



Protecting Health After a Wildfire

August 24, 2015

In response to the area fires the Northeast Tri County Health District is providing some guidelines for evacuees to consider when returning to their homes to assess damage and begin the cleanup process.

Debris and Ash – Handling and Disposal Issues

The ash from forest fires is relatively nontoxic and similar to ash that might be found in your fireplace. However, ash may contain unknown substances, including chemicals. In particular, ash and debris from burned structures may contain more toxic substances than forest fire ash, because of synthetic and other materials present in homes and buildings. Care should be taken when handling any materials from buildings that are either partially damaged by the fire (i.e., salvageable building materials remaining) or completely destroyed by the fire (i.e., only ash and debris remain). Fire ash may also irritate the skin, especially those with sensitive skin. If ash is inhaled, it can be irritating to the nose and throat and may cause coughing. Exposure to ash in the air can also trigger asthmatic attacks.

- Protective clothing and equipment should be worn to avoid skin contact and inhalation of ash and other disturbed material.
- Wear gloves, long-sleeved shirts, and long pants when cleaning ash, and avoid skin contact. If ash does get on your skin, wash it off as soon as possible.
- Well-fitting dust masks may provide some protection during cleanup. Masks rated N-95 or P-100 are more effective than simpler dust or surgical masks in blocking particles from ash. In general, many ash particles are larger than those found in smoke; thus, wearing a dust mask can significantly reduce (but not completely eliminate) the amount of particles that are inhaled.
- Persons with heart or lung disease should consult with their physicians before using a mask during post fire cleanup.
- Soil under the area where the ash/debris was deposited should be scraped to ensure that all ash and building debris has been removed from the site.
- Materials must be thoroughly wetted to minimize dust, then packaged inside a 6-mil plastic sheeting liner and placed in an end-dump roll-off with the top of the roll-off sealed with the plastic sheeting to secure the contents during transport once the roll-off is loaded.
- If asbestos-containing material is known or suspected to be present in ash or debris, please contact a certified contractor to perform abatement or clean up.
- Metal debris must be washed clean of ash/debris prior to recycling.
- Do not allow children to play in the ash.
- Wash ash from toys before allowing children to play with them.
- Wash ash off of household pets.
- Avoid circulating ash into the air as much as possible. Do not use shop vacuums and other non-HEPA filter vacuums, as they do not filter out small particles and can blow particles into the air where they can be breathed in.
- In most cases, gently sweeping indoor and outdoor hard surfaces followed by wet mopping is the best way to clean up ash residue. A damp cloth or wet mop may be all that is needed on lightly dusted areas.
- Avoid washing ash into storm drains whenever possible.
- If you wet down ash, use as little water as possible.
- Collected ash may be disposed of in the regular trash. Ash may be stored in plastic bags or other containers to help prevent it from being disturbed.

Disposal of Household Chemicals

Everyday items, such as household cleaners, fertilizers, and pesticides, contain dangerous chemicals that may have spilled in or near your home during the fire response. Be alert for leaking or damaged containers and household chemicals, such as caustic drain cleaners and chlorine bleach. Take these steps to prevent injury or damage:

- Keep children and pets away from leaking or spilled chemicals.
- Do not combine chemicals from leaking or damaged containers; doing so might produce dangerous reactions.
- Do not pour chemicals down drains, storm sewers, or toilets.
- Do not try to burn household chemicals.
- Clearly mark and set aside unbroken containers until they can be properly disposed.
- Leave damaged or unlabeled chemical containers undisturbed whenever possible.
- Do not put household chemicals in the trash. When discarding these products, they become household hazardous waste requiring proper disposal.
- Do not put chemicals in a trash bag. Use boxes or plastic tubs to transport.
- Transport chemicals in the trunk of your vehicle.
- Contact County Solid Waste listed in Appendix A for advice on where to dispose or store the chemicals.

Propane Tanks

If you have a propane tank system, contact a propane supplier, turn off the valves on the system, and leave the valves closed until the supplier inspects your system. Tanks, brass, and copper fittings, and lines may have been damaged from the heat and can be unsafe. If fire burned the tank, the pressure relief valve likely opened and released the contents.

Heating Oil Tanks

If you have a heating oil tank system, contact a heating oil supplier for an inspection of your system before using it. The tank may have shifted or fallen from the stand, and the fuel lines may have kinked or weakened. Heat from the fire may have caused the tank to warp or bulge. Non-vented tanks are more likely to bulge or show signs of stress. The fire may have loosened or damaged fittings and filters.

