

Help for the Common Herper

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Helpful Information for
Herp Keepers Who Don't
Know All the Latin Names
(and for Those Who Do)

First in a Series:

Preventing Salmonellosis

I know what you're thinking. "I know all about *Salmonella* and reptiles. I wash my hands, I don't kiss my snake, and I don't buy those little green turtles under 4 inches." Certainly, no one will dispute that these are all wise practices, but ask yourself:

- Do you ever wash those water bowls in your kitchen or bathroom sink (after all, what other sinks are there)?
- Have you ever soaked your lizard or turtle in your shower or tub?
- Have you ever held your snake or lizard against your shirt to restrain it?
- When cleaning cages, have you ever stashed your herp on the counter or the floor "for just a second?"
- Have you ever showed-off your precious herp to family or friends and egged them on, "Come on, just touch it?"
- Iguana owners, now admit it, have you ever let Iggy walk around your house or perch on the couch?

If you answered "yes" to any of these questions, then you've put yourself and your family at risk of salmonellosis (sal-mohn-el-OH-sis), an infection that we can unknowingly catch from our beloved animals, caused by the *Salmonella* bacteria (of which there are more than 2,300 strains).

How do I get it?

Salmonella is most commonly passed from animals to people through contaminated food, such as chicken or eggs – beware of the dangers of undercooked chicken and raw cookie dough! It is also true that lots of animals also can pass *Salmonella* to other animals or to people through

their feces: reptiles, chicks, ducklings, farm animals, even your dog, cat or pet bird can give it to you.

Transmission starts with fecal matter. Unclean cages and animals that walk through the waste products in their cage are common sources of *Salmonella* transmission. Any place the reptile has crawled can have a thin veneer of *Salmonella* left behind. It's as easy as touching the animal or its soiled container. Then, you can spread the bacteria to anyone or anything that you touch. The bacteria cannot travel through your skin. To infect you, it must enter your body; most often it enters through your mouth. It can also enter through an open cut, sore or wound directly into your bloodstream. Infection can also occur through the splashing of contaminated material into your eyes or nose or through inhalation of contaminated materials.

Hasn't *Salmonella* in reptiles been blown way out of proportion?

You're right -- a lot of media attention has gone to reptile-associated salmonellosis, because the number of reptile owners is dramatically on the rise. During 1991 to 2001, the estimated number of households with reptiles doubled from approximately 850,000 to 1.7 million. An estimated 3% of all households in the United States now own at least one reptile. And, since experts say that 90% of all reptiles carry *Salmonella* as part of their normal intestinal flora, that's a big potential for infection. To make matters worse, evidence also now targets amphibians (frogs, toads, newts and salamanders) as carriers of *Salmonella*. The press gave the disease lots of coverage in late 2003, when the CDC reported that contact with reptiles and amphibians now accounts for 74,000 cases of *Salmonella* infection every year in the United States.

Okay, let's put that big number into perspective. The 74,000 cases of reptile-associated salmonellosis is not a number to sneeze at, but it still *only* accounts for 6% of the total 1.2 million sporadic *Salmonella* infections that occur each year in the United States. You are still more likely to

contract *Salmonella* from that raw chicken or unbaked cookie dough than you are from your herp – but that doesn't dismiss that fact that your amphibians or reptiles can still make you or a friend or family member sick.

So what...does it make you *that* sick?

In a healthy person, there is a chance that the bacteria could simply pass through your body unnoticed. Most people have diarrhea, fever and stomach pain that start 1 to 3 days after they get infected. These symptoms usually last 1 to 2 days (sometimes up to a week) and most people assume they had the stomach flu and don't even seek medical treatment. Now ask yourself, how many cases of mild stomach upset have you had since owning a herp?

There are people who are much more likely to get salmonellosis: infants, children younger than 5 years old, organ transplant patients, people with HIV/AIDS, patients undergoing cancer therapy, pregnant women, and the elderly. To these folks, salmonellosis can be life-threatening and can result in invasive illnesses, such as septicemia or meningitis. Here are some salmonellosis case studies that vividly illustrate just how serious this infection can be.

California: A 3-month old infant was taken to emergency room with bloody diarrhea and fever and was hospitalized for 2 days. No reptiles lived in the home, but the infant's father was a biology teacher that used reptiles in the classroom, including a large boa that he draped over his shoulders. The father insisted that he was always careful to wash his hands after handling the animals or the cages; however, he did not change clothing when he came home from work before holding his child.

Florida: A 1-month old infant admitted to the hospital with fever and diarrhea. One week before the illness, the family had moved into a household that contained a bearded dragon. The lizard's cage had been washed in the kitchen near the infant's bottle nipples.

North Carolina: A 2-day old, 8-week premature, baby boy was diagnosed with salmonellosis. His 28-day old hospital roommate was also diagnosed 11 days later. Neither infant had ever left the hospital nor were they exposed to reptiles. The mother of the first infant reported having a diarrheal illness 4 days be-

fore the birth of the infant and reported frequently handling her savanna monitor which was caged in her kitchen.

