



Natural Disaster Assistance for Missouri Citizens Additional Contact Phone Numbers

1-800-361-4827

Department of Natural Resources fact sheet

3/2006

The Department of Natural Resources realizes that a natural disaster will spawn environmentally related problems not specifically mentioned in this guide. As always, staff are available to help you. For more information on the following concerns, you can call department staff at the numbers below:

Environmental Emergencies should be reported to (573) 634-2436.

Air Pollution Control	(573) 751-4817
Environmental Services	(573) 526-3315
Hazardous Waste	(573) 751-3176
Land Reclamation	(573) 751-4041
Public Drinking Water	(573) 751-5331
Soil and Water Conservation	(573) 751-4932
Solid Waste Management	(573) 751-5401
State Historic Preservation Office	(573) 751-7858
Water Pollution Control	(573) 751-1300

Department of Natural Resources Regional Environmental Offices:

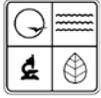
St. Louis Regional Office	(314) 416-2960
Kansas City Regional Office	(816) 622-7000
Northeast Regional Office (Macon)	(660) 385-8000
Southeast Regional Office (Poplar Bluff)	(573) 840-9750
Southwest Regional Office (Springfield)	(417) 891-4300

Other Government Agencies

Missouri Department of Agriculture	(573) 751-3376
Missouri Department of Health and Senior Services	(573) 751-6111

For More Information Contact

Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens

What To Do With Disaster Debris

800-361-4827

Department of Natural Resources fact sheet

6/2008

The following guidance applies only after the Governor has declared a state of emergency due to damage caused by a natural disaster.

After the Governor issues an executive order giving the Director of the Missouri Department of Natural Resources the authority to temporarily waive or suspend the rules and regulations, the department may issue variances from environmental regulations during the emergency and subsequent recovery period.

Check with the department's nearest Regional Office for details on how wastes shall be handled before implementing any of these special practices. A list of regional offices is found in this document and on the Web at [www.dnr.mo.gov/regions.htm](http://www.dnr.mo.gov/regions/regions.htm).

Appliances

Appliances include clothes washers, dryers, water heaters, trash compactors, dishwashers, conventional ovens, ranges, stoves, woodstoves, air conditioners, refrigerators and freezers.

Appliances damaged by the storm can be disposed of in a sanitary landfill **only if** the Governor declares a state of emergency, issues an executive order, and the department has issued appropriate waivers. Cities and counties are encouraged to coordinate collection of storm damaged appliances, using their own public works vehicles or contract help. Cities and counties should establish centralized collection centers to accumulate damaged appliances. Refrigerants should be legally recovered from air conditioners, freezers and refrigerators before recycling them or sending them to a landfill.

Processing and Recycling Appliances for Residents and Business Owners

Individuals needing to dispose of damaged appliances should contact their local officials first for collection of drop-off information, either for recycling or disposal. In rural areas where local assistance is not available, individuals should contact scrap metal recyclers.

For a partial list of recyclers, contact the Department of Natural Resources' Solid Waste Management Program at 800-361-4827 or 573-751-5401. Many recyclers are listed in the yellow pages of your local telephone directory.

Dead Animal Disposal

Small accumulations of dead animals should be buried on site as soon as possible to reduce public health hazards and odor problems.

Large accumulations of dead animals will require special consideration. Contact one of the following offices:

State Veterinarian (Department of Agriculture), 573-751-3377

Public Health Veterinarian, 573-751-6136

Department of Natural Resources' Solid Waste Management Program, 800-361-4827 or 573-751-5401

Hazardous Chemical Waste (Drums, Tanks and Barrels)

If you find sealed drums, tanks or barrels of unknown contents, call the department's Environmental Emergency Response hotline at 573-634-2436. If a propane tank is in flood debris, a company distributing gas may be able to identify the tank and return it to its proper location. (Propane tanks are identified with serial numbers.) All above ground or underground leaks of fuel or other hazardous substances should be reported to the department's Environmental Emergency Response hotline at 573-634-2436.

