

Working Safely with Reptiles: 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 reptiles.

Injuries from Handling Reptiles

All reptiles, regardless of their personal history, are undomesticated and should be treated as wild animals. Severe scratches can be inflicted through efforts to escape. Bite wounds and scratches are particularly prone to infection when caused by reptile injury. It is essential that people who handle reptiles 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

There are a number of zoonotic diseases associated with care and handling of reptiles. Some of those diseases may not produce easily observable signs of illness in reptiles. In general, humans contract reptile borne disease through contamination of lacerated or abraded skin or mucosal exposure. An important feature of many of the 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 a reptile borne disease and should consult your health care provider. Zoonotic diseases that reptiles may carry include:

Salmonella: Salmonellosis, caused by the bacterium *Salmonella*, is a common bacterial disease subsequent to reptile (and particularly iguana) exposure. A variety of Salmonella species have been the cause of infections. The bacteria do not usually cause clinical illness in the reptiles. Disease in humans usually manifests as nausea, vomiting, and diarrhea. The infection can be severe and life threatening, especially in children and persons that are immunocompromised. The bacteria are passed in animal feces; humans can contract salmonellosis if they do not wash their hands after touching the feces of animals.

Mycobacterium: Organisms from the genus *Mycobacterium* are non-motile, acid-fast rods. Humans are typically infected by contamination of lacerated or abraded skin. Circumscribed cutaneous granulomatous nodules (hard bumps) may form at the site of infection, most commonly on hands or fingers. The granulomas usually appear approximately six to eight weeks after exposure to the organism. They initially appear as reddish bumps (papules) that slowly enlarge into purplish nodules. The infection can spread to nearby lymph nodes. Other diseases (disseminated respiratory disease, lymphadenitis, arthritis, osteomyelitis, and/or tenosynovitis) are likely in immunocompromised individuals. It is possible for these species of mycobacterium to cause some degree of positive

reaction to the tuberculin skin test.

Aeromonas spp.: Aeromonad organisms are facultative anaerobic, gram-negative rods. These organisms can produce ulcerative stomatitis and fatal hemorrhagic septicemia in snakes. Humans infected with *Aeromonas* may show a variety of clinical signs, but the two most common syndromes are gastroenteritis (nausea, vomiting, and diarrhea) and localized wound infections. Again, infections are more common and serious in the immunocompromised individual.

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

Allergic Reactions to Reptiles

Human sensitivity to reptile allergens (proteins which causes an allergic reaction in people) in the laboratory setting is unknown. However, it is reasonable to assume, like with amphibians and fish, some people may become sensitized to reptile 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 reptiles or contaminated cages. 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 and respiratory protection when appropriate. Wear long, heavy gloves that will prevent scratches or bites if the animal attempts to get away. Wear

protective gloves when handling bedding, animal tissues, body fluids, and waste. Wear dedicated protective clothing such as an apron or lab coat when handling animals. Launder the soiled clothing separate from your personal clothes. When in the field, change clothing as soon as possible after exposure to reptiles and/or their habitats.

Practice Good Hygiene: Cover abraded skin, cuts, scrapes or sores and do not allow wound contact with reptiles or contaminated housing 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 when handling reptiles or contaminated housing materials, 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 Reptiles: 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 you work with reptiles. 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.