

**Disease and Introduced Species Prevention Protocol
for Permitted Activities in the Marine Environment
Papahānaumokuākea Marine National Monument (Monument)¹**

I. Equipment and Dive Gear Disinfection

Equipment and gear is treated according to three levels that correspond to the potential for the spread of disease and/or introduced species.

General points applicable to all the levels and acceptable disinfection solutions are listed in part D.

A. Level One: Equipment in direct contact with diseased coral tissue or other diseased organisms

- **Equipment**: includes gloves, chisels, forceps, drill bits, shears, clippers, and spear tips, etc.
- **Multiple sets of equipment**: Use a disinfected set of equipment for diseased organisms and another disinfected set of equipment for non-diseased organisms at each dive site.
- **Disinfect between uses**: Use a disinfected set of equipment at each dive site.
- **Disinfection method**: 1) Remove any organic matter from the equipment. 2) Soak equipment for a minimum of ten minutes in a 1:32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution.
- **Secure all samples**: Seal all samples in bags or jars under water and place sample bags and jars in secure holding container.

B. Level Two: Benthic equipment not used to sample diseased coral tissue or other diseased organisms

- **Benthic equipment**: includes equipment that may contact the benthos such as reels, tape measures, goodie bags, transect lines, etc.
- **Disinfect between sites**: Use a disinfected set of equipment at each dive site.
- **Disinfect equipment**: 1) Remove any organic matter from the equipment. 2) Soak and or wipe equipment as specified for equipment type, below. See list of acceptable disinfection solutions in part D.

1. **Non-porous equipment** must be wiped and/or soaked. If wiping, use wipes in which the active ingredient is a quaternary ammonium compound (QAC). Acceptable wipes include Clorox® wipes or Lysol® wipes. If

¹ This protocol and a companion document, "Disease and Introduced Species Prevention Protocol for Permitted Activities in the Marine Environment of the Papahānaumokuākea Marine National Monument Explanation," were accepted at the April 9, 2007 Monument Management Board Meeting.

soaking, soak for a minimum of ten minutes in an acceptable disinfectant solution.

2. Porous equipment must be soaked for a minimum of ten minutes in an acceptable disinfectant solution.

C. Level Three: All dive gear used in the Monument

- Dive gear includes any wetsuit, mask, fin, snorkel, BC, regulator, weight belt, booties, etc.
- Disinfect dive gear daily (if used): 1) Remove any organic matter. 2) Disinfect by submerging for a minimum of ten minutes in an acceptable disinfection solution, followed by a thorough fresh water rinse, and hanging to dry.
- Rinse after disinfection: Rinse all gear in close proximity to the face or skin, e.g. masks, regulators, gloves, etc. with potable water following disinfection.

D. General points applicable to all three levels

- Disinfect any equipment and gear at least daily if used. Also, only disinfected equipment and gear may be transported either direction between the Monument and the main Hawaiian islands or other point of origin/destination.
- Dispose of organic matter, used disinfection solution, and rinse according to the ship's solid waste disposal or other approved secure holding system.
- Acceptable Disinfection Solutions:
 1. Levels One, Two, and Three: a 1:32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution; and
 2. Levels Two and Three: For dive gear and level two equipment, the manufacturer's recommended disinfection strength dilution of QACs in "soft" (low concentration of calcium or magnesium ions) fresh water. An example of an acceptable QAC solution is Lysol® All Purpose Cleaner in a 6.6% Lysol in water dilution.
- Rinse after disinfection: All gear in close proximity to the face or skin, e.g. masks, regulators, gloves, should be rinsed with potable water following disinfection.

II. Cleaning Tender Vessels

- At least daily if tender vessel if used, inspect for and remove for any algal fragments or other organisms (dispose of organic matter and used solution according to the ship's solid waste disposal or other approved secure holding system).

- Rinse tender vessel internal and external surfaces with fresh water between islands, including during transits in either direction between the Monument and the main Hawaiian islands or other point of origin/destination.
- Allow tender vessel to dry before redeployment.

III. Disinfection of Shipboard Wet Laboratory

- At least daily if used, disinfect entire laboratory, including sinks, countertops, walls, doors, and floors.
- Acceptable Disinfection Solutions and Wipes:
 1. a 1:32 dilution of commercial bleach in freshwater (1/2 cup bleach per gallon of freshwater), yielding a 1000 ppm dilution of sodium hypochlorite, or 3% free chlorine solution;
 2. the manufacturer's recommended disinfection strength dilution of QACs in "soft" (low concentration of calcium or magnesium ions) fresh water. An example of an acceptable QAC solution is Lysol® All Purpose Cleaner in a 6.6% Lysol in water dilution. Also, commercially available wipes containing QACs (e.g. Clorox® wipes, Lysol® wipes) are acceptable; and
 3. 70-80% ethanol.
- Dispose of all materials generated during cleaning according to the ship's solid disposal or other secure holding system.
- The laboratory must be clean between islands, including during transits in either direction between the Monument and the main Hawaiian islands.

