

References

www.cdc.gov
 www.health.state.mn.us
 www.mayoclinic.com
 www.niaid.nih.gov

Infectious Diseases Childcare & Schools Manual 6th Edition - Prepared by Hennepin County Human Services and Public Health Department - Epidemiology www.co.hennepin.mn.us

For more information about bedbugs, refer to University of Minnesota's Extension Office website www.extension.umn.edu/ (in the search box type: bed bugs).

Managing Pests in Landscapes and Homes Produced by the Minnesota Department of Agriculture <http://www.mda.state.mn.us/>

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Protecting yourself and your clients
Infections, Diseases, and
Cleanliness

Otter Tail County
Public Health



Public Health
 Prevent. Promote. Protect.

Mission: To protect, maintain, and improve the health of the people in Otter Tail County.

Remember: You don't always know the immune systems of the individuals you visit. Protect them!

General information

- Control germs effectively by frequent, thorough handwashing; cleaning and disinfecting surfaces and objects that come into contact with children; and proper handling and disposal of contaminated items.
- Follow proper cleaning and disinfecting practices whether dirt is seen or not. Germs can live on wet and dry surfaces and on those items that do not look soiled or dirty.
- Increase the frequency of cleaning and disinfecting to control certain communicable diseases (i.e. Flu Season).
- Treat all body fluids as infectious because disease-causing germs can be present even in the absence of illness.
- Know that children who do not show symptoms of illness may be as infectious as those children who do have symptoms.

Cleaning Mechanical process (scrubbing) using soap or detergent and water to remove dirt, debris, and many germs. It also removes invisible debris that interferes with disinfection.

Sanitizing Chemical process of reducing the number of disease-causing germs on cleaned surfaces to a safe level. This term is usually used in reference to food contact surfaces or mouthed toys or objects.

Disinfecting Chemical process that uses specific products to destroy harmful germs (except bacterial spores) on environmental surfaces.

When using cleaning, sanitizing, or disinfecting products ALWAYS:

- Consider the safety of yourself and others.
- Choose a product appropriate for the task.
- Follow the label instructions for mixing, using, and storing solutions.
- Read the warning labels.
- Store these products safely out of reach of children.
- Clean soiled surfaces and items before using sanitizers or disinfectants.



MICE and RATS in Houses

Mice and rats are very common household pests. Rodents in the house can be identified by sites, sounds, and even smells. Keep your eyes and ears open for:

- Small black droppings at the back of drawers, on counter tops, and near food.
- Trails of urine, which dries and leaves sticky, greasy stains.
- The sounds of scratching or chewing inside walls or around boxes.
- Fabric or furniture with large holes, or clumps of string, stuffing, and soft fabric shoved into a corner.
- Piles of food in corners or under objects.
- Mice can also give off a musky odor.

Prevention

Proper sanitation in the house is very important. Make sure all food is kept in sealed containers, not left on the floor in bags that are easily chewed through. If you have rodents and pets you may need to put the pet food out only at certain times and not let it sit out all day or overnight.

Management Strategies

Once you've discovered a rodent problem, take action quickly. The two main methods of control are trapping and rodenticide. Both of these methods should be used in combination with prevention and sanitation methods.

Trapping can be done with various snap traps, glue boards and live catch traps. Often, a combination is more effective than just one type. If trapping proves ineffective you may want to consider a rodenticide. Before buying, and again before using any pesticide, read the label carefully. Be sure the product is intended for household use. The label is the final authority on how any pesticide may legally be used.

Managing Pests in Landscapes and Homes Produced by the Minnesota Department of Agriculture <http://www.mda.state.mn.us/>

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

ANTS

Importance: Ants infest and contaminate food products while some species nest in wood and can damage buildings. Ants are often a nuisance just by their presence, especially if they occur in large numbers.

Ants can nest in homes behind baseboards, under countertops, and similar spaces.

Prevention and Nonchemical Management

You can help keep ants out by sealing obvious cracks and spaces along the building's exterior. Prevent ants from invading by storing food in insect-proof containers with tight-fitting covers. Take garbage out regularly in closed plastic bags. Vacuum and sweep regularly to remove food. Clean all kitchen surfaces regularly. Wash dishes, pans, and utensils soon after they are used. Rinse recyclable containers before storage.

