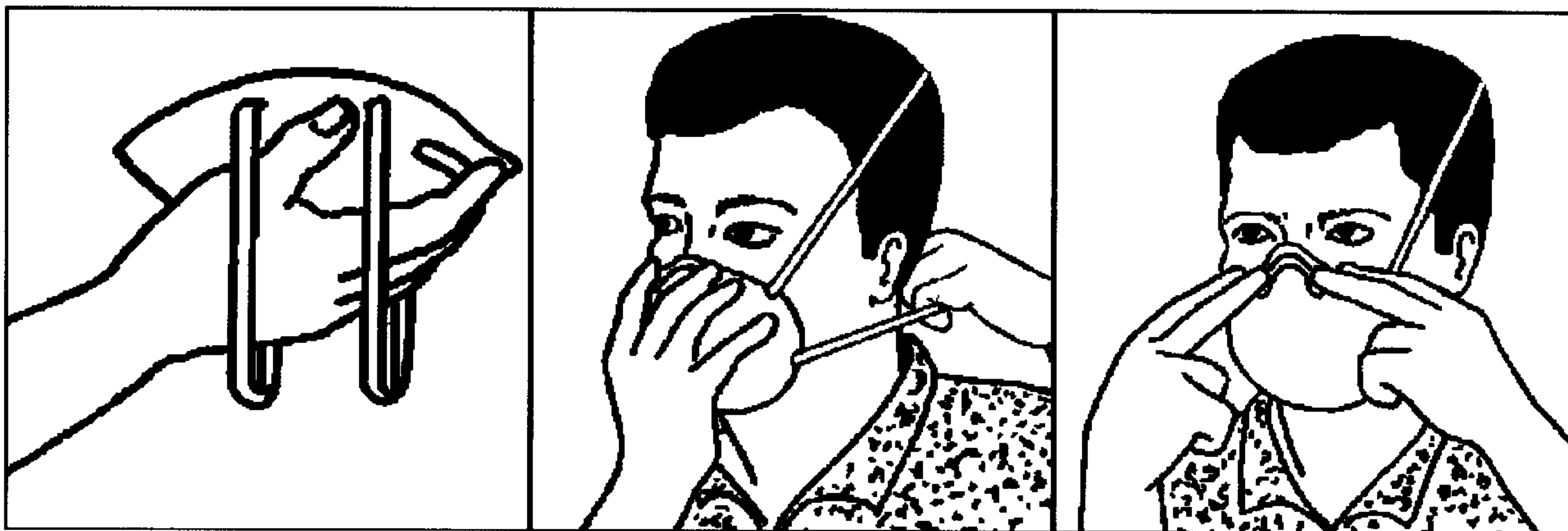


# Voluntary Respiratory Protection for Flood Clean Up

Revised 9/2/2011, 1600

- During flood clean up workers may experience exposure to high levels of crystalline minerals, possibly contaminated dust and microbiological air pollutants.
- For clean up workers who wish to protect themselves from these possible air pollutants, a NIOSH approved N-95 particulate filtering facepiece respirator should be used.
- An N-95 respirator is an air filtering device worn over the mouth and nose to reduce, not eliminate, exposure of the respiratory tract to hazardous particulate materials in the ambient air.
- Wearing an N-95 respirator will not protect the wearer from gasses and vapors, oiled particles, arsenic, asbestos, heavy metals such as lead, cadmium, high carbon dioxide or low oxygen environments.
- A good seal must be created between the respirator and the wearer's skin. Beards, mustaches or other facial hair should be shaved before wearing a respirator.
- If a respirator becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area immediately and dispose of the respirator.
- Individuals with reduced respiratory function should not wear a respirator.
- **Children under the age of 18 should not wear a respirator.**
- How to put an N-95 respirator on:
  1. Cup the respirator in one hand
  2. Place the respirator over the mouth and nose
  3. Stretch the top strap over crown of the head, and place the bottom strap on the neck
  4. Press the nosepiece against the nose with both hands to achieve the best seal



[www.3M.com](http://www.3M.com)

