



Healthy Homes Healthy People Project

Prevention Strategies to Keep Mice Out of Your Home

This manual aims to empower residents of Navajo Nation to reduce their risk of becoming sick with hantavirus by offering step-by-step instructions for repairing and reinforcing homes to keep mice out.

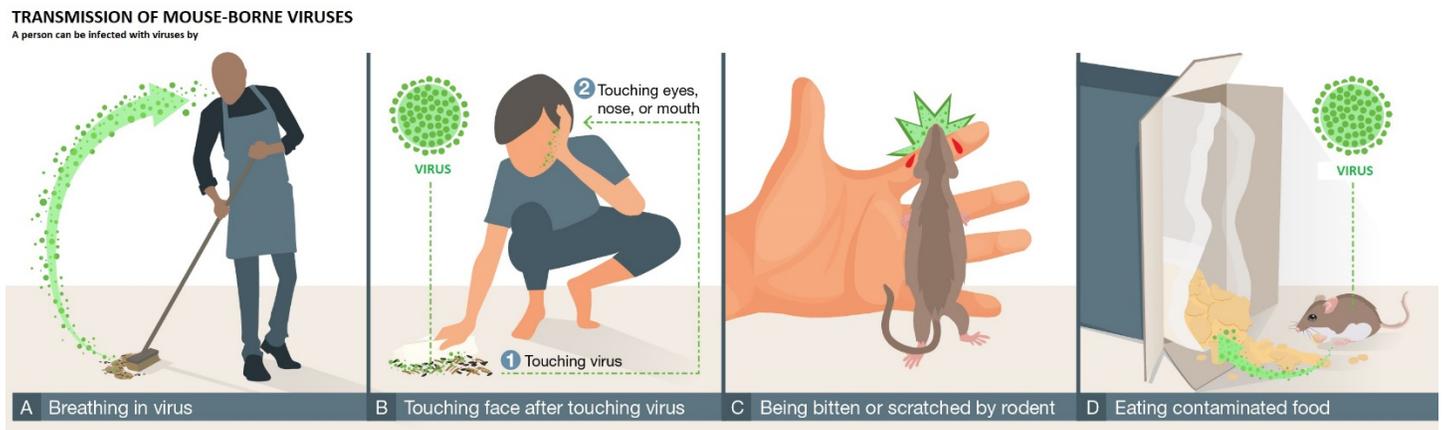
MICE AND THE RISKS TO YOUR HEALTH

It is important to keep mice out of your home because they can carry diseases that are harmful to you and your family, including Hantavirus Pulmonary Syndrome (HPS), a severe, sometimes fatal, respiratory disease in humans caused by infection with hantaviruses. Most diseases carried by mice are rare, but do occur in all regions of the United States, including the southwest.

Infestation of mice in an around the home is the main reason disease is spread from mice to humans. Even healthy people can become sick if they come in contact with mice infected with certain diseases.

Disease can spread from mice to people by:

- Breathing in air contaminated with fresh urine, droppings, or nesting materials from an infected mouse.
- Touching contaminated mouse urine, droppings, or nesting material and then touching eye, nose, or mouth.
- Being bitten or scratched by an infected mouse.
- Eating food contaminated by urine, droppings, or saliva from infected mice.



Many diseases do not cause any apparent illness in mice, so you cannot determine whether a mouse is carrying a disease just by looking at it. Therefore, avoid all wild mice and safely clean up any mouse urine, droppings, or nests in your home.

THE DEER MOUSE

The deer mouse, found throughout North America, is the most common mouse found in the southwestern United States. It prefers woodlands, but is also present in desert areas. The head and body of the deer mouse measure approximately 2-3 inches long, with a tail that adds 2-3 inches. The deer mouse ranges in color from grey to reddish brown, depending on age. The underbelly is always white and the tail has clearly defined white sides.



COMMON MOUSE ENTRY POINTS AND SHELTER LOCATIONS

During colder weather, mice are attracted indoors seeking warmth, shelter, food, and water often found in buildings occupied by people. They may also seek shelter in unoccupied buildings, such as cabins or sheds. Warm conditions, like homes, sheds, and other buildings, can lead to the production of large numbers of offspring.

Mice can find their way into buildings through openings as small as ¼-inch in diameter, the same width of a #2 pencil. When food, water, and shelter are available and predators are not present, mice populations continue to increase as long as the resources present allow for survival.