When you encounter an ant problem, the first step in their management is identification as different ants are treated differently. Contact an expert if you need help to identify it. In Minnesota, the most common ants in and around homes are carpenter ants, pavement ants, cornfield ants, pharaoh ants, thief ants, and field ants.

Vacuuming ants (including winged ants) can be effective for ants found inside. Throw away vacuum cleaner bags to prevent the ants from crawling back out.

Use baits (e.g. products containing abamectin) boric acid, fipronil, or sodium tetraborate) and place where you see ant activity. Baits are slow acting and need time to work. Do not spray insecticides when using baits. If one bait does not seem to work, consider using a different type.

When the nest is concealed, e.g. behind a wall, it may be necessary to drill small holes and apply an insecticidal dust, such as products containing deltamethrin or permethrin.

Spraying foraging ants is not recommended.

The effect of insecticides is only temporary and has very little, if any, impact on the nest.

If at any time you wish to have professional help or an ant problem becomes difficult to control, contact a pest control service.

HAND WASHING

Hand Washing plays a major role in preventing the spread of diseases. Washing your hands regularly with soap and water can protect you from many illnesses caused by viruses and bacteria. Washing removes germs you pick up when you touch people, animals, or surfaces. If not removed, these germs may get into your eyes, nose, or mouth and cause illness.

How to Wash

The following procedure will remove up to 99.9 percent of the germs that get on your hands during the course of daily activities:

- Wet your hands with clean water
- Apply soap
- Rub your hands together vigorously and scrub all surfaces
- Scrub for 20 seconds (sing Happy Birthday twice)
- Rinse with clean water
- Turn off the faucet with a paper towel
- Dry hands briskly
- Open door handle with paper towel if possible



Alcohol Based Hand Sanitizers

- Effective when directions are followed
- Can be used when dirt is not visible

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

CLEANING, SANITIZING, AND DISINFECTION

Cleaning

- Use warm/hot water with any household soap or detergent.
- Scrub vigorously to remove dirt and soil. Use a brush if item is not smooth or has hard to reach corners, such as toys.
- Change water when it looks or feels dirty, after cleaning bathrooms and diaper changing area, and after cleaning the kitchen.
- Always clean the least dirty items and surfaces first (for example, countertops before floors, sinks before toilets).
- Always clean high surfaces first, then low surfaces.
- Disposable towels are preferred for cleaning. If using reusable cloths/rags, launder between cleaning uses. DO NOT use sponges since they are hard to clean.
- Clean completely on a regular schedule and spot clean as needed.

Disinfecting - Surfaces or objects that will NOT have contact with the mouth or food

1. Clean first with soap or detergent and water.
2. Rinse.
3. Spray the area thoroughly with **bleach solution 1 or another appropriate disinfecting product**.
4. Wipe the area to distribute the disinfectant evenly using single-service, disposable paper towels.
5. Discard paper towels in a plastic-lined container.
6. Allow surface to air dry.
7. Wash your hands.

Sanitizing - Surfaces that come in contact with food or are put into the mouth

1. Clean first with soap or detergent and water.
2. Rinse.
3. Spray the area thoroughly with **bleach solution 2 or another appropriate sanitizing product**.
4. Wipe the area to evenly distribute the sanitizer using single-service, disposable paper towels.
5. Discard paper towels in a plastic-lined container.
6. Allow to air dry.

Bleach (Sodium hypochlorite) solutions of differing concentrations can be used for sanitizing and disinfecting. You can prepare your own bleach solutions by mixing specified amounts of household bleach and water or you can purchase commercially prepared bleach-containing products. Bleach is safe when used as directed, is effective against germs when used at the proper concentration, is inexpensive if you make your own solutions, and is readily available. However,

