

# **Arizona Department of Health Services Flooding Response Plan**



**Division of Public Health Services  
Bureau of Emergency Preparedness and Response**

**January 2007**

## **Goals of Plan:**

- 1) Limit the adverse public health effects from a flood
- 2) Protection of the public from sources of contaminated food and water

## **Authorities:**

The following citations represent portions some of the statutory authorities available to the Department for a response to a flood. For additional authorities during an emergency with public health implications, please refer to the [ADHS Emergency Response Plan Authorities](#) section located on SIREN at: *State Health/Response Plans/ADHS Plans/Emergency Response Plans* and the Arizona Revised Statutes (ARS) available at: <http://www.azleg.state.az.us/arizonarevisedstatutes.asp>

### **ARS §36-104**

Powers and Duties

### **ARS §36-136D**

The director may delegate to a local health department, county environmental department or public health services district any functions, powers or duties that the director believes can be competently, efficiently and properly performed by the local health department, county environmental department or public health services district

### **ARS §36-182**

Establishment of local health departments or public health services district; powers; expenditures; plan for local health departments

### **ARS §41-1081**

Standards for delegation

**ARS §36-910** gives the Department (and subsequently the local health departments) the authority to embargo agricultural or retail food.

### **ARS §36-910**

Seizure (Food embargo authority)

A. When the director finds or has probable cause to believe that any food is adulterated or misbranded within the meaning of this article as to be dangerous or fraudulent, he shall affix to such food or its container a tag or other appropriate marking, giving notice that such food is, or is suspected of being, adulterated or misbranded and has been detained or embargoed, and warning all persons not to remove or dispose of such food by sale or otherwise until permission for removal or disposal is given by the director or the court. It is unlawful for any person to remove or dispose of such detained or embargoed food by sale or otherwise without such permission.

**ARS §36-601 Public Nuisances Dangerous to Public Health**

A. The following conditions are specifically declared public nuisances dangerous to the public health: 1. Any condition or place in populous areas which constitutes a breeding place for flies, rodents, mosquitoes, and other insects which are capable of carrying and transmitting disease-causing organisms to any person or persons

**Roles and Responsibilities:**

The Arizona Department of Health Services (ADHS) will:

- Serve as a technical resource in public health matters such as safe food and water, proper sanitation, vector control and communicable disease prevention
- Support the local health departments and broker resources as much as possible including hospital space and emergency medical services.
- Place a Department Liaison at the State Emergency Operations Center
- Provide a Public Information Officer to craft (in conjunction with the local health departments) various health messages for the State Emergency Operations Center's Joint Information Center (JIC)
- Coordinate with the Centers for Disease Control and Prevention
- Order the Strategic National Stockpile if needed (See ADHS SNS Plan)

**Concept of Operations:**

Under this plan, the Department will utilize its NIMS compliant incident command system called the Public Health Incident Command System (PHIMS) to manage the incident. (See Appendix A) The ADHS PHIMS response system is divided into four functional areas: Operations, Planning, Logistics and Finance.

The Operations Section functions specific to this incident will include the following:

Under the leadership of the *Epidemiology and Disease Control (EDC) Branch Director*:  
Subject Matter Experts in the Operations Section:

- Draft environmental and public health messages for the public and healthcare practitioners.

*Environmental Health Group Supervisor* will:

- Provide technical advice and consultation to local health departments, health care providers, ADEQ, food and water entities and others for the following environmental and public health issues:
  - general sanitation
  - safe food
  - water supply
  - re-entry
  - mold/contamination issues
  - carbon monoxide poisoning
- Provide public health information related to public health issues such as maintaining sanitary conditions, a source of potable water and the decontamination of food.

- Give guidance and recommendations on food storage and food safety to the State Prison kitchens as well as Assisted Living and Group Homes.
- Lend assistance to the local health departments for shelters, restaurants, retail food establishments and application of vector control measures as needed
- Ensure inspection of various shelters for sanitation and cleanliness
- Provide support to the Arizona Department of Environmental Quality and the local health departments to advise on safe drinking water and community water systems

*Vector-borne Disease Group Supervisor will:*

- Provide technical advice on vectors and animals (in conjunction with the State Public Health Veterinarian) as they relate to public health

*Immunizations Group Supervisor*

- Provide technical advice and consultation to local health departments, health care providers, first responders and the general public regarding tetanus and other vaccine administration
- If requested by the county public health department(s), provide assistance in the ordering and receipt of appropriate vaccines

*Epidemiological Group Supervisor*

- Track epidemiological data

*Behavioral Health Branch Director*

- Communicate with the Regional Behavioral Health Authority(ies) (RBHA) crisis response teams in the affected area(s).
- Provide technical information for use in Behavioral Health related press releases, public announcements and education materials.

*Local Health Branch Director*

- Helps to coordinate support of local health departments for resources and staff time

*Hospital and Healthcare Branch Director*

- Support group homes, assisted living facilities, hospitals, community health centers, and other healthcare providers regarding environmental, public health and evacuation issues.

The Planning Section will cover the following activities:

- Creation of the PHIMS Chart
- Generation of the Incident Action Plan (IAP)
- Collection of information and compilation of daily/weekly Situation Reports
- Preparation of weekly Governor's Reports
- Creation of GIS maps as needed