Animal Burial

If you have determined that burial is an appropriate method, be sure every part of the carcass is covered by at least three (3) feet of soil; at a location not less than 100 feet from any well, spring, stream, or other surface waters; not in a low-lying area subject to seasonal flooding or within a 100-year flood plain; and not in a way likely to contaminate ground water.

Food Safety After a Fire

Food exposed to fire can be compromised by heat of the fire, smoke fumes, chemicals used to fight the fire, and power outage as a result of the fire. Food in cans or jars may appear to be fine, but if they have been close to the heat of a fire, they may not be edible. Heat from a fire can activate food spoilage bacteria. If the heat is severe, the cans or jars can split or rupture, resulting in unsafe food. Toxic fumes, which may be released from burning materials, are one of the most dangerous elements of a fire. The fumes can be hazardous, and they can also contaminate food. Chemicals used to fight fires contain toxic materials that can contaminate food and cookware.

While some of the chemicals may be listed as non-toxic to humans, they can be harmful if swallowed. These chemicals cannot be washed off of the food.

- Throw away any food stored in permeable packaging, such as cardboard or plastic wrap. Toxic fumes can permeate the packaging and contaminate the food.
- Throw any raw foods stored outside the refrigerator, such as potatoes or fruit, as they could also be contaminated by fumes. Even food stored in the refrigerator or freezer can become contaminated by fumes, as the seals are not necessarily airtight.
- If food from your refrigerator or freezer has an off-flavor or odor when it is prepared, it should be discarded and not eaten.

- Discard foods that have been exposed to chemicals, including:
 - Food stored at room temperature, such as fruit and vegetables.
 - Food stored in permeable containers, like cardboard and screw-topped jars and bottles.
 - Canned goods and cookware exposed to chemicals can be decontaminated if they have not been subjected to severe heat.
 - Wash canned goods and cookware that have been exposed to chemicals with soap and hot water. Then dip them in a bleach solution (1 teaspoon of bleach per quart of water) for 15 minutes, rinse, and let air dry.
- The main concern with perishables stored in the refrigerator and freezer is the availability of electrical power. Refrigerated items should be safe, provided that the power is off for no more than about two (2) hours. If the power has been off for more than two (2) hours:
 - Keep the refrigerator and freezer doors closed.
 - Open the refrigerator as little as possible.
 - Throw away any perishable food that has been held at temperatures above 41°F for more than four (4) hours.
 - Throw away any food that has an unusual odor, color, or texture.
 - Throw away food in your refrigerator and freezer that looks suspicious, such as the presence of liquid or refrozen meat juices, soft or melted and refrozen ice cream, or unusual odors.
 - Never taste food to determine its safety. Food unfit for human consumption is also unfit for pets. If in doubt, throw it out.

Masks

It's important to protect your lungs from health hazards like smoke and ash while cleaning up after a wildfire. If you cannot avoid the area, a "particulate respirator" can help to protect your lungs during cleanup efforts.

- Choose a mask called a "particulate respirator" that has the word "NIOSH" and either "N95" or "P100" printed on it. These are sold at many hardware and home repair stores and pharmacies. Choose a mask that has two (2) straps that go around your head. DO NOT choose a mask with only one strap or one with straps that just hook over the ears. (N-95 masks do not protect against vapors or fumes.)
- Choose a size that will fit over your nose and under your chin. It should seal tightly to your face. These masks do not come in sizes that fit young children.
- Do not use bandanas (wet or dry), paper or surgical masks, or tissues held over the mouth and nose. These will not protect your lungs from wildfire smoke or debris.
- Place the mask over your nose and under your chin, with one strap placed below the ears and one strap above.
- Pinch the metal part of the mask tightly over the top of your nose.
- The mask fits best on clean-shaven skin. Keep your face clean and shaven.
- Throw out your mask when it gets harder to breathe through or if the inside gets dirty. Use a new mask each day if you can.
- It is harder to breathe through a mask, so take breaks often if you work outside.
- If you feel dizzy or nauseated, go to a less smoky area, take off your mask, and get medical help.
- If you have a heart or lung problem, consult with your doctor before using a mask.
- Remove earrings and jewelry before using the equipment to prevent catching them on the respirator.
- Check in a mirror to ensure that your respirator fits properly.

Respiratory Health

- Children are more likely to be affected by health threats from smoke because their airways are still developing and because they breathe more air per pound of body weight than adults. Children also are more likely to be active outdoors.
- Pay attention to local air quality reports. Listen and watch for news or health warnings about smoke. Also pay attention to public health messages about taking additional safety measures.