The range for which mice will travel away from their nests in search of food is influenced by a number of factors, including topography, food preference, competition, and availability. While mice prefer grass seed and cereal grains, they also eat most foods consumed by humans and domestic pets.

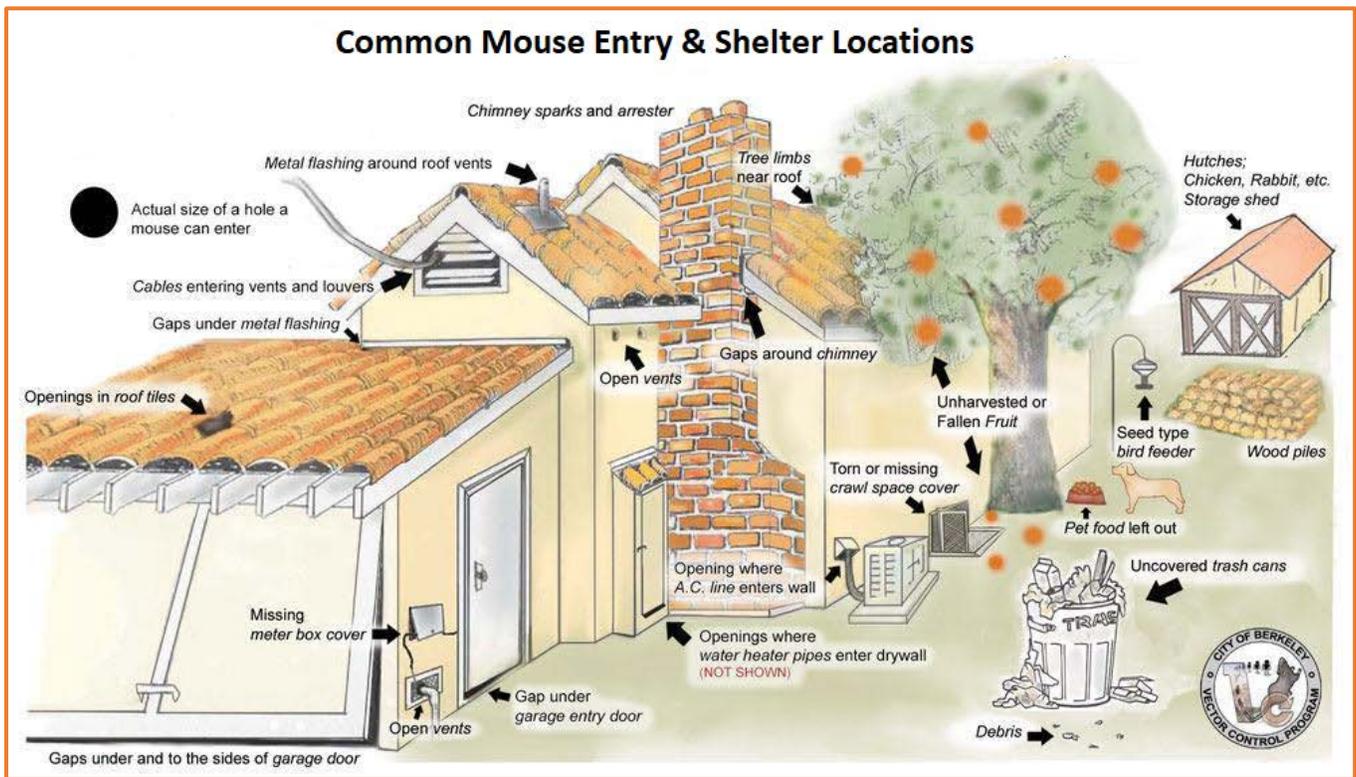


Figure credit: courtesy of the City of Berkeley, CA.

MOUSE CONTROL AROUND YOUR HOME

Cleaning-up in and around your home, effectively setting traps, and successfully sealing up even the smallest entries into your home can remove shelter and food sources for mice. These actions force mice to look somewhere else for conditions that are more favorable for their survival.

Use this manual as a reference guide and refer to it often to help you in your efforts to control mice. Keeping mice out of your home will create a healthy environment for you and your family and improve the well-being of the people in your community.