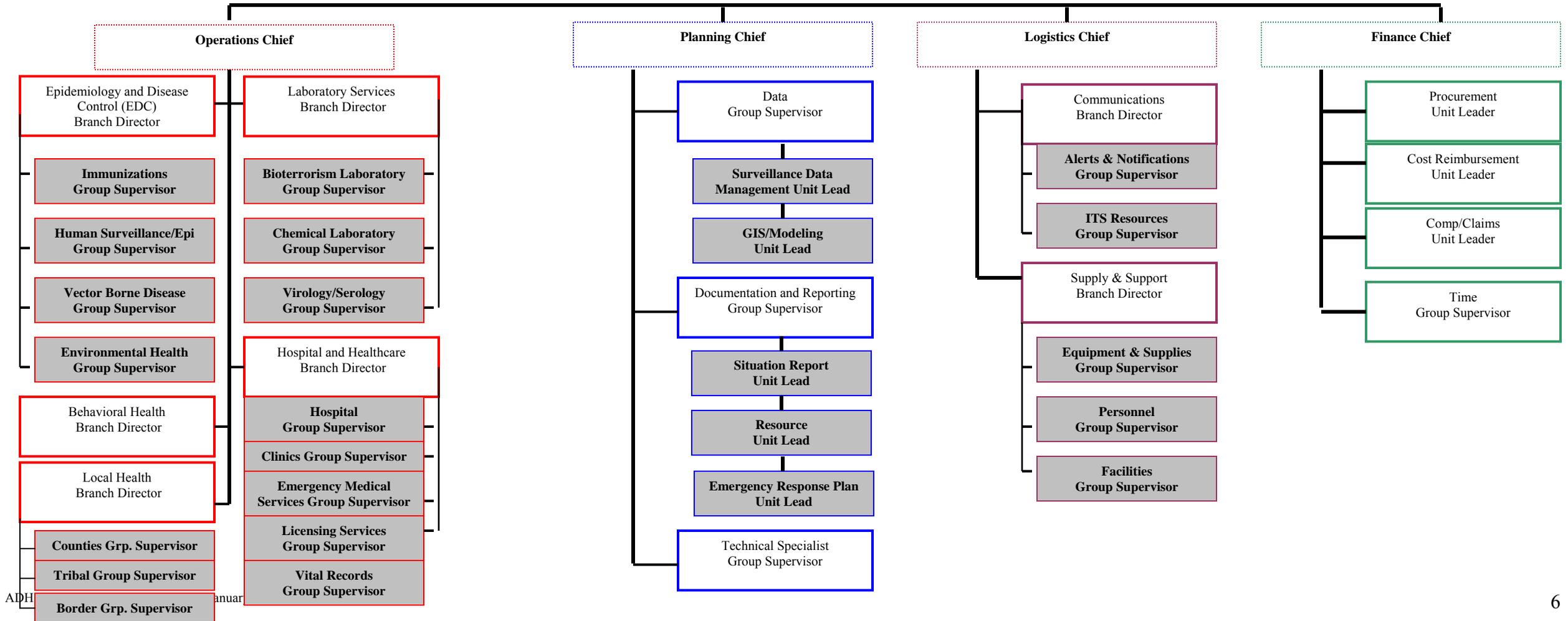
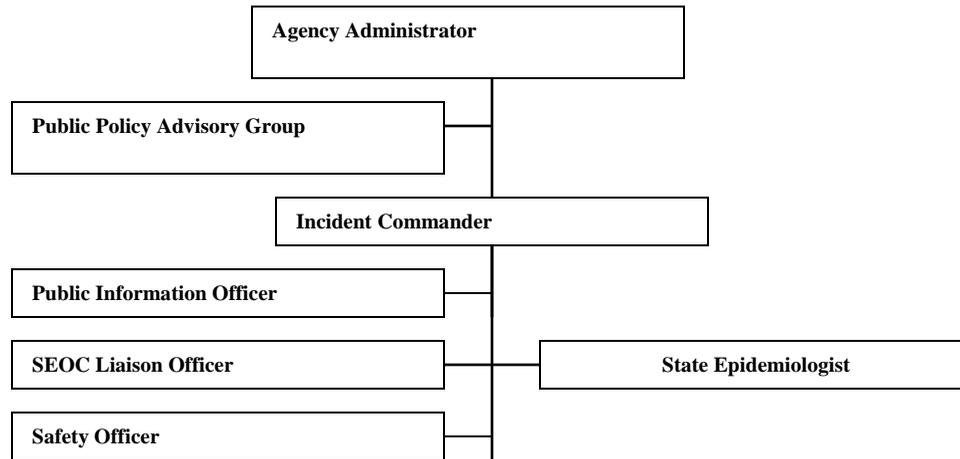
The Logistics Section will handle the following:

- Blast-faxing and other alerts and notifications through the HAN and EMS system
- Tracking volunteers
- Obtaining the webpage hits to ADHS information pages
- Maintain and update as necessary the ADHS 24-hour recorded Information line
- Obtaining the number of callers to the 24-hour recorded Information line
- Setting up (as needed) the Health Emergency Operations Center (HEOC)

The Finance Section will perform the following:

- Tracking hours spent on Flooding activities
- Give assistance with budgeting for the response
- Obtain contracts and procure needed items.

# PHIMS – Bioterrorism or Public Health Emergency



## **APPENDIX B**

### Sample Press Release Topics:

1. Emergency Supplies and Evacuation Preparation Tips
2. Sanitation & Hygiene During A Flood
3. Safe Water Supply During A Flood
4. Safe Well Water During A Flood
5. Food Safety During A Flood
6. Returning Home After A Flood
7. Tetanus Shots After A Flood
8. Clean-up of Flood Water
9. Animals and Controlling Mosquitoes
10. Protect Yourself From Mold
11. Protect Yourself From Carbon Monoxide Poisoning

## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

# **Emergency Supplies and Evacuation Preparation** **Tips**

### **If you are under a flood watch or warning:**

- Gather the emergency supplies you previously stocked in your home and stay tuned to local radio or television station for updates.
- Turn off all utilities at the main power switch and close the main gas valve if evacuation appears necessary.
- Have your immunization records handy or be aware of your last tetanus shot, in case you should receive a puncture wound or a wound becomes contaminated during or after the flood.
- Fill bathtubs, sinks and plastic soda bottles with clean water. Sanitize the sinks and tubs first by using bleach. Rinse and fill with clean water.
- Bring outdoor possessions, such as lawn furniture, grills and trash cans inside or tie them down securely.

### **Emergency Supplies You Will Need**

You should stock your home with supplies that may be needed during the emergency period. At a minimum, these supplies should include:

- Several clean containers for water, large enough for a 3-5 day supply of water (about five gallons for each person).
- A 3-5 day supply of non-perishable food and a non-electric can opener.
- A first aid kit and manual and prescription medicines and special medical needs.
- A battery-powered radio, flashlights, and extra batteries.
- Sleeping bags or extra blankets.
- Water-purifying supplies, such as chlorine or iodine tablets or unscented, ordinary household chlorine bleach.
- Baby food and/or prepared formula, diapers, and other baby supplies.
- Disposable cleaning cloths, such as "baby wipes" for the whole family to use in case bathing facilities are not available.
- Personal hygiene supplies, such as soap, toothpaste, sanitary napkins, etc.
- An emergency kit for your car with food, flares, booster cables, maps, tools, a first aid kit, fire extinguisher, sleeping bags, etc.
- Rubber boots, sturdy shoes, and waterproof gloves.
- Insect repellent containing DEET or Picaridin, screens, or long-sleeved and long-legged clothing for protection from mosquitoes which may gather in pooled water remaining after the flood. (More information about these and other recommended repellents can be found in the fact sheet [Updated Information Regarding Insect Repellents.](#))

## **Preparing to Evacuate**

Expect the need to evacuate and prepare for it. When a flood watch is issued, you should:

- Fill your vehicle's gas tank and make sure the emergency kit for your car is ready.
- If no vehicle is available, make arrangements with friends or family for transportation.
- Fill your clean water containers.
- Review your emergency plans and supplies, checking to see if any items are missing.
- Tune in the radio or television for weather updates.
- Listen for disaster sirens and warning signals.
- Put livestock and family pets in a safe area. Due to food and sanitation requirements, emergency shelters cannot accept animals.
- Adjust the thermostat on refrigerators and freezers to the coolest possible temperature.

## **If You Are Ordered to Evacuate**

You should never ignore an evacuation order. Authorities will direct you to leave if you are in a low-lying area, or within the greatest potential path of the rising waters. If a flood warning is issued for your area or you are directed by authorities to evacuate the area:

- Take only essential items with you.
- If you have time, turn off the gas, electricity, and water.
- Disconnect appliances to prevent electrical shock when power is restored.
- Follow the designated evacuation routes and expect heavy traffic.
- Do not attempt to drive or walk across creeks or flooded roads.

## **If You Are Ordered NOT to Evacuate**

To get through the storm in the safest possible manner:

- Monitor the radio or television for weather updates.
- Prepare to evacuate to a shelter or to a neighbor's home if your home is damaged, or if you are instructed to do so by emergency personnel.

For more information about preparing for an evacuation during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

## ***Sanitation & Hygiene in a Flood***

It is critical for you to remember to practice basic hygiene during the emergency period. Always wash your hands with soap and water that has been boiled or disinfected:

- before preparing or eating food;
- after toilet use;
- after participating in flood cleanup activities; and
- after handling articles contaminated with flood water or sewage.

When clean water is not available, you can use alcohol-based products made for washing hands.

Flood waters may contain fecal material from overflowing sewage systems, and agricultural and industrial byproducts. Although skin contact with flood water does not, by itself, pose a serious health risk, there is some risk of disease from eating or drinking anything contaminated with flood water. If you have any open cuts or sores that will be exposed to flood water, keep them as clean as possible by washing well with soap to control infection. If a wound develops redness, swelling, or drainage, seek immediate medical attention.