- 1. Identify and Fix the Moisture Problem** - the most important step in solving a mold problem is to identify and correct the moisture source(s) that allowed the growth in the first place.
- 2. Begin Drying All Wet Materials** - as soon as possible after becoming wet. For severe moisture problems, use fans and dehumidifiers and move wet items away from walls and off floors.
- 3. Remove and Dispose of Mold Contaminated Materials** - items which have absorbed moisture (porous materials) and which have mold growing on them need to be removed, bagged and thrown out. Such materials may include sheet rock, insulation, plaster, carpet/carpet pad, ceiling tiles, wood products (other than solid wood), and paper products. Likewise, any such porous materials that have contacted sewage should also be bagged and thrown away. Non-porous materials with surface mold growth may be saved if they are cleaned well and kept dry.
 - Take Steps to Protect Yourself** - rubber gloves, eye goggles, outer clothing (long sleeves and long pants) that can be easily removed in the work area and laundered or discarded, and an N95 or a N100 type disposable respirator.
 - Take Steps to Protect Others** - plan and perform all work to minimize the amount of dust generated.
- 4. Clean Surfaces** - surface mold growing on non-porous or semi-porous materials such as hard plastic, concrete, glass, metal, and solid wood can usually be cleaned.
 - Thoroughly scrub all contaminated surfaces using a stiff brush, hot water and a non-ammonia soap/ detergent or commercial cleaner.
 - Collect excess cleaning liquid with a wet/dry vacuum, mop or sponge
 - Rinse area with clean water and collect excess rinse water.
- 5. Disinfect Surfaces (if desired)** - after cleaning has removed all visible mold and other soiling from contaminated surfaces, a disinfectant may be used to kill mold missed by the cleaning. In the case of sewage contamination, disinfection is strongly suggested--contact the Minnesota Department of Health for appropriate advice.
 - Mix 1/4 to 1/2 cup bleach per gallon of water and apply to surfaces where mold growth was visible before cleaning. Apply the solution with a sponge or by other methods that do not over saturate or flood the surface area.
 - Collect any run-off of bleach solution with a clean and filtered wet/dry vacuum, sponge or mop. Do not rinse or wipe the bleach solution off the areas being treated -- allow it to dry on the surface.
- 6. Remain on MOLD ALERT** - Continue looking for signs of moisture problems or return of mold growth. Be particularly alert to moisture in areas of past growth. If mold returns, repeat cleaning steps and consider using a stronger solution to disinfect the area again. Regrowth may signal that the material should be removed or that moisture is not yet controlled.

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

MOLD

Mold is a type of fungus that is present in our natural environment. Excess moisture is the critical factor in any indoor mold problem. Eventually, the moisture and mold will damage what it is growing on, which may include both the building materials and personal belongings. The key to preventing mold growth is to prevent moisture problems.

What are the health concerns? Health effects from exposure to mold can vary greatly depending on the person and the amount of mold in their home. The type of health symptoms that may occur include coughing, wheezing, nasal and throat conditions. People with asthma or allergies who are sensitive to mold may notice their asthma or allergy symptoms worsen. Individuals with severely weakened immune system who are exposed to moldy environments are at risk of developing serious fungal respiratory infections.

How do I tell if I have a mold problem?

- Look for visible mold growth (may appear cottony, velvety, granular, or leathery and have varied colors of white, gray, brown, black, yellow, green). Mold often appears as discoloration, staining, or fuzzy growth on the surface of building materials or furnishings. When mold is visible, testing is not recommended.
- Search areas with noticeable mold odors.
- Look for signs of excess moisture or water damage. Look for water leaks, standing water, water stains, and condensation problems (i.e. watermarks or discoloration on walls, ceilings, carpet, woodwork or other building materials).
- Search behind and underneath materials carpet and pad, wallpaper, vinyl flooring, sink cabinets, furniture, or stored items (especially things placed near outside walls or on cold floors). Sometimes destructive techniques may be needed to inspect and clean enclosed spaces where mold and moisture are hidden.

Should I test for mold?

The Minnesota Department of Health does not recommend testing for mold. Instead, you should simply assume there is a problem whenever you see mold or smell mold odors.

Mold Clean-up and Removal To clean up and remove indoor mold growth, follow steps 1-6 as they apply to your home.

bleach is corrosive to metals and can strip floor wax, is ineffective in the presence of body fluids and soil (you must always clean first), is unstable when mixed with water (needs to be made fresh daily), and can be dangerous if mixed with other products.

Never mix bleach with ammonia -- toxic chlorine gas may result.