### **Drink clean, safe water and eat safe, uncontaminated food.**

- Listen for water reports from local authorities to find out if your water is safe for drinking and bathing.
- Throw away any food that may have come in contact with flood or storm water. Cans that are not dented or damaged can be cleaned and sanitized.
- Throw away bottled water if it has been submerged in flood or storm water.
- CDC recommends discarding wooden cutting boards, baby bottle nipples, and pacifiers. These items cannot be properly sanitized if they have come into contact with floodwaters.
- Clean and sanitize food-contact surfaces in a four-step process:
  - Wash with soap and warm, clean water.
  - Rinse with clean water.
  - Sanitize by immersing for 1 minute in a solution of 1 teaspoon of chlorine bleach (5.25%, unscented) per gallon of clean water.
  - Allow to air dry.
- If a water advisory has been issued, use only bottled, boiled, or treated water for drinking, cooking, food preparation, and hand washing.
- If water smells of petroleum don't use it for drinking, cooking or bathing.

### **Cleanup of Flood Water:**

<http://www.bt.cdc.gov/disasters/floods/cleanupwater.asp>

### **Keeping Food Safe:**

<http://www.fda.gov/Food/ResourcesForYou/Consumers/ucm076881.htm>

### **Personal Hygiene and Hand Washing After a Disaster:**

<http://emergency.cdc.gov/disasters/floods/sanitation.asp>

### **Safely protect your home from mold.**

- When returning to a home that has been flooded, be aware that mold may be present and may be a health risk for your family.
- Clean up and dry out the building quickly (within 24 to 48 hours). Open doors and windows. Use fans to dry out the building.
- To *prevent* mold growth, clean wet items and surfaces with detergent and water.
- When in doubt, take it out! Remove all porous items that have been wet for more than 48 hours and that cannot be thoroughly cleaned and dried, including
  - carpeting and carpet padding;
  - upholstery and wallpaper;
  - drywall, floor and ceiling tiles, and insulation material;
  - some clothing, leather, paper, and wood, and food.

Resources for mold after a disaster: <http://emergency.cdc.gov/disasters/mold/>

**Avoid risks during power outages.**

- Survey your area for downed power lines. Never touch a downed power line or anything in contact with them.
- If the power is out, use flashlights or other battery-powered lights if possible, instead of candles. If candles are all you have, place them in safe holders away from anything that could catch fire.
- Do not leave candles unattended.
  - Generators, grills, camp stoves, or other gasoline or charcoal-burning devices produce deadly Carbon Monoxide (CO) gases and should only be used outside.
  - Turn off the electric main before starting a generator to prevent inadvertently supplying electricity to outside power lines.

**What You Need to Know When the Power Goes Out Unexpectedly:**

<http://emergency.cdc.gov/disasters/poweroutage/needtoknow.asp>

**Carbon Monoxide Poisoning After a Disaster:**

<http://emergency.cdc.gov/disasters/carbonmonoxide.asp>

**Follow local flood watches, warnings and instructions.**

- If flooding occurs, get to higher ground. Get out of areas subject to flooding. This includes dips, low spots, canyons, washes etc.
- Avoid driving through floodwaters. Almost half of all deaths related to floods occur in vehicles.
- Return to your flooded home only after local authorities have told you it is safe to do so.

**After a Flood:** <http://emergency.cdc.gov/disasters/floods/after.asp>

**Interim Recommendations for Driving Safely in a Disaster Location:**

<http://emergency.cdc.gov/disasters/interimdrivesafely.asp>

**Worker Safety After a Flood:**

<http://emergency.cdc.gov/disasters/floods/workersafety.asp>

For more information dial 2-1-1.  
website: [Healthvermont.gov](http://Healthvermont.gov)  
<http://www.facebook.com/HealthVermont>  
<http://twitter.com/#!/healthvermont>

Water may not be safe to drink, clean with, or bathe in after an emergency such as a flood. During and after a disaster, water can become contaminated with microorganisms, such as bacteria, sewage, heating oil, agricultural or industrial waste, chemicals, and other substances that can cause illness or death.

People with drinking water wells in flooded areas should assume that their water is contaminated, and take precautions to protect health if any of the following conditions exist:

- if the well is flooded or in close proximity to flooded areas.
- if there has been a change in water quality (odor or taste).