In addition, parents need to help children avoid waterborne illness. Do not allow children to play in flood water areas, wash children's hands frequently (always before meals), and do not allow children to play with flood-water contaminated toys that have not been disinfected. You can disinfect toys using a solution of one cup of bleach in 5 gallons of water.

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

# **Safe Water Supply During a Flood**

## Water for Drinking, Cooking, and Personal Hygiene

Safe water for drinking, cooking, and personal hygiene includes bottled, boiled, or treated water. Your local authorities can make specific recommendations for boiling or treating water in your area. If you get your water from a [cistern](#) or a [well](#), please refer to the information on disinfecting cisterns or wells. If you do not get your water from a cistern or a well, follow these general rules concerning water for drinking, cooking, and personal hygiene.

- Do not use contaminated water to wash dishes, brush your teeth, wash and prepare food, wash your hands, make ice, or make baby formula. If possible, use baby formula that does not need to have water added. You can use an alcohol-based hand sanitizer to wash your hands.
- If you use bottled water, be sure it came from a safe source. If you do not know that the water came from a safe source, you should boil or treat it before you use it. Use only bottled, boiled, or treated water until your supply is tested and found safe.
- Boiling water, when practical, is the preferred way to kill harmful bacteria and parasites. Bringing water to a rolling boil for 1 minute will kill most organisms.
- When boiling water is not practical, you can treat water with chlorine tablets, iodine tablets, or unscented household chlorine bleach (5.25% sodium hypochlorite):
  - If you use chlorine tablets or iodine tablets, follow the directions that come with the tablets.
  - If you use household chlorine bleach, add 1/8 teaspoon (~0.75 mL) of bleach per gallon of water if the water is clear. For cloudy water, add 1/4 teaspoon (~1.50 mL) of bleach per gallon. Mix the solution thoroughly and let it stand for about 30 minutes before using it.

Note: Treating water with chlorine tablets, iodine tablets, or liquid bleach will not kill parasitic organisms.

Use a bleach solution to rinse water containers before reusing them. Use water storage tanks and other types of containers with caution. For example, fire truck storage tanks and previously used cans or bottles may be contaminated with microbes or chemicals. Do not rely on untested devices for decontaminating water.

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

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**SAMPLE NEWS RELEASE**

FOR IMMEDIATE RELEASE – \_\_\_\_\_

**Safe Well Water During Flooding**

Listen for public announcements on the safety of the municipal water supply. Flooded, private water wells will need to be tested and disinfected after flood waters recede. Questions about testing should be directed to your local or state health departments.

**Disinfecting Wells**

If you suspect that your well may be contaminated, contact your local or state health department or agriculture extension agent for specific advice. Here are some general instructions for disinfecting wells.

*To Disinfect Bored or Dug Wells*

1. Use [Table 1](#) to calculate how much bleach (liquid or granules) to use.
2. To determine the exact amount to use, multiply the amount of disinfectant needed (according to the diameter of the well) by the depth of the well. For example, a well 5 feet in diameter requires 4½ cups of bleach per foot of water. If the well is 30 feet deep multiply 4½ by 30 to determine the total cups of bleach required (4½ X 30 = 135 cups). There are sixteen cups in each gallon of liquid bleach.
3. Add this total amount of disinfectant to about 10 gallons of water. Splash the mixture around the wall or lining of the well. Be certain the disinfectant solution contacts all parts of the well.
4. Seal the well top.
5. Open all faucets and pump water until a strong odor of bleach is noticeable at each faucet. Then stop the pump and allow the solution to remain in the well overnight.
6. The next day, operate the pump by turning on all faucets, continuing until the chlorine odor disappears. Adjust the flow of water faucets or fixtures that discharge to septic systems to a low flow to avoid overloading the disposal system

<b>Diameter of well (in feet)</b>	<b>Amount of 5.25% laundry bleach chlorine per foot of water</b>	<b>Amount of 70% chlorine granules per foot of water</b>
3	1½ cups	1 ounce
4	3 cups	2 ounces
5	4½ cups	3 ounces

6	6 cups	4 ounces
7	9 cups	6 ounces
8	12 cups	8 ounces
10	18 cups	12 ounces
<i>Source: Illinois Department of Public Health. Recommendations may vary from state to state.</i>		

*To Disinfect Drilled Wells*

1. Determine the amount of water in the well by multiplying the gallons per foot by the depth of the well in feet. For example, a well with a 6-inch diameter contains 1.5 gallons of water per foot. If the well is 120 feet deep, multiply 1.5 by 120 (1.5 X 120 = 180).
2. For each 100 gallons of water in the well, use the amount of chlorine (liquid or granules) indicated in [Table 2](#). Mix the total amount of liquid or granules with about 10 gallons of water.
3. Pour the solution into the top of the well before the seal is installed.
4. Connect a hose from a faucet on the discharge side of the pressure tank to the well casing top. Start the pump. Spray the water back into the well and wash the sides of the casing for at least 15 minutes.
5. Open every faucet in the system and let the water run until the smell of chlorine can be detected. Then close all the faucets and seal the top of the well.
6. Let stand for several hours, preferably overnight.
7. After you have let the water stand, operate the pump by turning on all faucets continuing until all odor of chlorine disappears. Adjust the flow of water from faucets or fixtures that discharge into septic tank systems to a low flow to avoid overloading the disposal system.

<b>Table 2. Bleach for a Drilled Well</b>	
<b>Diameter of Well (in inches)</b>	<b>Gallons per foot of water</b>
3	0.37
4	0.65
5	1.0
6	1.5
8	2.6
10	4.1
12	6.0
<b>Table 3. Amount of disinfectant required for each 100 gallons of water</b>	
Laundry Bleach (5.25% Chlorine)	3 cups*

Hypochloride Granules (70% Chlorine)	2 ounces**
<p>*1 cup = 8-ounce measuring cup  **1 ounce = 2 heaping tablespoons of granules</p> <p><i>Source: Illinois Department of Public Health.  Recommendations may vary from state to state.</i></p>	

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

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## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

### ***Food Safety During and After A Flood***

Do not eat any food that may have come into contact with flood water. Discard any food without a waterproof container if there is any chance that it has come into contact with flood water. Undamaged, commercially canned foods can be saved if you remove the can labels, thoroughly wash the cans, and then disinfect them with a solution consisting of one cup of bleach in 5 gallons of water. Relabel your cans, including expiration date, with a marker. Food containers with screw-caps, snap-lids, crimped caps (soda pop bottles), twist caps, flip tops, and home canned foods should be discarded if they have come into contact with flood water because they cannot be disinfected. For infants, use **only** pre-prepared canned baby formula that requires no added water, rather than powdered formulas prepared with treated water.

#### **Frozen and Refrigerated Foods**

If your refrigerator or freezer may be without power for a long period:

- Divide your frozen foods among friends' freezers if they have electricity;
- Seek freezer space in a store, church, school, or commercial freezer that has electrical service; or
- Use dry ice -- 25 pounds of dry ice will keep a 10-cubic-foot freezer below freezing for 3-4 days. (Exercise care when handling dry ice, because it freezes everything it touches. Wear dry, heavy gloves to avoid injury.)

Thawed food can usually be eaten or refrozen if it is still "refrigerator cold," or if it still contains ice crystals. To be safe, remember, "When in doubt, throw it out." Discard any food that has been at room temperature for two hours or more, and any food that has an unusual odor, color, or texture.