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RECOMMENDED PRACTICES TO STOP MICE FROM ENTERING YOUR HOME

Mice will try to get inside your home when they smell food or feel warm air. Discourage mice from entering your home by consistently following the recommended practices described in this section.

STORE GARBAGE

Mice look for food and nesting materials in trash lying around. If garbage stays in one place over time, mice might make a nest in it. Mice can easily get into a trash can with a lid that does not fit tightly, or is cracked.

WHAT CAN YOU DO?

- ✿ Choose a thick plastic or metal trash can with a lid that fits tightly.



STORE FOOD

Mice can smell food left out on tables and countertops and will come looking for it. They can chew through plastic or paper packaging to get to foods such as bread, flour, sugar, and rice.

WHAT CAN YOU DO?

- ✿ Cover food right after meals.
- ✿ Place all leftovers in containers with tight fitting lids.
- ✿ Take food out of its original package.
- ✿ Place it in a glass or thick plastic container with a lid.



CLEAN UP AFTER MEALS

Mice can smell even the smallest amount of food. This includes spills in the kitchen, food left on dishes in the sink, and even the grease that builds up on the stove.

WHAT CAN YOU DO?

- ✿ Clean up spills immediately on floors, countertops, appliances, and tables.
- ✿ Wash all dishes soon after use.



STORE PET FOOD

Mice can smell pet food (or leftover food given to pets) and will try to eat it. They can smell pet food through its packaging and will get to it by chewing through the bag or entering through the top of the bag if it is not sealed.

WHAT CAN YOU DO?

- ✿ Remove pet bowl right after your pet eats.
- ✿ Put food at least 30 feet from the house if your pet eats outside.
- ✿ Store pet food in a container with a lid.



STORE HOUSEHOLD ITEMS OFF THE GROUND

Mice will use household items, like blankets and clothes, for a nesting area.

WHAT CAN YOU DO?

- ☼ Store blankets and other household items on shelves or hang them up in closets.



KEEP ALL DOORS AND WINDOWS WITHOUT SCREENS CLOSED

Mice will enter your home through a window or door if there is no screen, or a screen is in place, but not intact.

WHAT CAN YOU DO?

- ☼ Check all windows to see if screens fit tightly or if there are any holes.
- ☼ Fix any broken screens.
- ☼ Install a screen door.
- ☼ Keep doors and windows without a screen closed.



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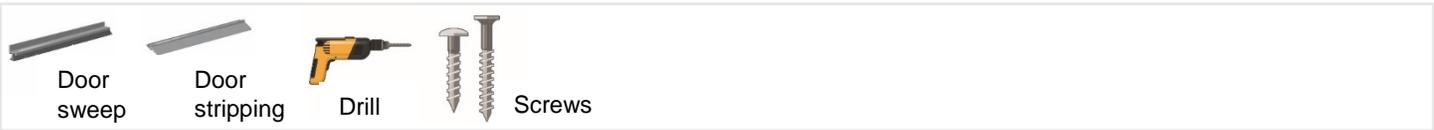
SEAL UP HOLES INSIDE YOUR HOME

Look around the inside of your home for any cracks, holes, and spaces where mice can enter. Follow the step-by-step instructions in this section to learn how you can seal up these spaces on your own.

IMPORTANT: Mice can chew through a seal-up or make new holes. Check seal-ups every month and look for new holes mice can use to get inside your home.

SPACE BETWEEN DOOR AND DOOR FRAME (Space under the door should be less than ¼ inch wide.)

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Install a new door sweep or adjust the old door sweep to reduce space. (*Alternative:* Install weather stripping around the door.)



CRACKS AND HOLES IN WALLS AND DOORS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Fill small holes in inside walls with plaster repair materials or mud.
- ✿ Seal cracks in inside walls and doors with caulk.
- ✿ Paint over the plaster to match the color of the walls.