Bleach Solution 1 (800 ppm) Use for hard surfaces		Bleach Solution 2 (200 ppm) Use for mouthed toys and food contact surfaces	
Water	Bleach 6.0 – 6.25%	Water	Bleach 6.0 – 6.25%
1 gallon (16 cups)	¼ Cup	1 gallon (128 ounces)	2 Teaspoons
1 quart (4 cups)	1 Tablespoon	1 quart (32 ounces)	¾ Teaspoon
1 pint (2 cups)	1 ½ Teaspoons	1 pint (16 ounces)	3/8 Teaspoon

Blood and body fluid spills or soiling

1. Wear a disposable medical glove for any blood and body fluid cleanup.
2. Use disposable towels to **ALWAYS clean objects and surfaces contaminated with blood and body fluids (stool, urine, vomit)** and discard in a plastic-lined, covered waste container.
3. Scrub the area with soap or detergent and water to remove blood or body fluids and discard paper towels. Rinse the area with clean water.
4. **Disinfect immediately** using **bleach solution 1 or another appropriate disinfecting product** on any items and surfaces contaminated with blood and body fluids (stool, urine, vomit).

5. Allow surface to air dry.
6. Discard disposable gloves. If using utility gloves, follow cleaning/disinfecting procedure.
7. Wash hands immediately.

Washable items like linens, towels, bedding

1. Use hot water in a **washing machine**. This is acceptable for soaking, cleaning, sanitizing, and disinfecting washable articles.
2. Read the label on the laundry detergent.
3. **Read the label and follow directions exactly if using bleach.**
4. Dry items in a dryer on high heat.

General Information

Cleaning Sanitizing Disinfection

Products Gloves Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory Bloodborne

Mold

Ants Mice/Rats

OTHER CLEANING PRODUCTS

Check label or manufacturer's instructions for the following:

EPA-registered (Environmental Protection Agency)

Clearly labeled with directions for mixing and use

Effective with a 10 minute or less contact time

Safe to use on food surfaces

Effective against *Staphylococcus aureus*, *Salmonella choleraesuis*, *Pseudomonas aeruginosa*

Green Cleaning Products

There has been an increased interest in using "green" cleaning products. This interest is twofold: first is due to reports about increased allergies, sensitivities and illness associated with chemical toxins in the environment and second, these products tend to cause less damage to the environment. Green cleaning products can be used, but must be approved by the EPA.

GLOVE USE

- Wear disposable gloves (consider using non-latex gloves as a first choice) when:
 - Handling blood (e.g., nosebleeds, cuts) or items, surfaces, or clothing soiled by blood or body fluids.
 - Covering open cuts, sores, or cracked skin.
 - Cleaning bathrooms, diapering areas, or any areas contaminated with stool, vomit, or urine.
- Remove gloves properly and discard after each use.
- **ALWAYS WASH HANDS IMMEDIATELY** when gloves are removed. Also wash hands when there has been contact with any body fluids. Follow handwashing and gloving procedures.
- Use non-latex gloves when touching people or food whenever possible.

BLOODBORNE PATHOGENS (INFECTIONS)

Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS), Hepatitis B

Standard Precautions combine the major features of Universal Precautions (UP) and Body Substance Isolation (BSI) and are based on the principle that **all blood, body fluids, secretions, excretions except sweat, nonintact skin, and mucous membranes may contain transmissible infectious agents** (e.g., urine, stool, secretions from the nose and mouth, drainage from sores or eyes). Standard Precautions include a group of infection prevention practices that apply to all, regardless of suspected or confirmed infection status, in any setting. These include: hand hygiene; use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; and safe injection practices. Also, equipment or items in the environment likely to have been contaminated with infectious body fluids must be handled in a manner to prevent transmission of infectious agents (e.g., wear gloves for direct contact, contain heavily soiled equipment, properly clean and disinfect or sterilize reusable equipment before used again).

One aspect of standard precautions is the use of barriers. The purpose of using barriers is to reduce the spread of germs to staff and children from known/unknown sources of infections and prevent a person with open cuts, sores, or cracked skin (non-intact skin) and their eyes, nose, or mouth (mucous membranes) from having contact with another person's blood or body fluids.

Examples of barriers that would be used include:

- Gloves (preferably non-latex) when hands are likely to be soiled with blood or body fluids.
- CPR (cardiopulmonary resuscitation) barriers – CPR mask or shield.

Other examples that most likely would not be needed are:

- Eye protection and face mask when the face is likely to be splattered with another's blood or body fluid.
- Gowns when clothing likely to be splattered with another's blood or body fluid.