Until a water test confirms that the water is safe use bottled water, or boil water for one minute to make it safe for:

- drinking
- cooking
- making juice or ice
- washing fruits and vegetables
- brushing teeth

**Do not use water for infant formula until a water test confirms it is safe.**

If water smells of petroleum do not use it for drinking, cooking or bathing.

## Water Testing

For a free water testing kit, contact your local District Office of the Vermont Department of Health.

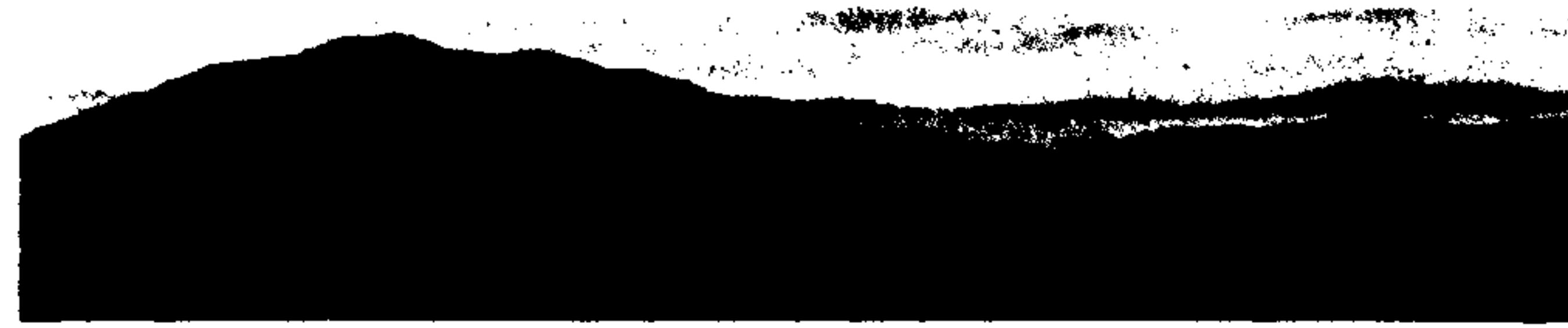
## Disinfection of Private Wells

Our **fact sheet on disinfecting drinking water** has detailed information about testing for contamination and disinfecting contaminated wells.

For more information dial **2-1-1**.  
website: [Healthvermont.gov](http://Healthvermont.gov)  
<http://www.facebook.com/HealthVermont>  
<http://twitter.com/#!/healthvermont>



Department of Health  
Agency of Human Services



## Drinking Water Disinfection

### My water is contaminated. Why hasn't it made me sick?

Coliform or other bacteria will not necessarily make you ill. However, since these organisms have been able to enter your water system other disease-causing organisms (bacteria, viruses, and protozoa) could enter as well. To prevent illness, we advise that you boil your water for one minute before drinking.

### Can water tests pinpoint the exact source of contamination?

No. Water tests show that coliform bacteria have entered your water system, either at the source or between the source and the faucet. The tests don't identify the source.

### What should I do if my drinking water is contaminated?

Boil for one minute all water used for drinking; making ice, juice or baby formula; and for washing fruits and vegetables. Look at the location and construction of your water source and try to identify and eliminate the source of contamination.

#### **Location**

Wells and springs should be isolated, preferably uphill from septic systems and other potential contamination sources, such as barnyards and pastures.

#### **Construction:**

Dug wells and springs should be made of concrete and have tight-fitting, lipped covers and sealed joints. Drilled wells should have casings that extend 18 inches above ground, surrounded by mounded clay to prevent surface water from entering.

### I disinfected my well and consulted with the Health Department, but my water is still contaminated. What should I do now?

You may need to hire an environmental engineer or hydrogeologist to find the problem. Lists of water system consultants and water treatment options are available from the Department of Health.

### How To Disinfect Your Water System

Use a chlorine bleach solution to disinfect your water supply after construction or repair work (including replacing the pump), or when a water test shows contamination.

Before you begin, disconnect or remove any water treatment devices, such as activated carbon filters, water softeners or reverse osmosis units. Highly chlorinated water can make them less effective or even damage them.