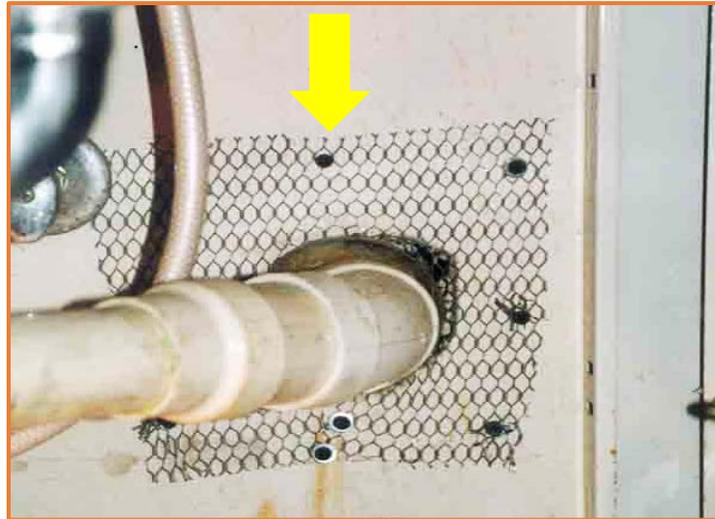


SPACE AROUND WATER PIPES

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- Fill smaller cracks, holes, and spaces around water and drain pipes with caulk.
- If gaps are large, cut a piece of hardware cloth to cover the open spaces around the pipe and attach with screws.



SPACE AROUND FURNACE VENTS AND SERVICE LINES

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- Cut a small piece of lathe metal to fit around the vent and attach with screws.
- Caulk around furnace line. (Alternative: Cut a small piece of lathe metal and push it into the space around the line.)



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TRAP MICE AROUND YOUR HOME

Even after you have sealed up your home, mice may still get in.

If you see evidence of mice in your home, first check inside and outside your home to see how they got inside. Next, follow the detailed instructions in this section to set snap traps throughout your home to catch any mice that may still be inside. Also, learn safe methods for throwing away dead mice caught in traps. Finally, once there are no longer mice inside your home, follow the step-by-step instructions in this manual to fix any holes or cracks you find both inside and outside your home.

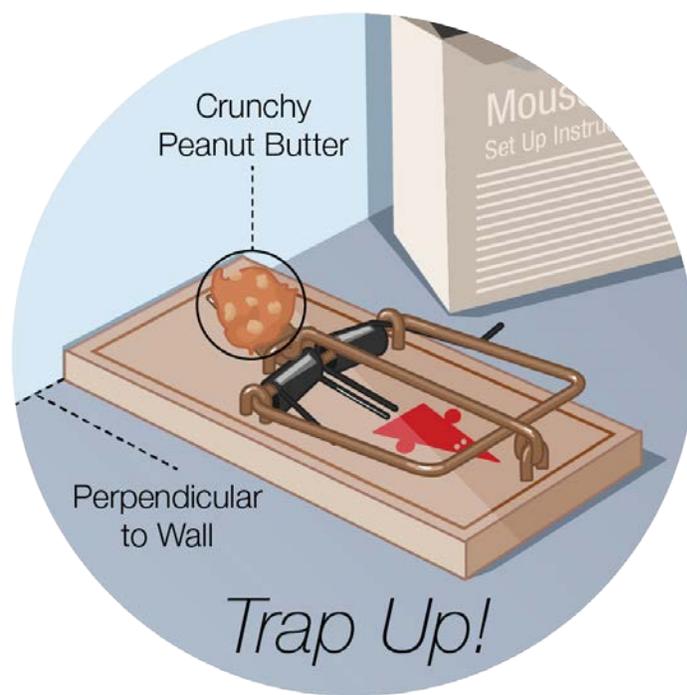
SET TRAPS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



Always keep traps and bait out of reach of children and pets. **DO NOT USE** glue or live traps. These traps can scare mice and cause them to urinate, increasing your risk of getting sick.

- ✿ Choose the right trap. Traps made for catching mice are smaller.
- ✿ Place a pea size amount of bait (peanut butter works well) on the bait pedal on the snap trap.
- ✿ Set snap trap following instructions on the box.
- ✿ Place snap trap where you have seen mice, nests, urine, droppings, or nibbled food.
- ✿ If placing traps on the floor, place baited end of trap against the wall to form a “T” with the wall.



CHOOSING THE RIGHT DISINFECTANT

When cleaning up mice or their urine, droppings, or nesting materials, choose one of the following cleaning solutions.

1. **A bleach and water solution:** In a spray bottle, mix 1.5 cups bleach to 1 gallon of water.



2. **A general-purpose household disinfectant** (ensure the word “disinfectant” is written on the label).

