



Conserve O Gram

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Health And Safety Hazards Arising From Floods

Flood conditions not only create problems for museum collections but also hazards for museum staff. It is important to be cautious of the following hazards in a water emergency:

- building structural instability
- electrical systems and gas lines
- physical dangers
- carbon monoxide
- chemicals and contaminants
- molds and mildew
- asbestos
- lead
- wildlife

When dealing with any of these hazards, be prepared. Do not enter flooded areas or take any action until authorities determine it is safe. Wear proper clothing when entering flooded areas. You will need boots and work gloves. Be sure to cover all areas of the body. According to the National Institute for Occupational Safety and Health, working in water cooler than 75°F (24°C) for extended periods of time can lead to hypothermia.

Structural Instability

Water can weaken the walls and foundations of buildings. Pressure from water in the ground surrounding the foundation can cause structural damage or collapse. The following are signs of unsafe structural conditions:

- washed out soil around the foundation
- large cracks or gaps in the foundation
- sagging roofs or ceilings
- floors that bounce or give when walked on

Do not enter a building that may have structural damage until a qualified individual inspects it and determines that it is safe. You may need to remove standing water. Pump no more than a third of the water each day to allow the building to settle gradually avoiding further damage.

Electrical and Gas Hazards

Before entering a flooded building, turn off the gas and electricity to avoid electrocution, fire and explosions. Do not touch electrical equipment if the ground is wet unless the power is off.

Be aware of:

- flooded electrical circuits
- broken or leaking gas lines
- submerged furnaces or appliances
- flammable materials

Use only battery-powered flashlights when inspecting a building. Never have an open flame in a flooded area. If you smell gas, evacuate the building immediately and call the fire department to check for leaks.

Physical Dangers

Use caution when entering a flooded location. Dangers may include:

- nails, broken glass, or sharp metal that can hide in water or mud
- slippery floors

Materials or furniture in flooded areas may have absorbed water. They could weigh over five times their normal weight. When moving heavy

or wet objects:

- Use caution and always lift with your legs.
- Avoid back injuries by using teams of two or more people.
- Don't lift objects that weigh more than 50 lbs. per person.

Carbon Monoxide

Flood cleanup may include the use of gas or diesel-powered pumps or generators. Never use this equipment indoors or in confined spaces. They often give off carbon monoxide, a colorless, odorless gas. When using equipment outdoors, make sure that exhaust does not enter the building. Carbon monoxide poisoning may lead to sickness or death. Seek medical attention if the following symptoms occur:

- dizziness
- chronic headaches or nausea
- excessive tiredness
- cherry red skin color

Chemicals and Contaminants

Most museums house chemicals that can be hazardous in floods. Cleaning chemicals, paints, solvents, and pesticides may be present in areas including:

- photographic processing labs
- maintenance closets
- storage areas
- conservation labs

Floodwater can dislodge containers that hold these chemicals. If working in an area that may be contaminated:

- Wear protective clothing and respirators to avoid skin contact or inhalation of vapors.
- Contain the spill area if possible.
- Construct a dam to prevent chemicals from spreading.

- Put smaller containers that are leaking into larger containers.

Some symptoms of pesticide poisoning include:

- headache
- nausea
- diarrhea
- sweating
- breathing difficulty
- tremors or convulsions

These symptoms usually appear immediately or within a few hours after exposure.

Molds and Mildew

When temperatures reach 70°F, mold growth can occur. Large numbers of mold spores can trigger allergic reactions, infections, and other respiratory problems. If a mold problem is detected, try to isolate it by:

- sealing off the area or objects that have mold growth
- keeping air movement to a minimum
- avoiding opening and closing doors
- blocking ventilation systems so spores cannot spread to other areas

When working in a moldy area, wear masks or respirators (see *Conserve O Gram 21/13: An Introduction to Respirator Use in Collections Management*). If a person breathes enough molds, reactions may include:

- tightening of the chest
- flu-like symptoms
- death

Asbestos

Asbestos was commonly used for insulation, ceilings, and floorings in buildings until the 1970s. It was also used in:

- treatment of natural history specimens
- taxidermy mounts
- fine art plaster
- textiles
- restoration patches in archeological ceramics

Asbestos fibers do not present a risk when they are enclosed. As asbestos-containing materials dry, however, the asbestos fibers can flake off. If the fibers become airborne, they can be very dangerous. The fibers are so small that they cannot be seen with the naked eye, and are easily inhaled. Common symptoms from asbestos exposure include:

- shortness of breath
- chest pains
- swelling in the abdomen

Lead

Lead can also present a hazard in post-flood buildings. Lead paint was often used in historic structures. Water can damage the painted walls causing the paint to crack and flake. Dust from the lead paint can be inhaled. Common symptoms of lead poisoning include:

- fatigue
- depression
- heart failure
- abdominal pain
- anemia
- kidney failure

Wildlife

Following floods, animals can be forced out of their natural habitats and into unusual places. Snakes can easily get into damaged structures through cracks and pipes. If you live in an area that snakes inhabit, take the following precautions:

- Learn how to identify venomous snakes in your area.
- Look for snakes around piles of debris or trash.
- Wear protective clothing, tall boots, and gloves.
- Use sticks or shovels to remove debris.
- Never expose hands or feet where snakes may be hiding.
- If you find a snake, avoid sudden movement; if you remain still, the snake may leave.

To prevent snakes from entering a building:

- Eliminate their food supply—mice and rats.
- Remove hiding places—debris and trash.
- Block openings where snakes may get in.

Rodents can also hide in debris. Snap traps can be used to catch mice and rats. Be aware of the kinds of animals that carry rabies. If an animal gets into your building, call a professional. Never corner an animal or try to catch one yourself.

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