Your refrigerator will keep foods cool for about 4 hours without power if it is unopened. Add block or dry ice to your refrigerator if the electricity will be off longer than 4 hours.

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## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

# **Precautions When Returning to Your Home**

## **Precautions When Returning to Your Home**

Electrical power and natural gas or propane tanks should be shut off to avoid fire, electrocution, or explosions. Try to return to your home during the daytime so that you do not have to use any lights. Use battery-powered flashlights and lanterns, rather than candles, gas lanterns, or torches. If you smell gas or suspect a leak, turn off the main gas valve, open all windows, and leave the house immediately. Notify the gas company or the police or fire departments or State Fire Marshal's office, and do not turn on the lights or do anything that could cause a spark. Do not return to the house until you are told it is safe to do so.

Your electrical system may also be damaged. If you see frayed wiring or sparks, or if there is an odor of something burning but no visible fire, you should immediately shut off the electrical system at the circuit breaker.

Avoid any downed power lines, particularly those in water. Avoid wading in standing water, which also may contain glass or metal fragments.

You should consult your utility company about using electrical equipment, including power generators. Be aware that it is against the law and a violation of electrical codes to connect generators to your home's electrical circuits without the approved, automatic-interrupt devices. If a generator is on line when electrical service is restored, it can become a major fire hazard. In addition, the improper connection of a generator to your home's electrical circuits may endanger line workers helping to restore power in your area. All electrical equipment and appliances must be completely dry before returning them to service. It is advisable to have a certified electrician check these items if there is any question. Also, remember not to operate any gas-powered equipment indoors.

## **Cleanup**

Walls, hard-surfaced floors, and many other household surfaces should be cleaned with soap and water and disinfected with a solution of 1 cup of bleach to five gallons of water. Be particularly careful to thoroughly disinfect surfaces that may come in contact with food, such as counter tops, pantry shelves, refrigerators, etc. Areas where small children play should also be carefully cleaned. Wash all linens and clothing in hot water, or dry clean them. For items that cannot be washed or dry cleaned, such as mattresses and upholstered furniture, air dry them in the sun and then spray them thoroughly with a disinfectant. Steam clean all carpeting. If there has been a backflow of sewage into the house, wear rubber boots and waterproof gloves during cleanup. Remove and discard contaminated household materials that cannot be disinfected, such as wallcoverings, cloth, rugs, and drywall.

## **Immunizations**

Outbreaks of communicable diseases after floods are unusual. However, the rates of diseases that were present before a flood may increase because of decreased sanitation or overcrowding among displaced persons. Increases in infectious diseases that were not present in the community before the flood are not usually a problem. If you receive a puncture wound or a wound contaminated with feces, soil, or saliva, have a doctor or health department determine whether a tetanus booster is necessary based on individual records.

Specific recommendations for vaccinations should be made on a case-by-case basis, or as determined by local and state health departments.

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

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**SAMPLE NEWS RELEASE**

FOR IMMEDIATE RELEASE – \_\_\_\_\_

**Tetanus Shots Available for Those Affected by  
Flood**

The Arizona Department of Health Services is recommending that anyone who has been exposed to floodwaters or have suffered injuries as a result of the flood, obtain a tetanus shot from the \_\_\_\_\_ County Health Department if they haven't received one in the last five years.

The \_\_\_\_\_ County Health Department will be providing tetanus shots at \_\_\_\_\_ location/address \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ until \_\_\_\_\_ date \_\_\_\_\_ or the flood cleanup is complete.

People with open cuts or wounds should especially take extreme care when walking through floodwaters due to the possibility of contracting tetanus.

“We are urging people who are not part of the cleanup effort to stay clear of the flood waters.” commented \_\_\_\_\_, \_\_\_\_\_ County Health Officer.

Those persons concerned about their tetanus status, but not involved with flood-related activities should consult their physician.

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

### **After the Flood: Cleanup of Flood Water**

When returning to your home after a flood, be aware that flood water may contain sewage. Protect yourself and your family by following these steps:

#### **Inside the Home**

- Keep children and pets out of the affected area until cleanup has been completed.
- Wear rubber boots, rubber gloves, and goggles during cleanup of affected area.
- Remove and discard items that cannot be washed and disinfected (such as, mattresses, carpeting, carpet padding, rugs, upholstered furniture, cosmetics, stuffed animals, baby toys, pillows, foam-rubber items, books, wall coverings, and most paper products).
- Remove and discard drywall and insulation that has been contaminated with sewage or flood waters.
- Thoroughly clean all hard surfaces (such as flooring, concrete, molding, wood and metal furniture, countertops, appliances, sinks, and other plumbing fixtures) with hot water and laundry or dish detergent, then disinfect with a solution of 1 cup of household bleach to 5 gallons of water. (Note: this solution should not be used for drinking, cooking, or personal hygiene.)
- Help the drying process by using fans, air conditioning units, and dehumidifiers.
- After completing the cleanup, wash your hands with soap and water. Use water that has been boiled for 1 minute (allow the water to cool before washing your hands).
  - Or you may use water that has been disinfected for personal hygiene use (solution of  $\frac{1}{8}$  teaspoon of household bleach per 1 gallon of water). Let it stand for 30 minutes. If the water is cloudy, use a solution of  $\frac{1}{4}$  teaspoon of household bleach per 1 gallon of water.
- Wash all clothes worn during the cleanup in hot water and detergent. These clothes should be washed separately from uncontaminated clothes and linens.
- Wash clothes contaminated with flood or sewage water in hot water and detergent. It is recommended that a laundromat be used for washing large quantities of clothes and linens until your onsite waste-water system has been professionally inspected and serviced.
- Seek immediate medical attention if you become injured or ill.

#### **Outside the Home**

- Keep children and pets out of the affected area until cleanup has been completed.
- Wear rubber boots, rubber gloves, and goggles during cleanup of affected area.
- Have your onsite waste-water system professionally inspected and serviced if you suspect damage.
- Wash all clothes worn during the cleanup in hot water and detergent. These clothes should be washed separately from uncontaminated clothes and linens.

- After completing the cleanup, wash your hands with soap and water. Use water that has been boiled for 1 minute (allow the water to cool before washing your hands).
  - Or you may use water that has been disinfected for personal hygiene use (solution of  $\frac{1}{8}$  teaspoon of household bleach per 1 gallon of water). Let it stand for 30 minutes. If the water is cloudy, use solution of  $\frac{1}{4}$  teaspoon of household bleach per 1 gallon of water.
- Seek immediate medical attention if you become injured or ill.

For more information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

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## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

# **Animals and Controlling Mosquitoes**

## **Animals**

Many wild animals have been forced from their natural habitats by flooding, and many domestic animals are also without homes after the flood. Take care to avoid these animals, because they may carry rabies. Remember, most animals are disoriented and displaced, too. Do not corner an animal. If an animal must be removed, contact your local animal control authorities. Your local and state health department can provide information about the types of wild animals that carry rabies in your area.

Rats may be a problem during and after a flood. Take care to secure all food supplies, and remove any animal carcasses in the vicinity by contacting your local animal control authorities.

If you are bitten by any animal, seek immediate medical attention. If you are bitten by a snake, first try to accurately identify the type of snake so that, if poisonous, the correct anti-venom may be administered.

## *Animal Disposal After a Flood*

Most states have their own guidelines on disposal of dead animals, so people with questions regarding the specific situation in their state are highly encouraged to contact local or state health and agricultural officials for clarification.