For a dug or drilled well, add one gallon of household laundry bleach for every 525 gallons of water. This means using one gallon of bleach for every 10 feet of 36-inch-diameter dug well or every 350 feet of 6-inch-diameter drilled well.

For an overflowing spring, use fast-dissolving 65 percent calcium hypochlorite pellets (3 ounces for every 100 gallons of water or about 2 feet in depth). Pellets are available at pool supply or hardware stores. **Caution: The pellets should contain ONLY calcium hypochlorite—NOT algicides, chlorine stabilizers/conditioners, acids or other disinfectants. (These may be acceptable to use in swimming pools, but are not safe for drinking water.)**

Whenever possible, run the chlorinated water through a garden hose back into the well for an hour so the chlorinated water washes down the inside of the casing. Scrub the sides of a dug well or spring with a clean brush and a chlorine solution (mix one part household laundry bleach to four parts of water). Use rubber gloves and eye protection.

After you recap the well, open one faucet at a time throughout the house. Run the water until you smell a strong chlorine odor, then turn tap off. **Caution: Strong chlorine solutions may damage rubber and polybutylene gaskets and fittings.**

It takes time for chlorine to disinfect, so it's important to keep the chlorinated water in your system for 12 hours. After 12 hours, connect a hose to a tap or outside faucet and drain the chlorinated water to a safe, outdoor location. Don't drain highly chlorinated water onto a lawn or garden or into the septic system. Dispose of the water onto a safe area, such as a graveled driveway or into a brushy area. Keep children and pets away from the discharge and don't allow the chlorinated water to reach a stream, because it could kill fish. Skin and eyes may be sensitive to strong chlorine solutions. Avoid contact during disinfection.

To avoid overstressing your water source, run the water at less than full flow or turn off the tap periodically and allow the source to recover for several hours. Continue flushing until the chlorine odor is gone.

Re-sample the water for bacteria two to three days after the chlorine odor has dissappeared. Continue to either boil water or obtain drinking water from a safe source until test results indicate the absence of bacteria.

## Emergency Disinfection

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To make water from a spring or well of unknown quality safe to drink on a temporary basis, mix the water with liquid chlorine bleach as shown in the **Table of Chlorine Dosages** below. This method will protect against most, but not all, disease-causing organisms. *(Note: These directions do not apply for disinfection of newly constructed, repaired, or bacteria-contaminated springs and wells. See **How to disinfect your water system.**)*

Mix the water and chlorine thoroughly and then let it stand for 2 to 3 hours. Store the water in a manmade covered reservoir, tank, or other sealed clean container to protect against recontamination.

Spring, pond, stream or well water that is turbid (cloudy or containing particles) must be boiled for five minutes before using it for drinking; making ice, juice or baby formula; or for washing foods.

Chlorine or any other reasonably available disinfectant will not work adequately when water is turbid. The chlorine cannot always penetrate suspended particles, which may conceal and protect organisms that cause diseases.

**Table of Chlorine Dosages (provides 2 parts per million chlorine)**

Water Volume	Liquid Bleach (common household chlorine bleach)
1 gallon	5 drops
10 gallons	1/2 teaspoon

# COMMON POST-DISASTER HAZARDS AND THEIR CONTROLS

## Unstable/Dangerous Walking and Work Surfaces

- Debris piles, standing water, cracks/voids in ground, recent fire
- Assess the area and choose the safest path
- Walk and work on surfaces you know are stable
- Look for smoldering material on/beneath surfaces
- Wear protective equipment including hard hats, safety glasses, leather gloves and safety shoes with slip resistant soles
- Watch for fall hazards to other levels
- Watch for entrapment hazards

## Unstable Structures and Confined Spaces

Disasters can rearrange and damage structures

- Never assume that damaged structures or ground are stable-have it certified safe by a registered professional engineer or architect
- Assume all stairs, floors and roofs are unsafe until inspected
- Unstable ground or flooring could give way
- Watch for leaning structures and trees and avoid them
- Entering confined spaces could kill you! Only trained and authorized personnel should enter confined spaces
- If you find a trapped person, call 911 IMMEDIATELY and do not attempt rescue as you could become the victim

