AND WARNINGS:

Listen to radio and television (TV) broadcasts and check the University of Hawai'i Website <http://www.hawaii.edu/>.

TSUNAMI WARNING

The highest level of tsunami alert, warnings are issued due to the imminent threat of a tsunami from a large undersea earthquake, or following confirmation that a potentially destructive tsunami is underway. Warnings advise that appropriate actions be taken in response to the tsunami threat. Such actions could include the evacuation of low-lying coastal areas. **Warning** - County Civil Defense sirens will sound.

TSUNAMI WATCH

The second highest level of tsunami alert, watches are issued based on seismic information without confirmation that a destructive tsunami is underway. It is issued as a means of providing advance alert to areas that could be impacted by a destructive tsunami. Watches are updated at least hourly to continue them, expand their coverage, upgrade them to a Warning, or end the alert. Preparations should begin so that all phases of your contingency plan can be implemented in the event that a hurricane warning is issued.

TSUNAMI ADVISORY

The third highest level of tsunami alert, advisories are issued to coastal populations within areas not currently in either warning or watch status when a tsunami warning has been issued for another region of the same ocean. An Advisory indicates that an area is either outside the current warning and watch regions, or that the tsunami poses no danger to that area. The Center issuing the Advisory will continue to monitor the event, issuing updates at least hourly. As conditions warrant, the Advisory will either be continued, upgraded to a watch or warning, or ended.

TROPICAL STORM

Distinct rotary circulation, sustained wind speed range of 39-73 mph.



STORM WARNINGS

Storm warnings are issued when winds from 55 to 73 mph are expected.

HURRICANE WATCH

A hurricane watch is issued when there is a threat of hurricane conditions within 48 hours. Preliminary actions should be taken.

HURRICANE WARNING

A hurricane warning is issued when a hurricane with sustained winds of 74 mph or more are expected in a specified area in 36 hours or less. A hurricane warning can remain in effect when dangerously high water or high waves continue, even though the winds may be less than 74 mph. Actions for protection of life and property should begin immediately when the warning is issued.

FLASH FLOOD WATCH

A flash flood watch means a flash flood is possible in the area; stay alert.

FLASH FLOOD WARNING

A flash flood warning means a flash flood is imminent or occurring, and everyone in the area should take immediate action.

RESOURCES:

Below are links to state, federal, and international agencies that provide more information about health, civil, natural, and other types of emergencies.

State Resources

- [American Red Cross Hawai'i State Chapter](http://www.redcross.org/hi/honolulu) <http://www.redcross.org/hi/honolulu>
- [Department of Health](http://health.hawaii.gov) <http://health.hawaii.gov>
- [Department of Transportation](http://hidot.hawaii.gov/) <http://hidot.hawaii.gov/>
 - [Airports Division](http://hidot.hawaii.gov/airports/) <http://hidot.hawaii.gov/airports/>
- [Hawai'i State Civil Defense](http://www.scd.hawaii.gov/) <http://www.scd.hawaii.gov/>
- [Honolulu Department of Emergency Management](http://www.honolulu.gov/dem.html) <http://www.honolulu.gov/dem.html>
- [U.S. Geological Survey Hawaiian Volcano Observatory](http://hvo.wr.usgs.gov/) <http://hvo.wr.usgs.gov/>

Federal Resources

- [Centers for Disease Control and Prevention](http://www.cdc.gov/) <http://www.cdc.gov/>
- [Central Pacific Hurricane Center](http://www.prh.noaa.gov/cphc/) <http://www.prh.noaa.gov/cphc/>
- [Department of Health and Human Services](http://www.hhs.gov/) <http://www.hhs.gov/>
- [Environmental Protection Agency](http://www.epa.gov/) <http://www.epa.gov/>
- [Federal Emergency Management Agency](http://www.fema.gov/) <http://www.fema.gov/>
- [Homeland Security](http://www.dhs.gov/) <http://www.dhs.gov/>
- [National Hurricane Center](http://www.nhc.noaa.gov) <http://www.nhc.noaa.gov>
- [National Oceanic and Atmospheric Administration \(Weather Alerts\)](http://www.noaa.gov/) <http://www.noaa.gov/>
- [Ready.gov \(National Preparedness Information\)](http://www.ready.gov/) <http://www.ready.gov/>
- [U.S. Department of State](http://www.state.gov/) <http://www.state.gov/>

International Resources

- [International Tsunami Information Center](http://itic.ioc-unesco.org/index.php) <http://itic.ioc-unesco.org/index.php>
- [Pacific Disaster Center](http://www.pdc.org/) <http://www.pdc.org/>
- [World Health Organization](http://www.who.int/en/) <http://www.who.int/en/>