## *Frequently Asked Questions*

### **Are there any special health risks I need to be aware of when disposing of dead animals after a flood?**

The risk to humans from animal carcasses is low if proper precautions are taken.

- Practice proper hand washing to prevent infection with certain pathogens that may be transmitted from farm animals, including *Salmonella* and *E. coli*.
- Secure all food sources and remove any animal carcasses to avoid attracting rats.
- Wear insect repellent when outdoors. Flooding may lead to more mosquitoes, which can carry disease.
- Be on the alert for snakes that may be hiding in unusual places after flooding. If you are bitten, try to identify the snake so that if it is poisonous, you can be given the correct antivenin. Do not cut the wound or attempt to suck the venom out. Contact your local emergency department for further care.

People working to clean up areas containing swine or poultry carcasses should take the following precautions:

- Wear protective clothing, including waterproof gloves, waterproof boots, and protective eyewear (cover any open wounds).
- Use duct tape to seal tops of gloves and boots to prevent water seepage.
- Wear respiratory protection – an N-95 respirator or better.
- If you smell hydrogen sulfide (a rotten egg smell), get out of the building and call your county extension office.
- Clean and disinfect all clothing and boots after handling carcass-contaminated materials.
- Wash work clothes separately from street clothes.
- Wash hands thoroughly before placing fingers in mouth (nail biting, etc.).
- Shower and wash hair thoroughly after handling carcass-contaminated materials.

### **How do I dispose of a dead animal on my property during flood cleanup?**

It is usually the responsibility of the owner or person in charge of domesticated animals to appropriately dispose of dead animals in accordance with local or state ordinances within 24 hours after knowledge of the death. It can be the responsibility of the municipal or county government to designate appropriate people to dispose of any domestic dead animals whose owner cannot be identified.

Contact your local animal control department, local health department, or state veterinarian for specific disposal guidance.

### **My pet was killed in the flood. Can I bury it on my property?**

Several cities require Animal Care and Control agencies to manage the disposal of family pets and other dead animals, except for livestock. Check with your local authorities for more information.

### **If not, how do I dispose of the remains?**

1. Wear gloves.
2. Cover your gloved hand with a plastic trash bag, pick up the remains, then invert the trash bag over the remains and seal the bag.
3. For larger animals, use a shovel to place remains inside a plastic trash bag, then rinse off the shovel with water.
4. Call your local animal care and control agency for further instructions and to request pickup.
5. Wash your hands.

### **I am a farmer and I lost a lot of livestock during the flood. How do I dispose of multiple animal remains?**

Each farm operation should have specific plans for animal disposal in the event of an emergency. Farm operations should check with state and local authorities to ensure their plan meets local requirements.

## **Mosquitoes**

The large amount of pooled water remaining after the flood will lead to an increase in mosquito populations. Mosquitoes are most active at sunrise and sunset. The majority of these mosquitoes will be pests, but will not carry communicable diseases. Local, state, and federal public health authorities will be actively working to control the spread of any mosquito-borne diseases.

To protect yourself from mosquitoes, use screens on dwellings, and wear long-sleeved and long-legged clothing. Insect repellents containing DEET are very effective. Be sure to read all instructions before using DEET. Care must be taken when using DEET on small children. Products containing DEET are available from retail outlets and through local and state health departments.

To control mosquito populations, drain all standing water left in containers around your home.

information about health and safety during a flood, please visit the Arizona Department of Health Services' Web site at [www.azdhs.gov](http://www.azdhs.gov) or call the State Public Health Information line at (602) 364-4500 or statewide toll-free at (800) 314-9243.

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## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

### **Protect Yourself From Mold**

After natural disasters such as hurricanes, tornadoes, and floods, excess moisture and standing water contribute to the growth of **mold** in homes and other buildings. 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.

#### **People at Greatest Risk from Mold**

The following groups of people may be at greater risk than others for mold:

- Infants and children
- The elderly
- People with asthma, allergies, and other respiratory (breathing) conditions
- People with weakened immune systems (such as people with HIV infection, cancer patients taking chemotherapy, and people who have received an organ transplant)

**Any person at risk from mold should not be in an area that is likely to be contaminated with mold.**

#### **Possible Health Effects of Mold Exposure**

- Stuffy nose, irritated eyes, or wheezing can occur in people who are sensitive to molds.
- Wheezing, difficulty in breathing, and shortness of breath can be an allergic reaction to mold and can sometimes be severe.
- Skin reactions can develop.
- Mold infections can develop in the lungs of people with weakened immune systems and with chronic lung diseases such as obstructive lung disease.

#### **Treating Symptoms of Mold Exposure**

If you or your family members have health problems after exposure to mold, contact your doctor or other health care provider.

#### **Recognizing Mold**

You *may* recognize mold by:

- **Sight** ( Are the walls and ceiling discolored, or do they show signs of mold growth or water damage?)
- **Smell** (Do you smell a bad odor, such as a musty, earthy smell or a foul stench?)

**Note: Controlling moisture in your home is the most critical factor for preventing mold growth.**

When you reenter your home, first dry out your house. (See the fact sheet for drying out your house, [Reentering Your Flooded Home](#).) Mold spores may be present and can become airborne.

### **Taking Steps to Protect Yourself**

Note: If the cleanup is a large job, you should consult or contract with a professional who is experienced in cleaning up mold. If it is a smaller job that you can do yourself, then take these precautions:

- Protect your eyes with glasses or goggles.
- Wear rubber boots and waterproof gloves during cleanup.
- Wear outer clothing (long-sleeved shirts and long pants) that can be easily removed and laundered or discarded.
- Shorten the amount of time you are in the area.
- Minimize the spread of airborne spores by using work practices such as
  - decreasing foot traffic in the area,
  - avoiding dry sweeping,
  - avoiding rapid movements (such as jerking or throwing moldy objects), and
  - covering moldy objects when removing them.

### **Deciding Whether to Wear Respiratory Protection**

Respirators are most commonly used in workplaces, where employer programs ensure that the correct type is selected and properly fitted. Employees in workplaces with such programs understand the limitations and whether they are physically capable of wearing a respirator. Homeowners using respirators for short periods don't have the support of a workplace program.

When wearing a respirator, please be aware of the following limitations:

- **People should check with their doctor** to ensure that they are physically capable of wearing a respirator. Wearing a respirator can pose a health risk.
  - For example, if a wearer has preexisting respiratory issues, the pressure drop created by a well-fitted respirator can put the wearer at risk.
- Wearers should read the instructions that come with the respirator on how to get the best fit. Proper adjustment and fit is important to lessen leakage into the respirator.
- Without proper training, wearers often use respirators for purposes for which the respirator was not intended. The N-95 respirator is designed to protect only against dusts and particles the size of mold spores with 95 percent or greater efficiency. (The N-95 is the respirator to use for mold clean-up if the decision has been made to wear one.)
- Wearers are not protected from disinfectant vapors.
- Wearers often think they are protected in hazardous areas when they are actually not protected.

## Cleaning Up Mold

After drying out your house and taking protective measures, remove items that cannot be cleaned, and then clean your home and household items.

