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Recommended Citation
Brennand, Charlotte P., "Food Storage, Rodents and Hantavirus" (1999). *All Archived Publications.* Paper 692.
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Food Safety Fact Sheet

FOOD STORAGE, RODENTS AND HANTAVIRUS

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October 1999 FN-FS-250.9

One of the problems in storing food is that it can attract rodents. Rodents have been identified as carriers of hantavirus; therefore, care needs to be taken when working in an area that shows signs of rodent infestation. Considering how long man and rodents have been living in close proximity, the number of cases is surprisingly low. However, hantavirus has a high fatality rate, and it is logical to take precautions. It is relatively easy to kill the virus.

GENERAL DESCRIPTION OF PROBLEM

In 1993, hantavirus was diagnosed in the Four Corner Area. This virus had not been identified in the United States prior that outbreak, however similar viruses were known in other parts of the world, primarily the Eastern Hemisphere. Hantaviruses are primarily carried by rodents and each type of hantavirus has a preferred rodent. Sin Nombre, the type of hantavirus identified in the Four Corner Area outbreak, is associated with deer mice. A study by the Communicable Disease Center (CDC) on animals in the areas where hantavirus had been identified found that 30% of the deer mice, 1% of pinon mice and 1% of chipmunks carried the virus. Recent studies in Montana and Colorado have found that 30-40% of deer mouse populations are infected.

Additional types of hantaviruses have been identified in the USA since 1993. These are associated with the cotton rat (Southeastern US), rice rat (Southeastern US) and the white-footed mouse (New England, Mid-Atlantic and Southern states, Midwest and into the western states). Deer mice are found almost everywhere in North America.

Hantavirus cases are not common. Between 1993 and July 1999 there were 217 cases reported in 30 states and another 11 cases pending confirmation.

Hantaviruses do not adapt readily to new hosts and are believed to have co-existed with mice for thousands of years. Infected mice do not show any symptoms.

Deer Mouse

The deer mouse (Peromyscus maniculatus) is a deceptively cute animal, with big eyes and big ears. Its head and body are normally about 2 - 3 inches long, and the tail adds another 2 - 3 inches in length. You may see it in a variety of colors, from gray to reddish brown, depending on its age. The underbelly is always white and the tail has sharply defined white sides. The deer mouse is found most everywhere in North America. Usually, the deer mouse likes woodlands, but also turns up in desert areas.

Signs and Symptoms of Illness

The illness begins with raging flu-like symptoms; fever, muscle aches and chills. Other common symptoms are a cough, difficulty breathing, abdominal pain and vomiting. Less common are dizziness or lightheadedness, joint pain, back, chest or abdominal pain, and sweats.

It is lethal in approximately 45% of the cases (MMWR 7/12/98).

How Does the Disease Spread?

Hantavirus infection is usually spread by inhaling the virus. The virus is carried in the saliva, feces and urine of deer mice. The danger is in breathing in contaminated dust while working in or cleaning the problem area. It is not passed from person to person nor in food cooked from raw ingredients that may have had contact with rodents.

There is a greater potential problem in years when mice populations increase. Wet years result in increased vegetation that can support a larger rodent population. In the fall or winter, mice may try to move indoors. They are especially attracted to garbage and food stores.

The virus is easy to destroy and dies by itself in 3-4 days. The problem in dust comes from relatively fresh mouse droppings.

How to Clean Areas That Show Signs of Mice Droppings or Nests

Wear protective clothing including latex or rubber gloves. Masks are desirable but inexpensive painters' masks are not effective and may give a false feeling of security. Masks need to have a HEPA or N-100 filter.

- If a closed area, let it air out for 30 minutes before beginning cleaning.
- **DON'T SWEEP OR VACUUM DROPPINGS.** This may spread the virus through the air.
- Thoroughly spray or soak any dead mice, traps, dropping or nests with a commercial disinfectant solution or a 10% solution of chlorine bleach. To make a 10% chlorine solution: mix 1 1/2 c. chlorine bleach in 1 gallon of water.
- Wipe down shelves, counters and cabinets with disposable rags or paper towels soaked in

the disinfectant. Mop floors using disinfectant solution.

- Double bag wastes and discard.
- Disinfect gloves or discard.
- Wash hands or shower.

PREVENTATIVE MAINTENANCE

Avoiding the problem is always the preferred method. This is not easy since the cartilage in rodent's heads allow them to go though very small holes. A mouse can get through a hole as small as 1/4 inch. This is the size of a shirt button or a pencil eraser. Rats can go through a 1/2 inch-size hole.

Begin by critically evaluating the storage area for possible mouse entry. See if the end of a pencil will fit into cracks or gaps. Don't forget to check for areas in cupboards, walls and floors where there are electric, gas or water pipes running through them. Is there a gap under the door?

Seal cracks and holes with materials that will be resistant to gnawing. These include concrete mortar, metal pieces, steel wool, and screening.

Package food defensively. Metal containers, glass bottles, and heavy plastic containers with tight fitting lids are resistant to rodents.

Paper boxes, plastic bags, and cellophane packages or packages that do not close thoroughly are easily accessible to rodents. Sacks of flour and bags of grains need a better barrier. For simplicity, pasta products, rice, dry soup mixes, pudding mixes, etc., still in their original packages can be placed in a rodent-proof package. This maintains the labels and cooking instructions with the products.

Rodent Proof Containers

If products such as rice, barley or other grains are transferred to plastic or glass containers, cut the cooking instructions from the label and place in the container with the food for future reference. Cracker boxes and large cereal packages also need protection and can be placed intact in larger safe packages.

If food is to be transferred from the original container, be sure that the new container is safe for food storage. For example, don't use an old gasoline drum or container that has held

chemicals. Any container that originally held food can be reused for food if it has a tight fitting lid. Empty coffee cans, mayonnaise jars, even plastic milk jugs can be cleaned and reused for products like grains.

If Rodents Have Already Moved In

Spring traps, sticky traps and poison can be used to eliminate existing problems. For information on using these, see USU Extension publication NR-WD-010 *Commensal Rodents*.

Other Diseases Associated with Rodents

Rodents are well know as a source of disease whether it is by direct contamination of food or water with the rodent's feces or urine, from a rodent bite, or carried by a flea, tick or mite on the rodent. Bubonic plague, the most common form of plague, results from the bite of a flea carried on rats.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert L. Gilliland, Vice-President and Director, Cooperative Extension Service, Utah State University, Logan, Utah (EP/10-99/DF).