

Salmonellosis: Reptile Owners at Risk from Turtles, Lizards and Snakes

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If you ask the average lay person if there are any risks in owning a pet turtle or other reptile, the one that is most commonly mentioned is *Salmonella* bacteria. Most, if not all, reptiles carry *Salmonella* in their intestinal tract and intermittently or continuously shed these bacteria in their feces. Studies have shown that 85% of all turtles, 77% of lizards, and 92% of snakes carry one of the 500 serotypes of *Salmonella*. *Salmonella* usually do not cause any illness in reptiles, but can cause serious illness in people.



Salmonella bacteria are easily spread from reptiles to humans. For *Salmonella* to spread from reptiles to humans, the bacteria must be ingested. This most often occurs when humans place their hands on the reptile or objects that have been in contact with the stool of reptiles; then they place their hands in their mouths, or on objects or food they put in their mouths, and can become infected. For example, infants have become infected after drinking from bottles of infant formula that became contaminated during preparation. Individuals who prepared the formula had not washed their hands after touching a reptile or reptiles were allowed to walk on kitchen counters. Simply touching or holding a reptile will not result in spread of bacteria unless something contaminated with reptile feces is placed in the mouth.

Most healthy humans come in contact with *Salmonella* and a whole host of disease-causing organisms on a daily basis, but because they have a healthy immune system and they come into contact with relatively small numbers of organisms, they do not contract the disease. Those humans who become infected with *Salmonella* usually have a mild, self-limiting illness characterized by diarrhea, fever, and abdominal cramps. However, the infection can spread to the bloodstream, bone marrow or nervous system, leading to severe, and sometimes fatal, illness. Such severe infections are more likely to occur in infants and in individuals whose immune systems are compromised (for instance, bone marrow transplant recipients, persons with diabetes mellitus, persons infected with the human immunodeficiency virus, and chemotherapy patients).

Unfortunately, *Salmonella* bacteria cannot be eliminated from the intestinal tract of reptiles. Administration of antibiotics to eliminate these bacteria has been unsuccessful and may result in emergence of *Salmonella* bacteria that are resistant to antibiotics. Attempt to raise or identify reptiles that do not carry *Salmonella* bacteria have also been unsuccessful; therefore, bacterial culture of stool samples in an attempt to identify reptiles that are not carrying *Salmonella* bacteria is not recommended.

Fortunately, by following some good common hygiene practices and avoiding contact with the feces of these animals as much as possible, we can easily prevent the spread of *Salmonella*. These basic preventive recommendations include:

- Wear disposable gloves or wash your hands thoroughly with hot, soapy water after handling reptiles, reptile cages and equipment, and the stool of reptiles.
- Do not allow reptiles to have access to the kitchen, dining room, or any other area in which food is prepared.
- Do not use the kitchen sink, kitchen counters, bathroom sinks or bathtubs to bathe reptiles or to wash reptile cages, dishes, or aquariums. Also, do not allow reptiles to have access to bathroom sinks and tubs or to any area where infants are bathed. Reptile owners may wish to purchase a plastic basin or tub in which to bathe or swim their reptiles. Waste water and fecal material should be disposed of in the toilet instead of the bathtub or household sink.
- Wash all food and water bowls and equipment with hot soapy water and disinfect with a chlorhexidine or household bleach solution (remember to rinse all disinfected utensils with clean water before using).
- Do not eat, drink, or smoke while handling reptiles, reptile cages, or reptile equipment. Do not kiss reptiles or share food or drink with them.
- Consider keeping your reptiles caged or limiting the parts of the house where reptiles are allowed to roam free. Always wash your hands after coming into contact with any area where reptiles are allowed to roam free.
- Pregnant women, children, elderly or frail adults, or immunosuppressed people are particularly at risk of infection or serious complications of salmonellosis. At a minimum, they need to take extra precautions; ideally, they should avoid contact with reptiles.
- The Centers for Disease Control and Prevention recommend that children less than five years of age avoid contact with reptiles and that households with children less than one year of age not own reptiles. Families expecting a new child should remove the pet reptile from the home before the infant arrives. The Association of Reptilian and Amphibian Veterinarians encourages reptile owners with young children to discuss steps to minimize risks associated with owning reptiles with their reptile's veterinarian and their physician. Children should be supervised when they are handling reptiles to ensure that they do not place their hands or objects that a reptile has contacted in their mouths. Reptiles should not be kept in child care centers.
- Do not use the same equipment for your animals that you use for yourself.



- Launder any clothing that may have come in contact with reptiles.
- Follow instructions from your reptile's veterinarian concerning proper diet and environment for your reptile. Healthy reptiles living in proper environments are less likely to shed *Salmonella* bacteria.

These recommendations are not meant to discourage reptile ownership. If these basic precautions and good common sense are observed, the risk of contracting *Salmonella* from a reptile is very low, with a few exceptions, such as infants or immunocompromised individuals. Reptiles can be safely kept as pets, but reptile owners should be aware of the methods for reducing their risk of acquiring *Salmonella* bacteria from their reptiles. Enjoy the reptile and remember that good hygienic practices are one of the best things you can do to protect yourself and your reptile from a whole host of infectious diseases.