

Working Safely with Amphibians: Preventing Injury and Zoonotic Disease Transmission

The VSU IACUC occupational health and safety program is designed to inform individuals who work with animals about potential zoonoses (diseases transmitted to humans from animals), personal hygiene to prevent zoonotic transmission, and other potential hazards associated with animal exposure. This information sheet is directed toward those involved in the care and use of amphibians.

Injuries from Handling Amphibians

People can receive cuts, scratches, or puncture wounds when handling amphibians. Infectious organisms from these species can enter skin wounds of handlers and may establish an infection. It is essential that people who handle amphibians for research or teaching be provided with training in proper handling techniques to avoid injury to themselves or the animals, such as specific handling and restraint techniques and protective clothing requirements.

Potential Zoonotic Diseases

The peril to humans by contact with North American amphibians is considered so minimal that experiments with living anurans and urodeles constitute part of the biology curriculum at almost all high schools and institutions of higher education. Most amphibians obtained from commercial sources are wild caught and may harbor etiological agents for diseases infectious to humans. In general, humans contract amphibian borne disease through contamination of lacerated or abraded skin or mucosal exposure.

An important feature of many disease causing agents is their opportunistic nature. The development of disease in a human host often requires a preexisting state in which the immune system is compromised. If you have an immune-compromising medical condition (e.g., AIDS/HIV positive or have had the spleen removed) or you are taking medications that impair your immune system (e.g., steroids, immunosuppressive drugs, or chemotherapy), you are at risk for contracting an amphibian borne disease and should consult your health care provider.

There are a number of zoonotic diseases associated with care and handling of amphibians. Some of those diseases may not produce easily observable signs of illness in the amphibians. Therefore, if you handle amphibians or their housing materials, you should take appropriate precautions to prevent transmission of these infections. Zoonotic diseases that amphibians may carry include:

Salmonella: Salmonellosis is a bacterial disease caused by the bacterium *Salmonella*. Many different kinds of *Salmonella* can make people sick. Most people have diarrhea, fever, and stomach pain that start one to three days after they get infected. These symptoms usually go away after one week. Sometimes, people have to see a doctor or go to the hospital because the diarrhea is severe or the infection has affected their organs. Animals can carry *Salmonella* and pass it in their feces. People get salmonellosis if they do not wash their hands after touching the feces of animals.

Other diseases: Other pathogens that can be spread through working with amphibians include *Campylobacter spp.*; Zygomycosis, Phycomycosis, and Mucormycosis spores from saprophytic fungi that are common isolates from amphibian gastrointestinal tracts. Amphibians may be transport hosts for Gnathostomiasis. For information about signs and symptoms of illness or disease in amphibians and humans, see [Zoonoses of Fish, Amphibians and Reptiles](#).

Allergic Reactions to Amphibians

In the laboratory setting, human sensitivity to amphibian allergens (proteins which cause an allergic reaction in people) is rare. However, some people do become sensitized to amphibian proteins through inhalation or skin contact.

How to Protect Yourself

Wash your Hands: The single most effective preventative measure that you can take is thorough, regular hand washing. You must wash your hands and arms after handling amphibians or contaminated water or tanks. Proper technique involves the following steps:

- Wet your hands with clean running water (warm or cold) and apply soap.
- Rub your hands together to make a lather and scrub them well; be sure to scrub the backs of your hands, between your fingers, under your nails, and up your forearms.
- Continue rubbing your hands and arms for at least twenty seconds (the time it takes to sing the "Happy Birthday" song from beginning to end twice).
- Rinse your hands and arms well under running water.
- Dry your hands and arms using a clean towel or air dry.

Washing hands with soap and water is the best way to reduce the number of germs on them. If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol. Alcohol-based hand sanitizers can quickly reduce the number of germs on hands in some situations, but sanitizers do **not** eliminate all types of germs. To use hand sanitizer effectively:

- Apply the product to the palm of one hand (read the label to learn the correct amount).
- Rub your hands together.
- Rub the product over all surfaces of your hands and fingers and up your forearms until they are dry.

Note that hand sanitizers may not be as effective when hands are visibly dirty.

Wear Personal Protective Equipment (PPE): Wear eye protection when appropriate. Wear gloves and/or protective sleeves when handling animals, animal tissues, body fluids, housing materials, and waste. If you spend a significant amount of time with your hands immersed in potentially contaminated water or if you have any cuts and abrasions on your hands or arms, wear sturdy, water-proof gloves of sufficient length to prevent water from entering the gloves at the cuff. Wear dedicated protective clothing such as a water-proof coat or apron when handling animals. Launder the soiled clothing separately from your personal clothes. When in the field, change clothing as soon as possible after exposure to amphibians and their habitats.

Practice Good Hygiene: Cover abraded skin, cuts, scrapes or sores and do not allow wound contact with amphibians, amphibian-contaminated aquarium water or materials. Avoid touching your face,

eyes, nose, or mouth with unwashed hands or contaminated gloves. Never eat, drink, use tobacco products, or apply makeup in animal facilities or while handling animals.

Maintain the Work Environment: Keep animal areas clean and disinfect equipment after using it on animals or in animal areas. Use cleaning techniques that do not aerosolize dirty water or other materials.

Seek Medical Attention Promptly: If you are injured on the job while handling amphibians or contaminated water, materials, or tanks/equipment, promptly report the accident to your supervisor, even if it seems relatively minor. Clean any minor cut or abrasion immediately with antibacterial soap, and protect it from dirt and animal secretions until it has healed. Seek medical assessment and referral for treatment for more serious injuries or if you have an infected wound indicated by swelling, redness, pain, and draining fluids with or without a fever.

Tell Your Health Care Provider You Work with Amphibians: Familiarize yourself about the animals that you will be working with and the potential zoonotic diseases associated with each species. If you are ill, even if you are not certain that the illness is work related, always mention to your health care provider that that you work with amphibians. Many zoonotic diseases have flu-like symptoms and would not normally be suspected. Your health care provider needs this information to make an accurate diagnosis. Questions about personal human health should be answered by your health care provider.