**Removal and cleaning are important because even dead mold may cause allergic reactions in some people.**

- Make sure the working area is well ventilated.
- Remove all porous items that have been wet for more than 48 hours and that cannot be thoroughly cleaned and dried. These items can remain a source of mold growth and should be removed from the home. **When in doubt, take it out!** However, homeowners may want to temporarily store items outside of the home until insurance claims can be filed. [See recommendations by the Federal Emergency Management Agency \(FEMA\).](#)
- Porous, noncleanable items include carpeting and carpet padding, upholstery, wallpaper, drywall, floor and ceiling tiles, insulation material, clothing, leather, paper, wood, or food.
- Clean nonporous surfaces such as walls, floors, and counter surfaces with soap and water. **(Use non-ammonia soap or detergent.)** Use a stiff brush on rough surface materials such as concrete.
- If you wish to disinfect, refer to the U.S. Environmental Protection Agency (EPA) document, *A Brief Guide to Mold and Moisture in Your Home* at <http://www.epa.gov/iaq/molds/images/moldguide.pdf>.

## Preventing Mold from Coming Back

The key to preventing mold from coming back is to control moisture. Mold spores are found in outdoor air, so mold can grow again if conditions are suitable indoors. **Previously damp areas must be kept completely dry.**

- Clean fabrics (curtains, upholstery, bedding, etc.) often and keep them dry.
- Store clean fabric items in well-ventilated areas.
- Reduce moisture in the air with dehumidifiers, open windows, or air conditioners, especially in hot weather.
- Keep the humidity in your home between 40% and 60%. Humidity in the home can be measured with a household humidity sensor available at your local hardware store.
- Reduce condensation on cold surfaces by insulating. Examples include insulating air-conditioning ducts, cold water pipes, etc.
- Routinely check potential problem spots such as the bathroom and laundry for moisture and moldy odors.
- Fix leaks in pipes, and investigate any damp areas around tubs and sinks.
- Vacuum and clean surfaces frequently.
- Seek the advice of a mold remediation company if mold growth persists.

## SAMPLE NEWS RELEASE

FOR IMMEDIATE RELEASE – \_\_\_\_\_

# **Protect Yourself From Carbon Monoxide Poisoning**

**Never use generators, grills, camp stoves, or other gasoline, propane, natural gas, or charcoal-burning devices inside your home, basement, garage, or camper—or even outside near an open window.**

**Install a carbon monoxide detector in your house, and check its battery every time you check your smoke detector batteries.**

**Carbon monoxide (CO) is an odorless, colorless gas that can cause sudden illness and death if you breathe it.** When power outages occur during emergencies such as hurricanes or winter storms, you may try to use alternative sources of fuel or electricity for heating, cooling, or cooking. CO from these sources can build up in your home, garage, or camper and poison the people and animals inside.

**If you are too hot or too cold, or you need to prepare food, don't put yourself and your family at risk—look to friends or a community shelter for help. If you must use an alternative source of fuel or electricity, be sure to use it only outside and away from open windows.**

**Every year, more than 500 people die from accidental CO poisoning.** CO is found in combustion fumes, such as those produced by small gasoline engines, stoves, generators, lanterns, and gas ranges, or by burning charcoal and wood. CO from these sources can build up in enclosed or partially enclosed spaces.

People and animals in these spaces can be poisoned and can die from breathing CO in an enclosed or partially enclosed space.

### **How to Recognize CO Poisoning**

**Exposure to CO can cause loss of consciousness and death.** The most common symptoms of CO poisoning are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion. People who are sleeping or who have been drinking alcohol can die from CO poisoning before ever having symptoms. If you think you may have CO poisoning, consult a health care professional right away.

### **Important Tips**

- Never use a gas range or oven to heat a home.

- Never use a charcoal grill, hibachi, lantern, or portable camping stove inside a home, tent, or camper.
- Never run a generator, pressure washer, or any gasoline-powered engine inside a basement, garage, or other enclosed structure, even if the doors or windows are open, unless the equipment is professionally installed and vented. Keep vents and flues free of debris, especially if winds are high. Flying debris can block ventilation lines.
- Never run a motor vehicle, generator, pressure washer, or any gasoline-powered engine outside an open window or door where exhaust can vent into an enclosed area.
- Never leave the motor running in a vehicle parked in an enclosed or partially enclosed space, such as a garage.

## APPENDIX C

# Health and Safety Universal Precautions for Post-Flood Buildings

The following article was written by Matthew Klein of Indoor Air Quality Solutions and Mark Fleming of Blue Chip Builders, Inc. This sheet contains only information relevant to **health and safety hazards of buildings after floods**. It doesn't contain detailed instructions about cleaning or claims procedures. This sheet was developed in response to the lack of comprehensive information about health and safety hazards due to floods. The health and safety information in this sheet has been developed from review of information from a broad range of sources and the authors' personal experience in building environment problems.

### *Universal Precautions:*

This information sheet contains universal precautions. **Universal precautions** are used with the assumption that a hazard exists, whether it actually does or not, unless proven otherwise.

Therefore, protective measures are used until the hazard is proven to not exist. Yes, universal precautions might not be needed. However, they're used because: experience has shown that a hazard most likely exists; the consequences of a hazard far outweigh the trouble and cost of using precautions; lack of time or cost prohibit the analysis needed to rule out a hazard; and/or persons who don't have the knowledge or skills to analyze for a hazard will be working in a potentially hazardous environment. One point needs to be made, **post-flood buildings have a high probability of having health or safety hazards. Whenever you are unsure about how hazardous a situation is, always use caution until the situation is proven otherwise.**

### *Health Precautions:*

Any tetanus shot that was received more than 5 years ago is assumed to be ineffective protection. Other immunizations might also be needed based on local health department recommendations. If you cannot remember when you last received a particular shot, assume it to be ineffective. **Any** person injured while working in post-flood buildings needs to be up-to-date on his or her tetanus shots. **All** persons might need other shots; pay attention to news bulletins from health organizations.

**All** persons with the following health problems shouldn't enter post-flood buildings until after the they are completely cleaned up, decontaminated, and dried out: persons with severe asthma, mold allergies or chronic respiratory disease; persons who have had other hypersensitivity respiratory reactions to bacteria or mold, such as hypersensitivity pneumonitis or humidifier fever; and persons who are immunocompromised in any way, such as persons with HIV or AIDS. Even after the buildings are cleaned, dried and decontaminated, such persons should leave the building if they develop symptoms, until the problem can be investigated.

Anyone who develops unusual symptoms, such as the following, should seek **immediate** medical attention: wheezing, difficulty breathing, chest tightness, chronic cough, fever, rashes or hives, extreme respiratory irritation. Remember that this cleanup is being performed in an environment where you can potentially be exposed to hazardous materials. Furthermore, the stress of working harder than many people are used to could cause injury. **Any** unusual

symptoms could signal serious exposure to hazardous chemical or biological materials, or another serious medical problem.

**Wash hands and face frequently** with anti-bacterial soap and drinking-quality water. When washing hands, scrub the areas under nails with a fingernail brush; dirt under the nails can harbor contaminated material. Wash hands and face before eating anything or smoking; contaminated material from dirt on the face and hands can be transferred to food or cigarettes, and ingested or inhaled. Avoid touching your eyes, mouth, ears, or nose with dirty hands. Keep in mind that personal cleanliness can be a major prevention of illness or disease.

Wash all cuts, abrasions, lacerations, and puncture wounds **immediately** with anti-bacterial soap and drinking-quality water for at least one minute, then apply an anti-bacterial salve and bandage. Have all deep cuts treated **immediately** by a medical professional. Infection can set in rapidly after injury. When in doubt about treating an injury, seek medical care.

Don't use showers, toilets, or other facilities until you are certain that the sanitary lines from the building are clear. Sewer water could back up into the building if the sewer or septic system is not working correctly.