For more information contact the department's Hazardous Waste Program at 573-751-3176 or the regional office in your area (see last page).

Household Hazardous Waste

Cities and counties are encouraged to establish HHW collection programs for these flood wastes. Homeowners and workers should use caution when cleaning up household products in leaking or damaged containers. Wear rubber gloves and avoid breathing any fumes or dust. Avoid working around these damaged products in confined or poorly ventilated areas. For more information contact the regional office in your area (see last page).

Sandbags

Sandbags may be used as clean fill material so long as they are subsequently covered with a layer of soil or other structural materials to a depth of at least 12 inches. Sandbags may also be used as daily cover at permitted sanitary landfills. Placement of the sand in playgrounds, sandboxes or other areas of direct human contact soon after use in sandbags should be avoided, as the sand may have been exposed to harmful bacteria in floodwaters. Bacteria will dissipate with time and exposure to the elements. Sand could be stockpiled and used for winter road sand, fill, concrete or mortar sand, and other uses.

Sandbags may be stored indefinitely in piles so long as local ordinances are observed. Crushed limestone is considered clean fill and may be used where structurally appropriate.

Sand from broken bags should be prevented from eroding into waterways or storm sewers. If sandbags are emptied of their contents, the bags themselves must be properly disposed of in a permitted disposal facility to reduce the potential for litter problems. Testing will not be required unless obviously contaminated. Follow proper procedures for disposing of sand that appears to have been contaminated by petroleum or other hazardous materials.

For more information contact the department's Solid Waste Management Program at 573-751-5401 or the regional office in your area (see last page).

Sediment and Silt

Sediment and silt are considered clean fill and will not require sampling. If the sediment or silt is known to be contaminated with petroleum products or other chemicals contact the department's Environmental Emergency Response hotline at 573-634-2436.

Storm-Damaged Home Furnishings

- Home furnishings including carpeting, draperies, linens, kitchenware, furniture and mattresses should be disposed of in a municipal solid waste landfill. Contact your local municipality about possible bulk collection.
- Because of toxic fumes, these items must **not** be open burned.

Structural Debris and Treated Lumber

Concrete, rock, brick and other materials defined as “clean fill” under state law may be buried onsite. Treated wood and painted or coated construction debris shall be handled as shown below.

- Contact municipalities for information on local collection of this material or the location of a centralized drop-off area.
- Material containing asbestos (transite siding, pipe, insulation), tires, and other materials that may generate toxic fumes (plastics, synthetic materials and shingles) must not be burned.
- Commercial, institutional, industrial and residential structures with more than four living units must be inspected for asbestos containing materials. Inspections must be conducted by Department certified inspectors. Department notification is required prior to cleanup activities of these structures. Asbestos removal may be needed depending upon the type and amount of asbestos materials identified. Lists of inspectors and asbestos contractors may be obtained from the Air Pollution Control Program at 573-751-4817 or at www.dnr.mo.gov/env/apcp/index.html.

Tires

Tires must not be burned or buried on-site. Tires should be cut into thirds and buried in a permitted sanitary landfill. You may also contact a local tire retailer for other disposal options. You also may contact a permitted waste tire hauler in your area. A list of haulers may be obtained from the Missouri Department of Natural Resources at the following Web address: www.dnr.mo.gov/env/swmp/tires/tirehaul.htm. Individuals or municipalities who accumulate more than 500 tires should contact the department's Solid Waste Management Program at 800-361-4827 or 573-751-5401 for guidance.

Untreated wood, vegetation, structural debris and lumber

Wood or untreated lumber may be mulched for on-site use if chippers are available. Untreated lumber does not include painted material, CCA or creosote impregnated materials. Vegetative material may be disposed of in a permitted sanitary or demolition landfill. Contact municipalities for information on local collection of this material or for centralized drop-off areas.