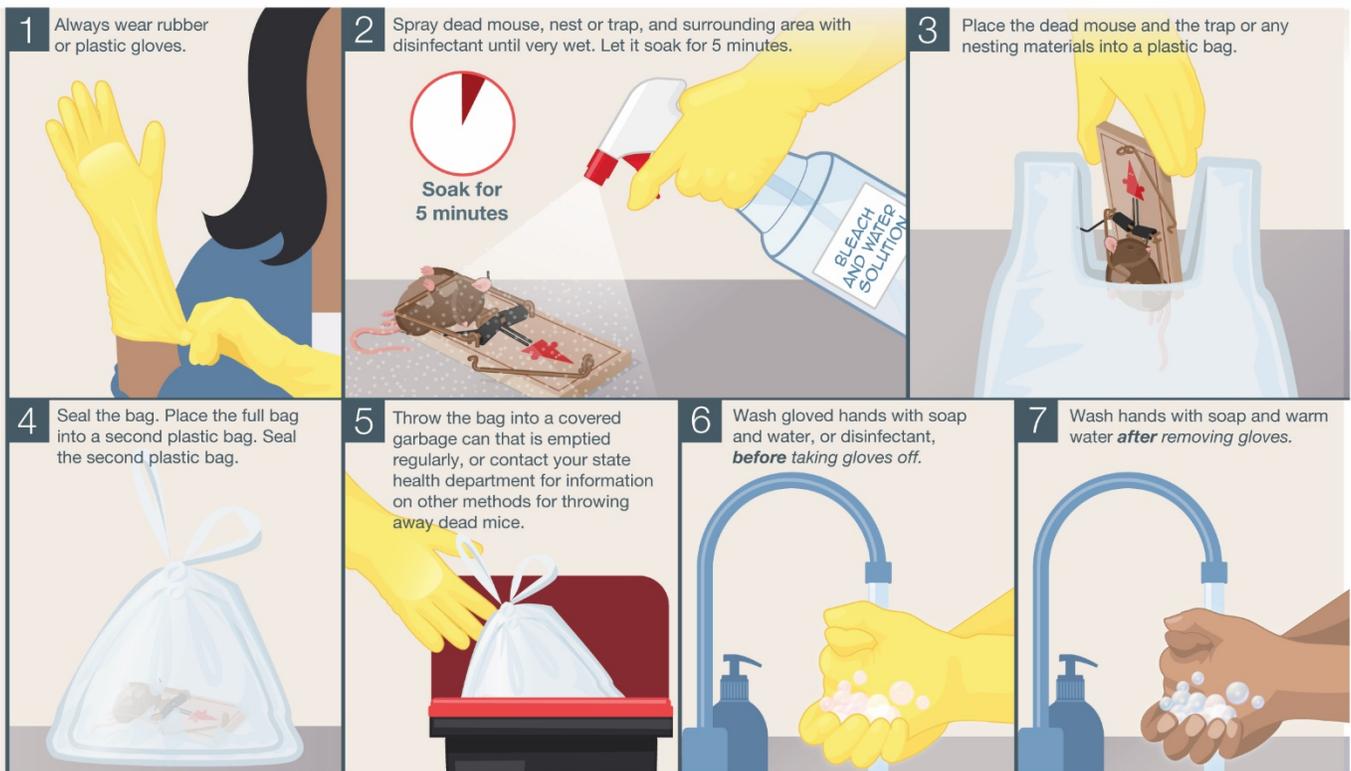
REMOVE MICE FROM TRAPS SAFELY

MATERIALS YOU MAY NEED FOR THIS PROJECT:



Follow these steps to remove mice from snap traps safely. Always use insect repellent (containing DEET) on clothing, shoes, and hands to reduce the risk of fleabites while cleaning up dead mice.

HOW TO: CLEAN UP A DEAD MOUSE IN A SNAP TRAP OR NEST



IF YOU PLAN TO REUSE THE TRAP...

Submerge the trap with the mouse in a bleach solution or disinfectant (using a bucket) for 5 minutes. Remove the mouse from the trap by holding the trap over the plastic bag and lifting the bar. Let the mouse drop in the bag. Rinse the trap well with water to remove the scent of the disinfectant and let it dry completely.

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CLEAN UP AFTER MICE

Mice and their urine, droppings, and nesting materials can carry viruses that can cause disease in people.

Follow the recommendations in this section to clean up mice urine, droppings, and nesting materials safely in your home to protect you and your family.