*General Safety Precautions:*

Unless proven otherwise, consider **all** mud, debris and water pools to be hiding electrical shock, laceration or slip hazards, chemical or biological exposure hazards, or wild animals. First, verify that all power is out in the area before walking through mud or water, or before clearing debris. Shuffle walk through mud and water pools when entering for the first time. Lift debris in piles with poles or sticks to check for hazards or wild animals before moving the debris. Inspect the building using only flashlights-never open flames of any kind.

Consider **all** pooled water inside and outside of the building to be biological or chemical exposure hazards, unless proven otherwise by qualified personnel. Don't permit children to play in water pools or mud. Attempts should be made to drain and dry the pools as soon as possible. Flooded basements should be emptied as soon as possible; but care should be taken to assure that the foundation will not collapse during draining. (Pressure from the water in the ground surrounding the foundation could cause the foundation to collapse.) If you don't know how to drain the basement without causing collapse, have a qualified person do it.

Consider all mold (a.k.a. fungi or mildew) and bacteria to be toxin producers. Some mold produce particles and volatile organic compounds that irritate most people's eyes and respiratory systems. But, some mold and bacteria have been linked to serious respiratory health problems and death. **Risking exposure isn't worth the time that could be spent in recovery from illness, and definitely not worth death.**

**Unusual odors, or irritation of the skin and mucous membranes** should be considered to be signs of toxic chemical exposure, unless proven otherwise by qualified personnel. Be aware that some toxic chemicals don't have odors that warn of their presence. If irritation of the skin or mucous membranes is encountered, leave the area immediately, wash the affected skin area with soap and water, and then be checked by medical personnel. Have qualified personnel check the area for chemical hazards before returning to it.

Combustion appliances and equipment will cause **carbon monoxide** poisoning when used in a building, unless proven otherwise by qualified personnel. Use all combustion equipment, such as gas-powered electrical generators and grills outside of the building. Make certain to locate them where their exhaust will not enter the building. Only heaters made to be used indoors should be used indoors; however, use them with caution and adequate ventilation. Follow manufacturers precautions about using combustion equipment. If you show symptoms of dizziness, chronic headaches or nausea, excessive tiredness, or a cherry red skin color, suspect carbon monoxide poisoning and seek medical care.

Any materials or furnishings that might have **absorbed water** (furniture, building materials, mattresses, etc.) could weigh over five times more than they did before flooding. (Water weighs over 60 lbs per cubic foot.) **Use caution when lifting anything**, and lift with the legs. Remember that water can wick farther up some materials than the level of the water; so, an item might have absorbed more water than expected.

Don't connect electrical generators to the electrical systems of the building. This could be a shock hazard to those in the building or those working on power lines. **Use generators to power only devices connected to extension cords.** Make sure that all extension cords are protected by ground fault circuit interrupters (GFCIs) and overload protectors. Make sure that the extension cords have adequate capacity to handle the equipment they are being used for, and that they are approved for use in wet areas. Don't use frayed or damaged extension cords. Follow all equipment safety precautions; even then, don't use equipment that you aren't skilled in using without supervision.

Use only wet/dry shop vacuums for vacuuming up water and wet materials. If possible, **pipe the vacuum exhaust out of the building** using additional length of vacuum hose. The exhaust could contain water aerosol from the material being vacuumed up. This aerosol might contain microbiological materials.

All debris should be moved immediately to disposal containers, such as dumpsters, or placed in plastic garbage bags and sealed. **Don't accumulate piles of debris** that could be microbiological breeding grounds or hiding places for wild animals.

**Fatigue, stress, and rushing leads to accidents.** Don't overwork yourself and get plenty of rest. Don't rush the work or take short cuts.

#### *Cleaning and Decontamination Procedures:*

Note that surfaces should always be cleaned **and** decontaminated. The following procedure is used for cleaning and decontaminating surfaces that were under water inside post-flood buildings:

1. Remove debris and materials that cannot be shoveled or scooped.
2. Shovel or scoop up dirt and mud, and remove it from the building.
3. Wash all surfaces with clean water.
4. Wash with a soap or detergent solution.
5. Rinse with clean water.
6. Apply a disinfectant solution.

7. After 15 to 20 minutes, rinse the disinfecting solution off.
8. Remove as much water as possible using a wet/dry vacuum or dry cloths.
9. Air dry as rapidly as possible, without damaging the item.

Water used in cleaning should be clean water, but doesn't have to be of the same quality as drinking water. **Disinfectant solutions can be made from household bleach** that contains at least 5.25% sodium hypochlorite. For porous, dirty surfaces (wood, cloth, concrete, etc.), one cup of bleach should be used for every 10 cups (about 1/2 gallon) of water. For non-porous, dirt-free surfaces (metal, glass, plastic, etc.), one cup of bleach should be used for every 100 cups (about 6 gallons) or water. Note that these concentrations are the maximum and minimum concentrations; they aren't absolutes. Use your judgment about concentration based on the surface to be disinfected. The more porous or rough a surface is, the more concentrated the bleach solution should be because porous or rough surfaces cannot be cleaned as effectively as non-porous or smooth surfaces.

**Note that bleach can corrode**, etch, lighten or otherwise negatively affect some materials, depending on the concentration. Small sections of a material should be tested with the bleach solution first to see if it affects the material. Be sure to leave the bleach solution on for as long as you would during the decontamination process. If the bleach solution harms the material, other disinfectants, such as Lysol or PineSol, can be used. Note that these other disinfectants can be used at any time instead of bleach. Bleach is less expensive, but as effective as the other disinfectants for decontaminating flood damaged items. Bleach should never be mixed with any other products unless the product label states that it is okay, because the bleach could react with them and produce hazardous gases. If in doubt, don't mix them.

Gloves need to be worn when using any cleaner, detergent, or disinfectant because the cleaner can cause skin problems. **Furthermore, most cleaners and disinfectants contain respiratory irritants, whether or not masking fragrances have been added.** Well ventilate the areas where cleaner and disinfectant solutions are mixed and used. **Read and follow all safety precautions on the labels of the cleaner and disinfectant products you use.**

#### *Protective Equipment:*

Use protective personal equipment. **Required equipment should be long-sleeved shirts, long pants, goggles, head protection against bumps and falling debris, heavy-soled shoes or boots, and work gloves.** Quality respirators are needed in areas where dust, mist or fibers are being generated into the air from cleanup or demolition work, and recommended in areas that have a musty odor. Heavy soled rubber boots or waders are needed when walking through water pools or deep mud.

#### *Food and Drinking Water:*

Drink only water you know is safe for drinking. Safe water is usually water in sealed bottles that weren't under water, water that has been stated as being safe by health officials, or water that you have treated according to health department guidelines. Wash and decontaminate any containers used for water before refilling.

Discard all food not in tin cans; it should be considered unfit to eat. Discard all food in tin cans that are swollen, leaking, or corroded. For the remaining tin cans, the Center for Disease Control (CDC) recommends removing their labels, washing and disinfecting them. Be sure to mark them to be able to identify their contents later. **In all cases, when in doubt, throw it out.**

#### *Building Structure:*

Unless qualified personnel state otherwise, **the following are signs of unsafe structural conditions:**

- buildings moved off of or shifted on their foundations;
- washed out soil around foundations;
- large cracks or gaps in foundations or basement walls that didn't exist before the flood;
- missing floor joist, main beam, or porch roof supports;
- sagging roofs, floors or ceilings;
- floors that bounce or give when walked on;
- walls that move when pushed;
- gaps between steps and porches;
- leaning walls;
- loose ceiling or wall materials;
- doors or windows stuck for reasons other than swelling due to water or whose frame is racked;
- or other changes in the shape or structure of the building.
- For buildings with chimneys, fireplaces, or other interior brick or stone structures, consider unusual gaps, cracks, loose materials, sags, misalignments or leaning in the structure to be signs of weak structure.