Open burning of wood may be permitted, although extreme caution is urged, due to possible gas leaks and other storm-related problems. Be sure to contact your local fire authorities prior to any burning. Some local authorities regulate open burning, so check with them first. Tires or used oil may not be used to start fires. Straw bales or virgin petroleum products, such as diesel fuel, are acceptable accelerants. **Burning will be allowed only with the approval of the local fire officials and local Missouri Department of Natural Resources Regional Office. Open burning permits are required and may be obtained by calling the Regional Office. Local authorities or permits may impose additional requirements.** The ash may be buried on-site with a minimum two feet of clean soil.

In rural areas, to minimize impact on neighbors when open burning, start fires after 10 a.m. and discontinue burning by 4 p.m.

For More Information

Missouri Department of Natural Resources

P.O. Box 176

Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-3443

www.dnr.mo.gov

REGIONAL OFFICES

The Department of Natural Resources' Regional Offices provide field inspections, complaint investigation and front-line troubleshooting, problem solving and compliance assistance on environmental issues and emergencies.

Kansas City Regional Office

500 NE Colbern Road
Lee's Summit, MO 64086-4710
(816) 622-7000
(816) 622-7044 fax

Counties served: Andrew, Atchison, Bates, Benton, Buchanan, Caldwell, Cass, Clay, Clinton, Daviess, DeKalb, Gentry, Harrison, Henry, Holt, Jackson, Johnson, Lafayette, Nodaway, Pettis, Platte, Ray and Worth.

Northeast Regional Office

1709 Prospect Dr.
Macon, MO 63552-2602
(660) 385-8000
(660) 385-8090 fax

Counties served: Adair, Audrain, Boone, Callaway, Carroll, Chariton, Clark, Cole, Cooper, Grundy, Howard, Knox, Lewis, Linn, Livingston, Macon, Marion, Mercer, Moniteau, Monroe, Osage, Pike, Putnam, Ralls, Randolph, Saline, Schuyler, Scotland, Shelby and Sullivan.

Southeast Regional Office

2155 N. Westwood Blvd.
P.O. Box 1420
Poplar Bluff, MO 63901
(573) 840-9750
(573) 840-9754 fax

Counties served: Bollinger, Butler, Cape Girardeau, Carter, Crawford, Dent, Dunklin, Howell, Iron, Madison, Maries, Mississippi, New Madrid, Oregon, Pemiscot, Perry, Phelps, Pulaski, Reynolds, Ripley, Scott, Shannon, St. Francois, Ste. Genevieve, Stoddard, Texas, Washington and Wayne.

Southwest Regional Office

2040 W. Woodland
Springfield, MO 65807-5912
(417) 891-4300
(417) 891-4399 fax

Counties served: Barry, Barton, Camden, Cedar, Christian, Dade, Dallas, Douglas, Greene, Hickory, Jasper, Laclede, Lawrence, McDonald, Miller, Morgan, Newton, Ozark, Polk, St. Clair, Stone, Taney, Vernon, Webster and Wright.

St. Louis Regional Office

7545 S. Lindbergh, Suite 210
St. Louis, MO 63125
(314) 416-2960
(314) 416-2970 fax

Counties served: Franklin, Gasconade, Jefferson, Lincoln, Montgomery, St. Charles and St. Louis.



⊙
**BOIL ALL
 DRINKING
 WATER**



Hiervan el agua antes de usarla.

Your public water system is under a voluntary boil water advisory. You may need to take the following precautions:

1. Boil water vigorously for three minutes prior to use. Use only boiled water for drinking, brushing teeth, diluting fruit juices and all other food preparations or consumption. Use of bottled water may be a feasible, though relatively expensive, alternative to boiling tap water when under a boil water order.
2. Do not use ice from a household automatic icemaker or use any ice made with unboiled water from this system. Remake ice cubes with water that has been boiled or buy ice.
3. Disinfect dishes and other food contact surfaces by immersion for at least one minute in clean tap water that contains one teaspoon of unscented household bleach per gallon of water.
4. **LET WATER COOL SUFFICIENTLY BEFORE DRINKING.**

Water used for hand-washing or bathing does not generally need to be boiled. Supervision of children is necessary while bathing or using backyard pools so water is not ingested. Persons with cuts or severe rashes may wish to consult their physicians.