CLEAN UP MICE URINE, DROPPINGS, AND NESTING MATERIALS SAFELY

MATERIALS YOU MAY NEED FOR THIS PROJECT:



If you discover mice in or around your home or vehicle, it is important to clean up all urine, droppings, and nesting materials. **Do NOT sweep or vacuum up** mouse urine, droppings, or nests as this can increase your risk of inhaling harmful viruses.

Follow these steps to clean up safely mice urine, droppings and nesting materials. Before you begin cleaning, ALWAYS use a preferred disinfectant described on page 18.

HOW TO: CLEAN UP MOUSE URINE AND DROPPINGS



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RECOMMENDED PRACTICES TO REDUCE THE NUMBER OF MICE OUTSIDE YOUR HOME

Mice will look for food and nesting materials around the outside of your home, increasing the likelihood that they will make their way inside your home.

Follow these recommended practices in this section to reduce the areas around your home that are inviting to mice, which can reduce the number of mice entering your home.

CLEAR AROUND YOUR HOME

Mice will look for food and nesting materials in trash and unused items around the outside of your home. Old appliances, furniture, boxes, or woodpiles found around the outside of your home are inviting shelters for mice.

In addition, mice will drink out of anything that holds water, including old tires, cans, and buckets that are left outside your home.

WHAT CAN YOU DO?

- ✿ Keep area around your house clean
- ✿ Keep trash off the ground.
- ✿ Put trash in metal or thick plastic cans with tight fitting lids. (Consider raising trash cans to keep mice out.)
- ✿ Dispose of unused items (including those that can hold water) or move them at least 30 feet away from your home.
- ✿ Move woodpiles at least 30 feet away from your home. (Consider raising woodpiles off the ground.)
- ✿ Cut tree branch limbs at least 18 inches away from your home.



MANAGE ABANDONED VEHICLES

Mice will make nests in abandoned vehicles. When abandoned vehicles are parked too close to your home, mice will try to find their way inside seeking warmth, food, and shelter.

WHAT CAN YOU DO?

- Dispose of abandoned vehicles or move them more than 100 feet from your home.

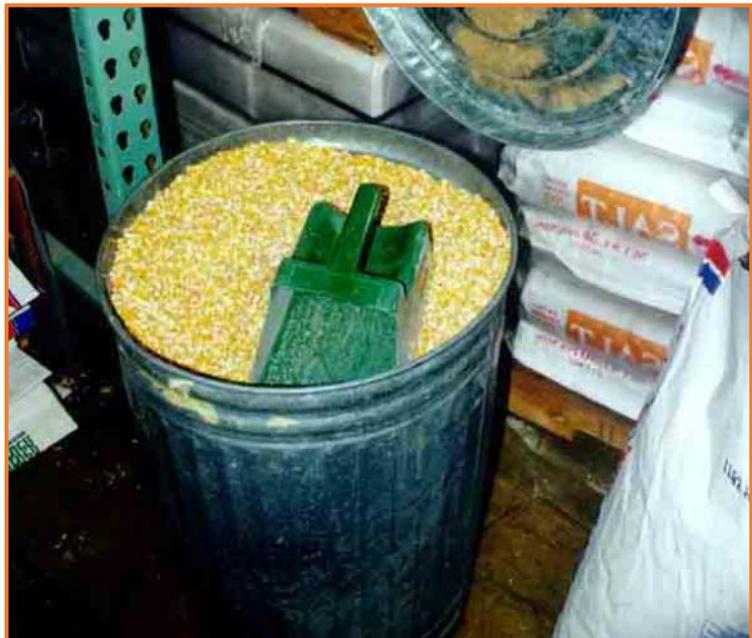


STORE ANIMAL FEED

Mice will eat animal feed and make nests near where the animals feed is stored.

WHAT CAN YOU DO?

- Store animal feed in metal or thick plastic containers with tight fitting lids.
- Keep animal feed storage at least 30 feet from your home.



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SEAL UP HOLES OUTSIDE YOUR HOME

Mice can easily find their way into your home through cracks, holes, and spaces commonly found in most homes.

Follow the step-by-step instructions found in this section and learn how you can seal up these entry points to keep mice out of your home, creating a healthy environment for you and your family.