**Leave immediately if you hear shifting or unusual noises - A COLLAPSE MAY BE OCCURRING**

## Pressure Washers

Hazards include chemical and thermal burns, lacerations, CO production, projectiles and electric shock. Safe use guidelines include:

- Follow manufacturers safe use recommendations
- Inspection of washer
- Training and proper use
- PPE (including insulating rubber boots)
- Understanding chemicals used with the washer
- Use with Ground Fault Circuit Interrupters (GFCI) and proper electrical safety

## Debris Removal

- Wear safety shoes with non-skid soles, safety glasses, leather work gloves, hard hat, long pants and shirt.
- Do not handle broken chemical containers
- Do not remove debris that may destabilize piles or structures
- Do not lift too much, call for heavy equipment
- Segregate debris according to FEMA or Local/State requirements

## Damaged Utilities

Utilities can cause electric shock, poisoning, explosions, fires, burns and death

- Call 911 if you suspect damaged utilities, do not enter area
- Fuel leaks will have a distinct odor (gasoline, oil, rotten eggs)
- Electrical contact can cause falls
- Stay away from downed power lines. Report downed lines and assume they are live

## Harmful Dusts

Dusts created by a disaster or during cleanup may have asbestos, heavy metals, silica or other toxic materials. Try not to disturb dust. Protect yourself in dusty environments. **If in doubt ask your local government authority.**

**If you must disturb dust use:**

- Water to mist material and keep it wet
- High Efficiency Particulate Air (HEPA) vacuum

**Do not use:**

- Common shopvac that does not have a HEPA filter
- Do not dry sweep

Avoid walking or working in dusty areas as you may inhale harmful dust and/or become contaminated with dust

Respirator use may be required. Respirator use requires training. Respirators must be fit tested and you may need medical clearance to wear certain respirators (business use only). An N-95 or greater respirator is acceptable for most activities. Use an elastomeric, half-mask respirator with N,R, or P-100 series filters if asbestos, ash or fire retardants may be present. For residence and volunteers seek guidance from your local government authority.

**Surgical masks should not be used because they do not provide adequate protection.**

## Hazardous Chemicals

Household and industrial (small business use or displaced from other property) chemicals

- Do not handle any containers that are damaged/leaking
- Do not handle any chemical containers if you are unsure of its contents
- Do not handle any industrial chemical containers
- Use gloves and safety glasses when handling household hazardous chemicals
- Do not mix chemicals
- Do not place chemicals near open flames/hot surfaces (running motor)

**Yellow tags communicating hazardous materials are present. Yellow tags**

## Portable Generators

Hazards include CO poisoning and electrocution.

- Follow manufacturer's recommendations and specifications and grounding instructions
- Use a qualified electrician to assist in installation and start-up activities
- If using gasoline- and diesel-powered portable generators, switch the main breaker or fuse on the service panel to the "off" position before starting the generator
- Do not use on or in wet surfaces
- Do not operate in rain unless the generator can be kept dry
- When refueling, turn off and wait for motor to cool or use appropriate funnel to prevent spills onto hot engine

## Chainsaw Use

Operate, adjust, and maintain the saw according to manufacturer's instructions.

- Properly sharpen chain saw chains and properly lubricate the bar and chain with bar and chain oil
- Periodically check and adjust the tension of the chain saw blade to ensure good cutting action.
- Use proper size of chain saw to match the job
- Include safety features such as a chain brake, front and rear hand guards, stop switch, chain catcher and a spark arrester
- Wear the appropriate protective equipment:
  - Hard hat
  - Safety glasses/face shield
  - Hearing protection
  - Heavy work gloves
  - Cut-resistant legwear (chain saw chaps)
- Always cut at waist level or below
- Avoid contact with utilities or ground
- Bystanders or coworkers should remain at least:
  - 2 tree lengths (at least 150 feet) away from anyone felling a tree
  - 30 feet from anyone operating a chain saw to remove limbs or cut a fallen tree

## Traumatic Stress

A traumatic event is a shocking and emotionally overwhelming situation in which an individual perceives actual or threatened death or serious injury. Those affected by a disaster may experience traumatic stress.