SEE REVERSE FOR ADDITIONAL INFORMATION

FOLD

Voluntary ⊙ Boil Advisory

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Date Issued: _____ ID#: MO _____

Water System Name: _____ County: _____

For information from your water system contact:

_____ at _____
(Name) (Phone Number)

DNR Regional Office Phone #: _____

DNR Public Drinking Water Program Phone #: (573) 751-5331

Description of situation that lead to voluntary boil water advisory:

Corrective actions taken: _____

People with severely compromised immune systems, infants, and some elderly may be at increased risk. These people should seek advice about drinking water from their health care providers.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.



Natural Disaster Assistance for Missouri Citizens - Disaster Response Guidance for Public Drinking Water and Wastewater Systems

The following information is intended to provide initial emergency guidance to the operators, owners and employees of both publicly and privately owned facilities that produce and distribute drinking water or collect and treat wastewater. Facilities damaged or out-of-service because of a disaster situation should follow their own emergency plan and procedures. If no plan is available, or for further support and guidance, individuals should contact an office listed in the emergency telephone numbers section of this document.

Disaster Response: First Steps

- Implement your emergency response plan.
- Contact the Missouri Department of Natural Resources' regional office serving you for further information. See the regional office map at www.dnr.mo.gov/regions/regions.htm for a listing of the regional office nearest you.
- Consult the resource list at the end of this document.

Notification for Wastewater Treatment Plants Threatened by Flood Waters

- If a facility is significantly affected by flood waters, it is authorized to bypass or shutdown if necessary to prevent loss of life, personal injury or property damages; or where unavoidable excessive storm drainage or runoff would damage any facilities or processes necessary for compliance with the effluent limitations and conditions of this permit.
- The facility must take all reasonable measures to prevent a bypass or shutdown. If prevention is not possible, the facility must take all reasonable actions to minimize the bypass or shutdown and all impacts.
- The facility must call the Department of Natural Resources within 24 hours and follow with a written report to the regional office within five days if a shut down or bypass occurs. Call the department's regional office serving you or the after hours Environmental Emergency Response hotline at 573-634-2436.
- The facility must notify the department daily if a bypass or shutdown occurs on multiple days.
- The wastewater treatment plant is authorized to take any reasonable actions to contain excess storm water to prevent a bypass without a construction permit.

- After the bypass or shutdown event is over, the facility must provide a written report to the department’s regional office that includes:
 - Name and permit number of permittee.
 - Location, duration and approximate volume of all bypasses.
 - Duration of any shutdown.
 - Description of conditions causing a bypass or shutdown.
 - Description of all actions taken by the wastewater treatment plant to avoid a bypass or shutdown. If avoidance was not possible, include a description of the actions taken by the facility.

Restoring Service

When attempting to restore service, be aware of potential hazards. Use the “buddy system.” Exercise caution with respect to the following:

- Confined spaces – use personal protection when entering. Test atmosphere for toxic or explosive gases and oxygen levels. If in doubt, ventilate or don’t enter.
- Electrical hazards.
- All underground utilities.
- Hazardous chemicals, such as chlorine.
- Biological hazards, such as bacteria and viruses.
- Potential for back injuries.
- Possibility of cave-ins or collapse of trenches.
- Structural damage and the potential for failure of a damaged structure.
- Fire or potential for fire.

Remember that safe operations always take precedence over shortcuts. Time saved is not worth a life lost or serious personal injury.