SEAL OUTSIDE WALLS

MATERIALS YOU MAY NEED FOR THIS PROJECT:

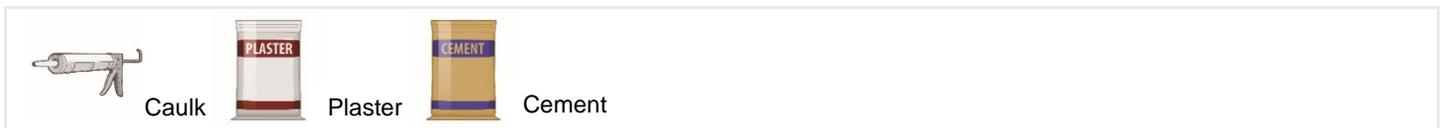


- ✿ Cut a patch of galvanized sheet metal, lathe metal, or ¼-inch hardware cloth and attach it over the hole with screws.
- ✿ Seal the open mesh of the lathe metal or hardware cloth with caulking or plaster.
- ✿ Seal space around chimney with chimney flashing (designed to prevent scorching).
(Alternative: place ¼-inch hardware cloth or galvanized sheet metal around the chimney.)



SEAL AROUND ROOF AREAS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Use caulk, plaster, or cement to fill all cracks, holes, and spaces around your roof.



SEAL THE FOUNDATION

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- Pull out all loose stones or broken cement.
- Push compressed lathe metal into the space.
- Seal with cement patching, if needed.



SEAL UP BURROWS AROUND YOUR FOUNDATION

Mice may be living inside your foundation. Refer to the “Trapping Mice” section of this manual and set traps around the hole for three consecutive days before sealing up holes. Check traps daily and remove any dead animals. Remove the traps on the third day and seal the hole following the steps above.

SEAL FOUNDATION AND ATTIC SCREENS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- Cover foundation and attic vents with 16-19 gauge hardware cloth with a ¼-inch mesh size. Attach with screws. (Alternative: Replace weak or broken frames or doors of foundation and attic vents.)



SEAL BROKEN WINDOWS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Cut a piece of 1/8 inch thick glass or acrylic plastic window sized to fit over the broken part of the window.
- ✿ Apply adhesive and place over broken part of window.
- ✿ Fill spaces and holes around window frame with caulk.



WINDOW SCREENS

Replace torn window screens or cover missing windows or screens by attaching ¼-inch hardware cloth over window opening with screws.

SEAL SPACE AROUND UTILITY LINES, WATER PIPES, AND PROPANE GAS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ If the space is large, push compressed lathe metal into the space.
- ✿ Fill the space with caulk.



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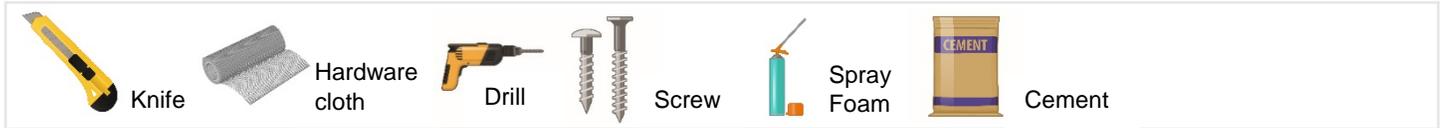
SEAL UP HOGANS, LOG HOMES, AND TRAILERS

Similar to other buildings, mice can enter hogans, log homes, and trailers through cracks, holes, and spaces found around the outside.

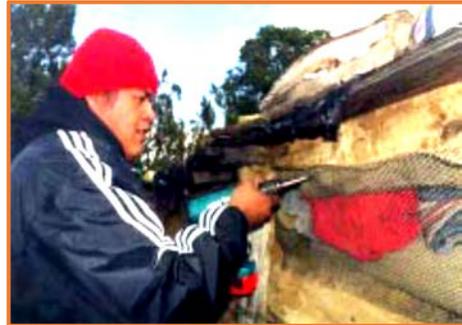
Follow the recommendations in this section to learn how you can seal up the entry points specific to hogans, log homes, and trailers to keep mice out, providing a healthy environment for you and your family.

SEAL LARGE SPACES IN LOG HOMES

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Place a patch of ¼-inch mesh hardware cloth over the space and attach with screws.
- ✿ Fill spaces between logs with expandable foam (optional). Once foam has fully expanded, trim it flush.
- ✿ Cover hardware cloth and foam with mud or cement.