Responses will vary from person to person. It is very common for people to experience anxiety, terror, shock, and upset, as well as emotional numbness and personal or social disconnection. **Individuals with prolonged traumatic stress (anxiety, depression, etc.) that disrupts their daily functioning should consult with a trained and experienced mental health professional.**

## Carbon Monoxide (CO)

Carbon Monoxide has no warning properties; it is a colorless odorless gas that can kill you!

Symptoms: Headache, dizziness, drowsiness, or nausea progressing to vomiting, loss of consciousness. Prolonged or high exposure can lead to coma or death.

Areas that have a high risk for CO exposure include:

- Any activity using gasoline, diesel or propane-powered equipment
- Work near gasoline, diesel or propane equipment
- Debris reduction sites (burning)
- Activity near hot work (cutting, welding) especially in confined spaces and smoldering debris

## Hand and Portable Power Tools

- Inspect tools in accordance with manufacturer's specifications
- Take damaged tools out of service and use only sharp tools and blades
- Do not work with electricity in wet environments
- Electrical cords/outlets must meet OSHA standards
- Use GFCIs on all power tools and cords as close to the panel as possible
- Use with proper gauge electric cord
- Use double insulated tools
- Do not re-energize electrical systems or use electrical equipment that has been in a fire or wet until it has been evaluated by a qualified electrician
- Always wear eye protection when using tools

## Other Post-Disaster Cleanup Hazards

- Heat and cold stress
- Sunburns
- Injuries to your body from lifting and strain
- Animals, insects and harmful plants
- Infection from polluted water and surfaces
- Working around heavy equipment
- Vehicle/ driving safety
- Cuts, punctures
- Eye injuries
- Fall injuries
- Fatigue

**If you or a co-worker gets injured, know how to get help.**

## Recovery from Hurricane Irene

8/31/11

### Steps to take before returning home:

#### Physical Hazards

- Clear debris and physical hazards and wear protective footwear to prevent slips, trips and falls

#### Electrical

- Turn off or disconnect electrical service to water-damaged units to prevent electric shock from damaged wires
- Use a dry plastic- or rubber-insulated tool to reset breakers and use only one hand —do not touch a circuit breaker or replace a fuse with wet hands or while standing on a wet surface
- Contact a licensed electrician to inspect before flipping a switch or plugging in appliances until an electrician tells you it is safe —do not turn on damaged electrical appliances as electrical parts can pose an electric shock hazard or overheat and cause a fire
- Keep power cord connections dry
- Use portable ground-fault circuit-interrupter (GFCI) protective devices to help prevent electrocution and electrical shock injury
- Discard electrical devices that have been submerged, including: circuit breakers, fuses, Ground Fault Circuit Interrupters (GFCI), receptacles, plugs, switches
- Follow manufacturer's instructions when using a wet-dry vacuum cleaner or a pressure washer to avoid electric shock
- Never use portable generators indoors or outdoors near open doors, windows or vents because they emit carbon monoxide (CO), a poisonous gas that is colorless and odorless

#### Mold

- Remove and throw away all porous items that cannot be thoroughly cleaned and dried quickly within 24-48 hours, including:
  - carpeting and carpet padding
  - upholstery and wallpaper
  - drywall, floor and ceiling tiles, and insulation material
  - some clothing, leather, paper, wood, and food
- Wear personal protective equipment, including: an N-95 respirator (hardware stores usually sell them), goggles, gloves, long pants, long-sleeved shirt, and work boots/shoes
- Open doors and windows
- Use fans to dry out the building
- Store wet items outside the home until insurance claims can be filed
- Control entry of additional moisture by fixing leaks in roofs, walls, or plumbing
- *Prevent* mold growth, clean wet items and surfaces with detergent and water
- Remove mold from small areas with a solution of 1 cup of bleach in 1 gallon of water
  - Use a stiff brush on rough surface materials like concrete
  - Never mix bleach or products containing bleach with ammonia or products containing ammonia
  - Read the label on any product to see what it contains
  - Open windows and doors to provide fresh air