Contact Information

The following numbers are answered 24 hours a day, 7 days a week:

Missouri Department of Natural Resources’ Environmental Emergency Response	573-634-2436
Missouri Highway Patrol Headquarters	573-751-3313
U.S. Environmental Protection Agency	913-281-0991
U.S. Army Corps of Engineers - Kansas City District	816-426-6320
CHEMTREC (hazardous materials information)	800-424-9300
National Response Center (e.g., oil and chemical spills, terrorist threats)	800-424-8802
State Emergency Management Operations Center	573-751-9512
National Weather Service	
Kansas City	816-540-6125
St. Louis	636-447-1887
Springfield	417-869-4491

The following numbers are answered during normal business hours:

Department of Natural Resources	800-361-4827
Water Protection Program - Public Drinking Water Branch	573-751-5331
Water Protection Program - Water Pollution Branch	573-751-1300

Department of Natural Resources' Regional Offices	
Kansas City	816-622-7000
Macon	660-385-8000
Poplar Bluff	573-840-9750
St. Louis	314-416-2960
Springfield	417-891-4300

State Emergency Management Operations Center	573-526-9100
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Missouri Department of Health and Senior Services	866-628-9891
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Missouri Rural Water Association	573-657-5533
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Missouri Water and Wastewater Conference	573-761-0376
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International Bottled Water Association	800-WATER-11
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For publications about restoring services after disasters, please call the Missouri Department of Natural Resources at 800-361-4827, Monday through Friday, 8 a.m. to 5 p.m.

For More Information

Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens

Disaster Response for On-Site Wastewater (Septic) Systems

1-800-361-4827

Department of Natural Resources fact sheet

5/2007

Natural disasters can damage on-site wastewater systems. Some of the systems may be so damaged that repairs will be required before they will work again. Health and safety hazards can exist from exposed sewage and damaged systems. Take personal safety precautions when examining your system for damage and when making repairs.

Many septic tank systems at individual properties may be flooded. Most of these systems will remain inoperable until the flood water recede and the ground where the sewage is absorbed becomes somewhat dry. Some of these systems may be so damaged that repairs will be required before they will work again.

One big problem with a septic tank that doesn't work is the release of untreated sewage onto the top of the ground or into stagnant pools left behind by the flood. The pooled sewage from these tanks can be significant health hazard. The other big problem is the backup of sewage into the building, caused by a blockage that results from the damaged tank system or piping.

Recommendations:

- Avoid contact with sewage. Raw sewage is a public health concern and can contribute to the spread of disease. Good personal hygiene, including hand washing, is necessary.
- Treat surfacing sewage with hydrated lime or diluted household bleach. Wear gloves. Handle chemicals carefully. Follow all listed precautions.
- Check for missing septic tank or treatment system access covers. Secure openings with temporary cover.
- Check for electrical system damage on systems with electric pumps and motors.
- Take care during cleanup operations not to drive over drainfields, low-pressure pipe fields or drip irrigation fields. This could damage your system.
- Carefully remove debris from wastewater lagoons. Repair damaged berms and fences.
- Avoid using the house plumbing system if the septic tank or the lateral field is still under water.
- Do not use the plumbing system if sewage is backing up into the house.
- Carefully investigate the cause of sewage backups. Check the septic tank to see if it has shifted, or if the grease layer in the top of the tank has blocked the inlet or outlet pipes. Any of the sewage pipes either leading to the septic tank or to the lateral field may have become broken or filled with silt. Look for broken and blocked plumbing and vents. Have the wastewater system serviced by a professional.
- Try to minimize the amount of mud and silt entering the plumbing system during cleanup operations. Mud can fill the septic tank and clog lateral lines.

- The greatest threat to flood-damaged septic systems is the clogging of drainfield lines with sewage sludge and silt left by receding floodwaters.
- Installation of a septic tank effluent filter can help prevent drain-field clogging.
- Flooded systems will remain inoperable until floodwater recedes and the ground where the treated wastewater is absorbed becomes somewhat dry.
- **Do not** pump flood-damaged septic tanks dry until the groundwater level has dropped sufficiently. Doing so may cause the tank to float upward or to collapse due to groundwater pressure outside the tank.
- **Do not enter the septic tank.** Septic tanks can contain hazardous fumes and gases that are potentially fatal.
- After the groundwater has dropped sufficiently, have a professional check the tank to determine the solids level prior to using the system. If solids are near the outlet pipe or baffle, the tank should be pumped before use.
- Individual lagoons that have silted in or have been physically damaged should be repaired as soon as possible before long-term use is resumed.
- Contact your local county health department or the Missouri Department of Health and Senior Services, Bureau of Environmental Regulations and Licensure, at (573) 751-6095, with questions about on-site wastewater system repair or replacement.