Proper use of safety needle/sharp devices and proper disposal of used needles and sharps are also part of standard precautions. ***Report Needle Sticks!!**

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

RESPIRATORY (AIRBORNE) INFECTIONS

Cold, Influenza, Tuberculosis, respiratory syncytial virus (RSV), and Severe Acute Respiratory Syndrome (SARS), Chicken Pox, Pneumonia, Pertussis

SPREAD: When a person with a respiratory illness coughs or sneezes tiny droplets with the virus into the air, and another person breathes them in. By touching the secretions from the nose and mouth of an infected person and also by touching hands, tissues, or other items soiled with these secretions and then touching your eyes, nose, or mouth.

Thorough handwashing is the best way to prevent spread of communicable diseases.

How do I stop the spread of germs if I am sick?

- Cover your nose and mouth with a tissue every time you cough or sneeze. Throw the used tissue in a waste basket.
- Sneeze or cough into your sleeve if you do not have a tissue.
- Clean your hands with soap and water or an alcohol-based hand rub immediately after coughing or sneezing.
- Stay home when you are sick.
- Do not share eating utensils, drinking glasses, towels or other personal items.
- Clean and disinfect surfaces and objects that could be contaminated by the ill person.

How can I stay healthy?

- Clean your hands often with soap and water or an alcohol-based hand rub.
- Avoid touching your eyes, nose, or mouth.
- Avoid close contact with people who are sick, if possible.
- Get vaccinated! Influenza (flu), pneumococcal (pneumonia), and pertussis (whooping cough) vaccines can prevent some serious respiratory illnesses.

Persons exposed to active, infectious Tuberculosis disease should have a TST (Tuberculin Skin Test) performed. If the first TST is negative, another TST may be needed to determine if infection has developed.

IS IT A COLD OR THE FLU?

Symptoms	Cold	Influenza
Fever	Rare	Usual; high (100°F to 102°F; occasionally higher, especially in young children); lasts 3 to 4 days
Headache	Rare	Common
General Aches, Pains	Slight	Usual, often severe
Fatigue, Weakness	Sometimes	Usual, can last up to 2 to 3 weeks
Extreme Exhaustion	Never	Usual, at the beginning of the illness
Stuffy Nose	Common	Sometimes
Sneezing	Usual	Sometimes
Sore Throat	Common	Sometimes
Chest Discomfort, Cough	Mild to Moderate, hacking cough	Common; can become severe
Treatment	Antihistamines Decongestants Nonsteroidal Anti-inflammatory medicines	Antiviral Medicines - see your doctor
Prevention	Wash your hands often Avoid close contact with anyone with a cold	Annual vaccination; antivirals medicines - see your doctor
Complications	Sinus congestion, Middle ear infection Asthma	Bronchitis, pneumonia; can be life threatening

BED BUGS

The presence of bed bugs in hotels, motels, dormitories, apartments, and houses in the United States has increased in the past few years; **however, bed bugs infest only a very small percentage of residences.** The bite of a bed bug has not been shown to spread disease. Bed bugs may be difficult to control without help from a pest control professional. Bed bugs are small (up to 1/4" long) flattened, wingless insects that feed on the blood of people and certain animals. After feeding, the color of a bed bug changes from brown to purplish-red. Bed bugs live close to areas where people sleep, rest, or sit for long periods. Bed bugs move quickly, feed at night, and hide in small spaces (under bed mattresses, in furniture, etc.) during the day.

SYMPTOMS Painless bites typically on the head, neck, arms, hands, or legs. Bites may become irritated and inflamed. Scratching may cause the bites to become infected. Bed bugs feed at night, so you may not be aware that you were bitten, or the bites can be mistaken for bites from another pest (fleas or mosquitoes).

SPREAD Bed bugs do not jump or fly. They quickly crawl to find a human host, feed for less than 5 minutes, and then hide. Bed bugs like to hide in small places; therefore, it is possible that bed bugs will crawl into luggage, beds, or furniture that is being moved from one place to the next. It is also possible for bed bugs to crawl through small spaces between units in a hotel or apartment building. Because bed bugs can survive for many months without feeding, they may already be present and hidden in apartments or homes that appear to not have any bed bugs.

Remember: Bed bugs are not transmitted from person to person. They are not like lice and will not usually travel directly on a person's body. Bed bugs are spread between residences when they hide and are transported in luggage, furniture, or other items.