SEAL SMALLER SPACES IN LOG HOMES

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Cracks: Fill the area completely with caulk, cement, or plaster.
- ✿ Holes: Push compressed lathe metal into the hole. Then cover with mortar, plaster, caulking, or mud.



SEAL HOLES AGAINST TRAILER SKIRTING

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Dig a trench 2-inches deep and 7-inches wide around the entire trailer skirting.
- ✿ Cut a 14-inch strip of 16-19 gauge hardware cloth. Bend it the long way in a “L” shape.
- ✿ Attach one side of the “L” to the trailers skirting with screws or flashing. Ensure there are no gaps that could allow a mouse to enter between the hardware cloth and trailer skirting.
- ✿ Place the other side of the “L” in the bottom of the 2-inch deep trench.
- ✿ Fill the trench with dirt.



TRAP ANIMALS BEFORE SEALING UP HOLE

Mice may be living inside your foundation. Reference the “Trapping Mice” section of this manual and set traps around the hole for three consecutive days before sealing up holes. Check traps daily and remove any dead animals. Remove the traps on the third day and seal the hole following the steps above.

SEAL GAPS IN CINDERBLOCK TRAILER SKIRTINGS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- Fill gap completely with caulk, cement, or plaster.



SEAL GAPS IN METAL TRAILER SKIRTING AND TRIM

MATERIALS YOU MAY NEED FOR THIS PROJECT:

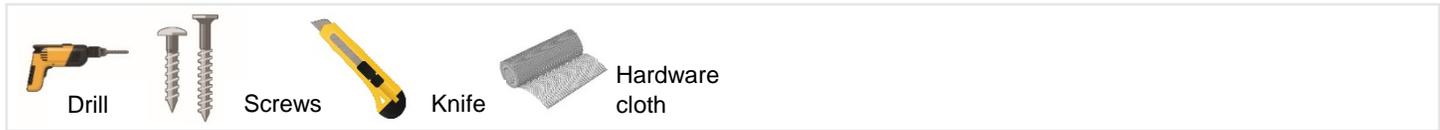


- Join loose edges of skirting panels together with screws. (*Alternative: Use a patch of sheet metal or ¼-inch hardware cloth over gap and attach with screws.*)
- Reattach trim to the exterior trailer wall using screws. (*Alternative: Fill any holes or spaces with caulk.*)



SEAL SPACE AROUND TRAILER TONGUE

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Cut patches of ¼-inch hardware cloth to fit existing holes.
- ✿ Screw edges of patches to the trailer tongue and trailer skirting.



SEAL SPACES IN WATER HEATER CLOSETS

MATERIALS YOU MAY NEED FOR THIS PROJECT:



- ✿ Fill spaces around wires and pipes with caulk, hardware cloth, or galvanized sheet metal.
- ✿ Place metal flashing or ¼-inch mesh hardware cloth over spaces around exhaust vent. Attach to the wall using screws.
- ✿ Install metal weather stripping along the top, sides, and bottom of the door.



CONTACT THE FOLLOWING GROUPS TO LEARN MORE ABOUT HANTAVIRUS AND HOW YOU CAN PROTECT YOURSELF AND YOUR FAMILY

- ☼ Navajo Epidemiology Center; 928-871-6539; www.nec.navajo-nsn.gov
- ☼ Navajo Department of Health; 928-871-6350; www.nndoh.org
- ☼ Navajo Office of Environmental Health; 928-871-6349
- ☼ Navajo Community Health Representatives; 928-871-6786
- ☼ Navajo Public Health Emergency Preparedness; 928-871-7954
- ☼ Navajo Health Education Program; 928-871-6612
- ☼ Navajo Animal Control Program; 928-871-7066; www.nndfw.org
- ☼ Navajo Veterinary and Livestock Program; 505-371-5214
- ☼ Navajo Area Indian Health Service – Executive Office; 928-871-5811; www.ihs.gov/navajo
- ☼ Navajo Area Indian Health Service – Environmental Health Office; 928-871-5855
- ☼ Arizona Department of Health Services – Office of Infectious Disease Services; 602-364-3676; www.azdhs.gov
- ☼ New Mexico Department of Health – Infectious Disease Bureau; 505-827-0006; nmhealth.org
- ☼ Utah Department of Health; 435-359-0038; health.utah.gov
- ☼ Centers for Disease Control and Prevention; www.cdc.gov



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