

## Health Threats from Rodent Infestation

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Rat infestations and human contact with rats can cause health problems, problems with contamination, and damage to property.

The United States Centers for Disease Control and Prevention lists several diseases that can be caused by rats:

Hantavirus Pulmonary Syndrome (HPS): an often deadly disease transmitted by rodents through urine, feces, or saliva. Humans can contract the disease when they breathe in dried, aerosolized secretions. Although a rare disease, the severity of the infection underscores reason for concern. Rodent control in and around the home is the best method of prevention.

Seoul virus and Hantavirus Fever with Renal Syndrome (HFRS): The natural hosts of Seoul virus are the Norway rat (*Rattus norvegicus*) and the black or “roof” rat (*Rattus rattus*), very common rats in Louisiana; however, Seoul virus occurs worldwide. Rats do not get sick with this virus, but, when infected, they shed the virus their entire lives. Most people infected with Seoul virus either do not get sick at all, or exhibit mild flu-like symptoms. A small minority of cases will develop the most severe form of the disease, referred to as HFRS. HFRS affects the kidneys and can cause hemorrhagic fever. Approximately 1% to 2% of people who develop HFRS will die. Seoul virus is transmitted in much the same way as other Hantaviruses, primarily through exposure to rodent urine, feces or nesting materials that are stirred up, often while cleaning. Rodent control and prevention of exposure to dangerous materials are the best means of prevention.

Murine typhus: This disease occurs worldwide, but is rather rare in the Americas, and is transmitted to humans by rat fleas. The disease is more common in the summer months, but in warmer climates, can occur throughout the year. Rat-infested buildings and homes, especially in port or riverine environments, are often havens for rats harboring infected fleas. The etiologic agents are *Streptobacillus moniliformis* and *Spirillum minus*.

Rat-bite fever: This is a systemic bacterial illness that can be transmitted from rats to humans through a bite, a scratch, or through the ingestion of food and water contaminated with rat feces. Approximately one out of every ten persons who contracts the disease will die.

Salmonella enterica serovar Typhimurium: This bacterium does not normally cause serious illness in humans, although an infection can be characterized by diarrhea, abdominal cramps, vomiting and nausea. However in the elderly, the very young or in people with reduced immunity, *Salmonella* infections can be fatal.

Leptospirosis: Caused by *Leptospira* bacteria. Infection with this organism can result in a range of symptoms, from no illness at all to mild symptoms (headache, fever, abdominal pain, diarrhea, rash) to

severe disease resulting in kidney damage, meningitis, liver failure, and respiratory distress. These infections are sometimes fatal.

Eosinophilic meningitis: Sometimes results from infection of the brain with stages of the rat lungworm, *Angiostrongylus cantonensis*. Some infected people don't have any symptoms -- or have only mild symptoms that don't last very long. Sometimes the infection causes eosinophilic meningitis. The symptoms can include headache, stiff neck, tingling or painful feelings in the skin, low-grade fever, nausea, and vomiting. Symptoms can last from several weeks to months.

Rats can produce up to 12 to 16 milliliters (more than 2 teaspoons – more than 1 tablespoon) of urine and 50 fecal droppings in a 24-hour period. Contamination of stored foods with rodent feces and urine may transmit disease to both humans and pets. These contaminated foods may carry diseases such as cryptosporidiosis, toxoplasmosis, leptospirosis, salmonellosis, and listeriosis. In addition to causing disease, contamination from rat urine and droppings increases spoilage and renders foods inedible.

Rats have also been implicated in the transmission of several other helminths (worms) and bacterial, rickettsial, protozoal, and viral infections in other parts of the world. Rat lice, mites, and fleas can also infest other animals and, occasionally, people.

Rats can also cause considerable damage to property and buildings. An example of this is the gnawing of electrical cables.