Wastewater System Abandonment

Some on-site wastewater systems might be abandoned after a natural disaster. The following are recommendations that will help ensure that the site formerly used for wastewater treatment and disposal is safe:

- Disconnect power at the source to all electrical controls and remove controls and panels.
- Have a septage hauler pump the wastewater and sludge from all the tanks in the system.
- Fill tanks with sand or gravel to prevent future collapse, remove the tanks or crush in place. Backfill the excavation to a natural grade and establish a vegetative cover.
- Remove all parts of the system on the ground surface such as valves, valve boxes and risers. Backfill the area to a natural grade and establish a vegetative cover.
- Coat all surface areas exposed to wastewater with hydrated lime and establish a vegetative cover.
- Wait at least 18 months before using the wastewater disposal area for gardening or construction.

Produced in cooperation with the Missouri Department of Health and Senior Services.

For More Information Contact

Department of Natural Resources
 PO Box 176
 Jefferson City, MO 65102-0176
 1-800-361-4827 or (573) 751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens

Disaster-Related Animal Production Mortalities

Emergency Procedures

1-800-361-4827

Department of Natural Resources fact sheet

3/2006

During a disaster the highest priority is protection of human life and safety. As soon as the immediate threat is over, animal producers must address the disaster's effects on their animals and property. Live animals should be provided humane treatment and dead animals must be disposed of in compliance with state law. For the disposal law, see www.moga.mo.gov/statutes/c200-299/2690000020.htm or call the Missouri Department of Agriculture's Division of Animal Health at (573) 751-3377.

Estimating Site Damage

Begin by viewing the site and making a written self-estimate of damage. This will help in talking to agencies and organizations and making cleanup plans. Document conditions by photographing damage at the earliest opportunity and then identify the following:

- Number of animals originally on site;
- Approximate number and size of dead animals;
- Uninjured animals and their needs for food, water and protection;
- Animals that remain unaccounted;
- Condition of confinement buildings or enclosures.

Cleanup

Move to safety and find housing for uninjured animals either on your property or with the help of your integrator company. Contact your **county USDA Natural Resources Conservation Service office**, usually located in the county seat, to determine what assistance is available.

Dispose of dead animals within 24 hours of death by the most practical means available among the following. This list is in order of desirability with rendering being most desirable and burial least desirable:

- Processing at a rendering plant. Visit www.mda.mo.gov/Animals/rendcomp.htm or call (573) 751-3377 to request information on licensed companies. Some integrator companies have their own rendering in conjunction with processing plants;
- Composting as recommended by University of Missouri Extension;
- Landfill disposal. Call the landfill first to determine whether it accepts large quantities of dead animals. For a complete listing of landfills, visit www.dnr.mo.gov/env/swmp/facilities/sanlist.htm.

- or call the Department of Natural Resources' Solid Waste Management program at 1-800-361-4827 or (573) 751-5401 to obtain phone numbers of landfills in the area;
- Pre-existing University of Missouri Extension service-designed agricultural incinerator or Department of Natural Resources permitted commercial incinerator;
- On-site burial following state law's standard loading limitations. Call your Department of Natural Resources Regional office for information on loading limitations in your area.

Compost and Burial Site Selection

Do not bury or compost animals in sinkholes, ravines, caves, mines, low-lying areas subject to flooding, ditches or at the base of a hill. Follow the state law setback distances, using the greatest applicable distance:

- 100 feet from surface water such as ponds, streams and lakes
- 300 feet from springs, losing streams, wells including unused and abandoned ones neighboring residences, surface drinking water intakes and public water supply lakes
- 50 feet from property lines

Draw a diagram of the property showing all applicable setbacks. Do not bury or compost in sinkholes, ravines, caves, mines, low-lying areas subject to flooding, ditches, or at the base of a hill. Attempt to follow or exceed all setbacks above.