SIGNS OF BED BUGS

- If you notice bites after sleeping that were not there when you went to bed. Because several different kinds of insects look like bed bugs, carefully compare the bugs with good reference images to confirm their identity. If still unsure about the identity of bugs in the home, contact a pest control expert.
- Look for blood stains from crushed bugs or dark red spots (bed bug fecal material) on bed sheets and mattresses. Cast skins, which are empty shells of bed bugs as they grow from one stage to the next, may be present.
- Look for live, crawling bed bugs – usually found around the seams and in the folds of bed mattresses or in crevices of

CONTAGIOUS PERIOD From the time a person acquires the mites (before rash appears) until 24 hours after treatment begins.

DIAGNOSIS Recommend parents/guardians call their healthcare provider if they suspect scabies in their household members. Skin scrapings should be examined to identify the mites.

TREATMENT The healthcare provider will prescribe a medication, usually a cream or lotion. Permethrin 5% (Elimite*) is the drug of choice. There are several other prescription scabicides. **Directions must be followed carefully.**

- Itching and rash may not go away immediately after treatment. It often takes 2 to 3 weeks for rash and itching to go away.
- It is recommended that household members are treated, particularly those with prolonged direct skin-to-skin contact. Other people to consider for treatment are the babysitter, boyfriend/girlfriend, non-custodial parent.

* Brand names are mentioned for identification purposes only and do not constitute health department endorsement.

PREVENTION/CONTROL

- Wash bedding and towels used in the past 48 hours in hot water and dry in a hot dryer at the time of treatment. Items that cannot be laundered should be sealed in a bag for one week.
- Vacuum upholstered furniture and carpeting.
- DO NOT use insecticide sprays.

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

BED BUG



HEAD LICE

Nits

Adults



SCABIES RASH



SCABIES

Scabies is an infestation caused by tiny mites that burrow and lay eggs under the skin.

SYMPTOMS Rash consisting of pink bumps or tiny blisters and intense itching, which may be more severe at night. Frequently only scratch marks can be seen. Common locations to see the rash are folds of skin between fingers, around wrists and elbows, and armpits. Other areas where rash may appear are knees, waist, thighs, genital area, abdomen, chest, breasts, and lower portion of buttocks. Infants and young children may be infested on head, neck, palms, and soles of feet.

SPREAD By frequent or prolonged direct contact with the skin of a person with scabies (also during sexual contact) or by sharing bedding, towels, or underclothing of a person with scabies. Mites cannot survive off the human body for more than 3 days and cannot reproduce off the body.

the bed frame. In heavier infestations, live bed bugs may be found further away from the bed (window and door frames, electrical boxes, cracks in floors and ceilings, within furniture, behind picture frames on the wall).

PREVENTION

- DO NOT bring infested items into the home. **Carefully** inspect clothing and baggage after traveling. Pay attention to cracks, crevices, seams, and folds of suitcases and luggage.
- Use caution when buying used furniture. Inspect all furniture and avoid buying used bed mattresses and bed frames. Taking free furniture items left by the curb for disposal or behind places of business is not recommended.

CONTROL

After confirming a bed bug infestation in the home, **consult a licensed pest control operator who has experience with bed bugs before beginning any control activities.** (Tenants should contact their property manager or landlord to discuss their respective obligations and to agree on a plan to manage the infestation. Generally, landlords are legally required to contract with a licensed pest control operator.)

- Control plans will be made on a case by case basis; the control plan may include the following activities:
- Reduce clutter to limit the hiding places for bed bugs.
- Thoroughly clean infested rooms - vacuum carpets, upholstered furniture, bed mattresses, bed frames, etc. It may be necessary to move and disassemble furniture during cleaning.
- Wash all bedding and affected clothing in hot water and dry in a hot dryer for at least 20 minutes before using again.
- Caulk or seal all holes in ceilings, walls, and around baseboards.
- Various insecticide (chemicals that kill insects) treatments may be needed.

The insecticides available are commercial products requiring special equipment and training and are not readily available in "over-the-counter" products. **Insecticides should be applied by a licensed pest control operator.**

- DO NOT apply any insecticides to bed mattresses or on bedding or linens.

Work with a certified pest control operator to determine how insecticides will be used and applied in your residence. Insecticide treatments may require you to leave your home for a few hours or even several days. Several treatments may be needed to fully control the problem.