Never enter a building that has an unsafe structural condition until a qualified person checks out the building and the structure is properly braced or repaired. If the condition is found after entering the building, everyone should leave the building **immediately**, an inspector called in, and unsafe materials removed or structures braced before work resumes inside the building.

#### *Electrical Systems:*

Consider **any** downed power lines within one block of the building to be potential shock hazards until proven otherwise. (Electricity can travel for great distances through water, fence materials or other conductors, and some wires might be hidden in the mud.) Consider **all** wiring in buildings to be shock hazards until it has been checked out by a building inspector or electrician. Until then, turn the power off at the building's **service panel**. Have only persons knowledgeable about electrical shock hazards shut the power off. **All** electric circuit breakers, GFCIs and fuses that were under water need replacing. Switches and outlets that were under water can be cleaned and reused if still functional; but **when in doubt, throw it out**. All electrical motors that were under water need cleaning, drying and inspection by a qualified person before being put back in service. All light fixtures that were under water need to be opened, cleaned, dried and checked before being put back in service.

#### *LP, Natural Gas and Fuel Oil Lines:*

Consider **all** gas lines to be leaking unless proven otherwise by leak checks. Gas lines should be cut off at the service supply until after cleanup is completed and gas appliances have been

serviced. All gas control valves on gas-combustion appliances that were under water need to be replaced. Leak checks need to be performed on all lines when the appliances are returned to service. At **any** time and **even if the gas has been turned off**, gas odors should be considered to be a sign of a leak, unless proven otherwise by fire or utility personnel. (Gas can travel underground from leaks in other locations.) When odors are detected, the building should be evacuated **immediately** and fire or utility personnel called in to check for leaks.

Oil tanks are considered to be leaking, unless proven otherwise. Shut the line off at the tank until after cleanup is completed and the oil furnace has been serviced. When the furnace is put back in service, check for leaking lines.

#### *Building Materials:*

Assume that any building materials (carpet, padding, wallboard, wallpaper, ceiling tiles, etc.) that are **moist or wet 24 hours after the water recedes has mold growing on or in it**, even if you cannot see or smell it. Replaceable building materials that cannot be thoroughly cleaned, decontaminated and rapidly dried should be discarded. Irreplaceable building materials should be cleaned and decontaminated by professionals as soon as possible. Wall paneling made from wood laminates or vinyl might be cleaned and decontaminated, and reinstalled. Low-cost paneling, made of particle board for example, should be discarded. Consider all wall and floor coverings (for example, wallpaper, carpet, padding, and vinyl flooring) and insulation other than foam insulation to be contaminated with mold growth, and discard them if they are replaceable. Foam insulation needs to be cleaned, decontaminated, and dried thoroughly. Irreplaceable floor and wall coverings should be cleaned and decontaminated professionally as rapidly as possible. Remember, **if in doubt, throw it out**.

Consider all enclosed wall, ceiling and floor cavities that were under water to be areas where toxic mold or bacteria are growing. **These cavities must be opened, cleaned, decontaminated, and thoroughly dried.** In general, walls that were under water should be stripped to the studs and outer skin of the building up to about one foot above the flood line. The remaining wall cavity above the flood line should be checked for mold growth, and areas where mold is found growing should also be opened. Floor and ceiling cavities usually can have one side of the cavity exposed for work. Note that checking for mold growth in ceiling cavities above the flood line might also be prudent if these areas have gotten wet. Walls, ceilings and floor cavities with non-replaceable sheeting materials or wall coverings will need access holes made in each stud or joist cavity to allow cleaning, disinfecting and drying. These cavities should be professionally cleaned and decontaminated.

**Building materials made from particle and wafer board that were under water should be discarded.** Some of these materials swell when gotten wet and will never return to their previous shape. Mold might have also grow within the material and be nearly impossible to remove. Buildings built before 1975 might have asbestos or lead paint. Asbestos was used primarily as insulation or a tape on heating systems. Consider all white fibrous material used on heating system components to be asbestos and extremely hazardous. Loose or friable asbestos needs to be removed. Paint can be tested for lead using testing kits available at some building supply centers. If in doubt, have questionable materials checked by qualified personnel. If you find asbestos or lead, contact your state or federal Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA), the National Institute for Occupational

Safety and Health (NIOSH) or an industrial hygiene firm for information on proper removal and disposal techniques.

**Dry the interior of the building as rapidly as possible using dehumidifiers, heated air, and outdoor ventilation air.** Using a wet/dry vacuum to pull water out of the materials will also help speed drying.

*Personal Property:*

**Assume that any material that is moist or wet 24 hours after the water recedes has mold growing on or in it,** even if you cannot see or smell it. Most paper items, and clothing and linens made from natural materials are highly susceptible to fungal growth. These items should be taken care of first.

- **All** personal items that are being kept and that were under water should be rinsed off. **Clothing and linens** should be laundered in hot water and dried in a dryer, or sent to a dry cleaner.
- Nonessential **paper items** should be discarded. Other paper items should be air dried. Photos can be wiped off and air dried. If possible, copy essential paper items after they have dried and discard the original. If you cannot tend to the paper items quickly, rinse and freeze them until you can.
- Discard all **health and beauty supplies**, cosmetics, bandages and medicines that were under water.
- **Children's toys** that are being kept should be cleaned and decontaminated before the children play with them.
- All other personal property will also most likely be contaminated. All replaceable property that cannot be cleaned, disinfected and dried thoroughly, such as **upholstered furniture, and mattresses**, should be discarded.
- Property made from particle or wafer board should also be discarded. Property that doesn't readily absorb water, such as **metal or quality wood furniture**, should be cleaned and decontaminated. Invaluable property that has absorbed water should be professionally cleaned and decontaminated. If possible, upholstery and fabric on irreplaceable furniture should be replaced. If these cannot be replaced, the fabric should be removed and decontaminated, and the stuffing replaced.
- **Consider all electric appliances that were under water to be shock hazards.** All appliances will need to be cleaned, decontaminated, dried thoroughly and checked before being used. Some appliances might have to be discarded. Qualified appliance service personnel should do the work on larger appliances, and probably on the smaller ones too.

*Heating, Ventilating, and Air Conditioning (HVAC) Systems:*

**The interior surfaces of HVAC equipment that were under water are reservoirs for mold and bacteria growth.** The interior components of the air handling unit (a.k.a. furnace, air conditioner, central air system) will need to be inspected, cleaned and decontaminated by professionals. Insulation inside the air handling unit might need to be replaced if it is damaged or if it has mold growing on it.

Fans will need to be removed, cleaned, decontaminated and dried thoroughly **before being placed back in the air handling unit.** Qualified service personnel need to replace the gas control valves on gas-combustion units. These personnel also need to clean, check and service

the heating and air conditioning equipment, and control systems of all air handling units that were under water.

**Registers or diffusers can be removed, washed, decontaminated, and reinstalled.** Unlined ductwork can be disassembled, washed, decontaminated, dried and reassembled by persons doing cleanup if they have the necessary skills. Lined ductwork should be checked and cleaned by professionals. If the lining in the ductwork is damaged or has mold growing on it, the insulation should be replaced. Ductboard ducts should be replaced.

**Exhaust fans** need to be removed, cleaned, decontaminated and dried thoroughly before being reinstalled and put back in service. Persons doing the cleanup can do this work if they have the skills to do it.

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