Oklahoma: Two hospital patients who received donor blood platelets, developed sepsis as a result of exposure to *Salmonella* bacteria. One of the patients died. The man who donated the *Salmonella*-tainted blood owned a boa constrictor and showed no outward symptoms.

Colorado: 20 patients were diagnosed with salmonellosis after visiting the Komodo dragon exhibit at a Colorado Zoo. Zoo officials believe the dragons had licked the handrails while being moved to their cages and the rails were then touched by zoo visitors who ate lunch without washing their hands.

Should I have my animal tested?

No. It's not recommended that your reptile be tested or treated for *Salmonella*. Reptiles live naturally with *Salmonella*, the way a dog lives with fleas.

Estimated *Salmonella* Infection Rates*

Turtles	12-85%
Snakes	16-92%
Lizards	36-77%

* Johnson-Delaney, 1996

Treatment will only make the bacteria antibiotic-resistant. It's better to just assume that your animal has it and do everything you can to avoid contracting it. An infected reptile may not shed the bacteria in feces all the time. It is not clearly understood, but stress in the animal seems to have some part in the way reptiles shed *Salmonella*. If someone tries to sell you an animal they claim to be "*Salmonella*-free," smile and walk away. There is no such thing.

Think hatchings can escape it? Think again. *Salmonella* can be passed from mother to baby before birth or laying and the bacteria in substrate can actually penetrate through the shells of turtle eggs within one hour of contact with a contaminated surface.

How long can *Salmonella* live?

Good question, scary answer. *Salmonella* can remain viable from weeks to even months. Take a look at this:

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Preventing Salmonellosis — *continued*

<i>Salmonella</i> Remains Viable	
Days:	In:
89 days	Tap water
115 days	Pond water
120 days	Pasture soil
280 days	Garden soil

So, what can I do to protect me and my family?

Now, this may not be the perfect CDC model for bio-hazard protocol, but here is a collection of recommendations from the CDC, veterinary experts, and other authors that offers sage advice for amphibian and reptile keepers.

- Children under 5-years old and immunocompromised people should not live in the same household with amphibians or reptiles and should avoid all direct contact with them.
- After handling amphibians, reptiles, their enclosures or accessories, wash your hands thoroughly with soap and water for a minimum of 30-seconds. (Try counting slowly to 30 while you're washing, it's a lot longer than you think.) Water alone is ineffective. Antimicrobial hand sanitizers can be a bonus. Use paper towels for drying.
- Amphibians and reptiles should not be allowed to free-roam around your home or business.
- Herp enclosures should not be kept in kitchens or food preparation areas.
- Use only non-porous ceramic dishes to hold your animals' food and water. Plastic bowls can get scratched and the scratches harbor bacteria.
- Wash enclosures, water/food bowls and all surfaces using industry-standard disinfectants (e.g. 10% bleach/water solution, Nolvasan, A33 Dry, Roccal-D, etc.) Read the labels – most require direct contact with a surface for a minimum of 10 minutes in order to be effective. Some require rinsing, some do not.
- Enclosures, dishes, and accessories should NEVER be washed in the kitchen sink.
- If the bathroom sink or tub must be used, all surrounding items should be removed (towels, cups, toothbrushes, etc.) so they won't get splashed and the sink or tub must be thoroughly disinfected afterwards.
- Do not handle any herp or their caging with open cuts or lesions on your hands; surgical gloves are recommended at such times.
- When washing enclosures and accessories, avoid splashes to your face. If splashing is unavoidable, consider wearing safety glasses or face-protection.
- If using a handheld vacuum or shop-vac to empty an enclosure, wear a face mask to prevent inhaling of the bacteria.
- If your reptile enclosure uses a dry substrate, consider changing to unprinted newsprint or paper towels for ease of feces removal and disinfection.
- Filtration of aquatic turtle water alone will not kill the bacteria. Complete water changes and disinfection is essential.
- Change your clothes after cage cleaning or animal handling.
- Make it convenient. Keep spray bottles filled with disinfectant and paper towels handy in all animal rooms and near sinks.
- If amphibians or reptiles are used for public contact, hand sanitizer or hand-adequate washing facilities must be provided.

The Bigger Picture

On a personal level, protecting yourself and your family from salmonellosis is unquestionably important. But, the entire herpetological community should also be concerned about protecting our hobby and industry. We should all be doing everything we can to educate new and old amphibian and reptile owners about salmonellosis prevention. Why? Because even though the number of reptile-associated salmonellosis cases is relatively small, it still constitutes a very visible and viable target for public health and lawmakers to go after. This is especially true since infants and toddlers are so susceptible to this infection and their stories provide ample sensationalism for the media and public to enjoy. Educating others on how to prevent reptile-induced salmonellosis could eventually help us to protect our rights to own and keep the animals we love.

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