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats

HEAD LICE

Pediculus humanus capitis, a louse. Head lice are very small (less than 1/8" long, about this size [--]), brownish-colored insects that live on human heads and lay their eggs (nits) close to the scalp. The eggs are tiny (about the size of the eye of a small needle) and gray or white in color. Adult lice move fast and do not like light.

SYMPTOMS Itching of the head and neck. Look for: 1) crawling lice in the hair; 2) eggs (nits) glued to the hair, often found behind the ears and at the back of the neck; and 3) scratch marks on the head or back of the neck at the hairline.

SPREAD Lice are spread by head-to-head contact and by sharing personal items such as combs, brushes, barrettes, hats, scarves, jackets, blankets, sheets, pillowcases, stuffed animals, play activity clothes, and hats. Lice do not jump or fly; they crawl and can fall off the head. **Head lice do not live longer than 48 hours off the head.** They only lay their eggs on the head. The eggs do not hatch if they fall off the head. Lice do not spread to or from pets.

TREATMENT AND CONTROL

If you have questions concerning diagnosis and treatment of head lice, call your doctor or public health department. The recommended treatment includes using either a prescription or over-the-counter (OTC) medicated (lice-killing) product. Effective head lice treatments include (1) "Nix," a cream rinse product available OTC which contains permethrin, a synthetic insecticide; (2) many brands of pyrethrin-based shampoo products ("RID", "R&C", "Triple-X", etc.) which are also available OTC; and (3) "Ovide", a prescription drug containing malathion. With all of these products, the lice are usually killed with one treatment; however a second treatment 7 to 10 days later is often necessary to ensure all of the nits are killed. Because there have been reports of treatment failure with the OTC products, when re-treating make sure instructions on the product are being carefully followed or talk to your health care provider. Shampoos containing lindane are no longer the first choice for head lice treatment because of the risk of neurological toxicity associated with lindane.

Alternative Treatments: Many alternatives to OTC or prescription head lice control products have been suggested. Although there is little scientific information to support these methods, successful treatment has been reported using several alternative treatments when conventional treatments haven't worked, or when there is a concern about the toxicity of using head lice control products repeatedly. **The Minnesota Department of Health cannot recommend these treatments without further evidence of their effectiveness.** Some of the treatments being used include applying mayonnaise, oils (vegetable, olive, mineral, etc.), or petroleum jelly (Vaseline) to the head. These materials may suffocate and/or make it hard for the lice to move but do not kill the nits. Some of these products are very difficult to remove from the hair.

How to Remove Nits: Dead nits do not fall off the hair after treatment. Because they are strongly cemented on, they are often difficult to remove. Head lice lay their eggs very close to the scalp, and they hatch within a week -- before the hair grows more than 1/4 inch. Nits found any farther along on the hair shaft than 1/2 inch will have already hatched or been killed during treatment and their removal is not necessary.

- Work in a well lit room or under a bright lamp (using a magnifying glass may help you see the nits)
- Divide the hair into 4 parts and divide each part into 1-inch sections.
- Starting at the scalp, use a metal nit comb, cat flea comb, or your fingernails to comb each hair section individually.
- Use the comb or your fingernail to slide eggs off the hair shaft or use scissors to cut hair shafts that have nits glued to them.
- Remove all nits each time you comb the hair.
- REMEMBER: **it can take at least 2 weeks to get rid of lice.**

CLEAN UP

To keep head lice from returning, you should do the following:

1. Wash clothing worn in the last 3 days (e.g., jackets, hats, scarves, pajamas), bedding, and towels in hot (130 F or higher) water and dry in a hot dryer for at least 20 minutes before using again. Clothing or backpacks that cannot be washed or dried, linens, and stuffed toys can be dry cleaned or sealed in plastic bags for 2 weeks.
2. Clean combs, brushes and similar items by:
 - soaking in the medicated shampoo for 10 minutes, or
 - soaking in a 2% Lysol solution for one hour, or
 - heating in water of at least 130 degrees F for 10 minutes.

Vacuum carpets, upholstered furniture, mattresses, and seats in the car(s) thoroughly. Insecticide sprays are **NOT** recommended because this will expose household members to unnecessary pesticides and most viable lice are found on the head, not in the environment.

General
Information

Cleaning
Sanitizing
Disinfection

Products
Gloves
Cold/Flu

Bed Bugs

Head Lice

Scabies

Respiratory
Bloodborne

Mold

Ants
Mice/Rats