Add neighboring property features requiring setbacks and ask questions of the landowners, if needed. Observe the proper distance from water wells and residences is crucial. Draw a line or radius showing the setback distance from these features on the neighbors' properties on the property diagram and eliminate these from consideration.

Look at a topographic map, which may be obtained from the Department of Natural Resources' Division of Geology and Land Survey by calling 1-800-361-4827 or (573) 368-2125 or faxing (573) 368-2111, or visit topozone.com. The USDA Natural Resources Conservation Service office, county commissioners' or the county surveyor's office may have one available locally. Look at the proposed site property and adjoining properties. Questionable areas that may be sinkholes often are identifiable on topographic maps and low-lying areas and surface water will be identified and should be avoided following the applicable setback.

Identify the highest elevations and flatter areas of the property from the topographic map. A ridge area normally will be farthest from surface water features and should be one of the first areas considered for the burial or compost site. Flat to gently sloping areas are most desirable, although somewhat sloping land can be used if it is free of other problems.

Check the soil survey book for soil type and thickness of soil above bedrock. A county soil survey book should be available at the USDA Natural Resources Conservation Service office in the county seat, or contact the Department of Natural Resources' Soil and Water Conservation Program Soil Scientists Unit at 1-800-361-4827 or (573) 526-1079.

Clay-textured soils are desirable, including heavier silty clay loam, clay loam, sandy clay, silty clay and clay. Soils with sandy textures or large amounts of gravel are not desirable.

Burial sites should have at least 2 feet of clay-textured soil material beneath the trench. Look for the areas of the property that have the deepest soil but avoid flood-prone areas. A 6-foot-deep trench requires 8 feet of soil depth and a 4-foot-deep trench requires 6 feet of soil depth.

If a 6-foot-deep trench would expose bedrock everywhere on the property, a shallower trench of 3 to 4 feet depth may be necessary. In this case, a single layer of large animals could be deposited in the trench.

Emergency Composting Structures

If an empty litter stacking shed is available, it makes a good temporary composter. In general, if no shed is available, emergency dead animal composting units should be constructed with the following in mind:

- They should hold dead animals in long narrow windrow piles no higher than 6 feet and no wider than 10 to 12 feet by any length necessary;
- They should have three sides enclosed with large round hay bales or double-stacked square bales;
- The bottom and part of the sides should be lined with plastic sheeting;
- Approximately one foot of a dry absorbent material such as sawdust, tree leaves, straw or spoiled hay should be placed on top of the plastic;
- Dead animals and six-inch layers of absorbent material should be stacked in alternating layers to reach 5 feet in height. Dry poultry litter may be used in inner layers instead of absorbent material, if available. If disposing of large animals, only one or two layers might be possible, and extra absorbent material may be needed at the bottom.
- Cap the pile with a 6-inch layer of dry absorbent material.

Further guidance for building composting units according to University of Missouri Extension service designs is available at <http://extension.missouri.edu/explore/envqual/wq0351.htm>, <http://extension.missouri.edu/xplor/envqual/wq0205.htm> and <http://extension.missouri.edu/xplor/envqual/wq0211.htm>.

Burial Guidelines

- Dig a trench no deeper than 6 feet with earth-moving equipment to comply with the state statute. Stockpile the topsoil separately.
- If soil depth is not adequate to dig 6 feet and leave 2 feet of clay soil under the trench, limit the trench depth to 3 to 4 feet deep. Try always to have at least 2 feet of clay soil under the trench.
- Keep the bottom of trenches as flat as possible. One end of the trench should be sloped so vehicles can drive in to deposit animals. Attempt to “daylight” one end of the trench if possible. A daylighted trench is one that has the bottom of one end terminating at existing ground level.
- If the site is sloping, run the trench across the slope to minimize the probability of erosion. Make the uphill side of the trench no more than 6 feet deep and the downhill side less than 6 feet.
- If an underground void such as a sinkhole, rock crevice, cave or manmade chamber such as a cistern is encountered while digging, do not use that area.
- To prevent trench sides from collapsing, slope or bench any excavation face more than 4 feet high and take any other necessary safety precautions.
- Deposit animals to within about 1 foot of the surface. Pierce body cavities of large animals that are more than 150 pounds as they are deposited to minimize bloating and comply with the state statute.