- If you are advised to stay indoors, keep indoor air as clean as possible. Keep windows and doors closed unless it is extremely hot outside. Run an air conditioner if you have one, but keep the fresh-air intake closed and the filter clean to prevent outdoor smoke from getting inside. If you do not have an air conditioner and it is too warm to stay inside with the windows closed, seek shelter elsewhere.
- Do not add to indoor pollution. When smoke levels are high, do not use anything that burns, such as candles, fireplaces, or gas stoves. Do not vacuum, because vacuuming stirs up particles already inside your home. Do not smoke.

Private Wells

Your well or septic system could be adversely affected by fire, power outages, equipment failure, or contamination of water supplies. Perform a visual inspection of your well and other components which are part of your water supply system, including:

- Damage to electrical wires and wire connectors which supply power to your well.
- Damage to above ground PVC plastic pipes used with the well to bring water to your house.
- Damage to well houses and special equipment (chlorinators, filters, electronic controls).
- Damage to pressure tanks which could have been caused by exposure to excessive heat.
- Damage to storage tanks, vents and over-flow pipes.
- If you find damage to your well or water system, contact an appropriate contractor to repair the damage.
- If your water tastes or smells earthy, smoky or burnt, you may need to thoroughly flush your water lines.
- If your system has been damaged or if you are in doubt about the safety of your water, you may want to have your water tested. Water testing kits are available; See Appendix A.
- If you suspect that your well or water system has been contaminated, or if sampling indicates that bacterial contaminants are present, disinfection of your well is recommended.
- Each person in a household will need at least one gallon of water per day for drinking, cooking and general hygiene. If you suspect that your water supply may have been compromised during the fire, bring plenty of bottled water with you when returning to your home.

Water Disinfection

If you do not have water that you know is safe, it is possible to purify the water for drinking purposes. Start with the cleanest water you can find and treat it by one of the following methods:

- **Chemical Disinfection:** Treat the water with household-strength liquid chlorine bleach (do not use scented bleach products). Add bleach according to the table below, stir or shake; allow water to stand for thirty (30) minutes before drinking.

Amount of Water	Amount of bleach if water is clear	Amount of bleach if water is cloudy
1 gallon	1/8 tsp	¼ tsp
5 gallons	½ tsp	1 teaspoon

- **Boiling Water as Disinfection:** Boil the water for ten (10) minutes. Once the water has cooled, it can be consumed, or stored in clean containers to use later.

Septic Systems

If you are connected to an onsite wastewater treatment system (septic system), inspect your septic system for damage:

- Damage to plastic piping above ground that may have been damaged by heat.
- Raised systems scorched or damaged by fire.
- Damage to piping where pipes enter the home/structure.
- Disturbance of the soil treatment area by large vehicles such as firefighting equipment.
- If your septic system has been damaged, backing up, or malfunctioning, discontinue use and contact a septic system installer or designer for guidance and instruction.

Tetanus

After a fire, there is risk of injury as cleanup efforts begin. Tetanus is a concern for persons with both open and closed wounds, and a tetanus vaccination is recommended for all residents returning to the burn area who have not had a documented dose within the past ten (10) years. If you receive a puncture wound or a wound contaminated with feces, soil, or saliva, a health care professional should determine if a tetanus booster is necessary, based on individual records.

- Patients without a clear history of receiving at least three (3) tetanus vaccinations and who have any wound should get the tetanus immune globulin (TIG) as well as the vaccination.
- Tetanus in the United States is most commonly reported in people older than forty (40) because they are less likely to be adequately vaccinated.
- Women over fifty-five (55) years of age are especially susceptible because they likely do not have protective levels of tetanus antibody.
- Diabetics are at increased risk for tetanus. Reported tetanus is about three (3) times more common in diabetics, and fatalities are about four (4) times more common.

Wound Care

Wounds in contact with soil and sand can become infected. Puncture wounds can carry bits of clothing and dirt into wounds and result in infection. Crush injuries are more likely to become infected than wounds from cuts. Seek medical attention as soon as possible if:

- There is a foreign object embedded in the wound.
- The wound is at special risk of infection (such as a dog bite or puncture by a dirty object).
- A previous wound shows signs of becoming infected (e.g. increased pain, heat, swelling, redness, draining, or fever).

Care for Minor Wounds

- Wash your hands thoroughly with soap and clean water.
- Avoid touching the wound with your fingers while treating it.
- Remove obstructive jewelry and clothing from the injured area.
- Apply direct pressure to any bleeding wound to control bleeding.
- Clean the wound after bleeding has stopped.
- Examine wounds for dirt and foreign objects.
- Gently flood the wound with clean water and gently clean around it with soap and water.
- Pat the wound dry and apply an adhesive bandage or dry clean cloth.
- Provide pain relievers, if possible.