- Cover the animals with all of the excavated soil so that a mound is formed and the soil cover over the animals is at least 30 inches thick to comply with the state statute. Pack the cover material by running heavy equipment over it several times.
- Place the topsoil on the surface of the mound and spread it. Seed with a perennial grass as soon as possible. This will prevent eroded areas from forming and will help prevent rainwater from infiltrating the site.

Contact the Missouri Department of Agriculture's Division of Animal Health and a Missouri Department of Natural Resources' regional office for further assistance.

Helpful Contacts

- **Your integrator company.** If applicable, these companies may be helpful in capturing live animals and finding locations where these animals may be relocated.
- **The Department of Agriculture's State Veterinarian's Office.** Visit www.mda.mo.gov/WhoWeAre/ah_div.htm or call (573) 751-5608, particularly if buildings are unsafe to enter, which might make it difficult to comply with the state statute regarding disposal in a timely manner, or for situations that require disposal of large numbers of animals.
- **Your region's Department of Natural Resources regional office** for help with disposal questions. Visit www.dnr.mo.gov/regions/regions.htm or call 1-800-361-4827 to find out which regional office serves your area.
- **Your county sheriff or other law authorities.** They can assist in protecting animals and belongings.

For More Information Contact

Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens Emergency Guidance for Hazardous Materials and Hazardous Waste

1-800-361-4827

Department of Natural Resources fact sheet

3/2006

Damaged or Unusable Hazardous Chemicals at Businesses

- Owners, managers and employees returning to a business that has been affected by a natural disaster may find materials or products that are damaged and unusable.
- Products labeled with words such as POISON, DANGER, WARNING or CAUTION contain hazardous chemicals. Materials used in business activity, manufacturing or maintenance may have hazardous characteristics. They may be TOXIC, EXPLOSIVE, IGNITABLE OR CORROSIVE.
- If possible, recover these materials for use for their intended purpose. If this is not possible, the damaged or unusable hazardous materials should be separated from other debris or solid waste and placed in containers so that further human contact and release to the environment is minimized. Permanently mark the outside of the container with the name of the material inside and the potential hazard (e.g., Endrin Waste – TOXIC).
- Use extreme caution when cleaning up hazardous materials in leaking or damaged containers. Wear protective garments and emergency breathing apparatus if necessary. Do not work around these damaged products in confined or poorly ventilated areas. Obtain professional hazardous materials response and cleanup services if appropriate.
- Storm or building debris that is contaminated with hazardous materials may need to be handled and disposed of as hazardous waste.
- Disposal of hazardous materials as hazardous waste must be in accord with the Missouri Hazardous Waste Management Law and Regulations using a licensed hazardous materials transporter at a permitted hazardous waste disposal facility.
- Contact one of the department's regional offices or the Hazardous Waste Program if specific guidance is needed on determining whether a waste is hazardous and how to properly manage and dispose of the waste.

Drums, Tanks and Barrels

- Most barrels that wash up in a flood are open-burn barrels, trash barrels or dock barrels.
- There may be danger in sealed barrels, drums or tanks with unknown contents. These should be handled by trained professionals. If you find sealed drums, barrels or tanks of unknown contents, call the department's Environmental Emergency Response staff at (573) 634-2436.
- If a propane tank is in flood debris, a company distributing gas may be able to identify the tank and return it to its proper location. Propane tanks have serial numbers that help to identify owners and locations.
- If propane tanks are present or are found and there is reason to believe that they may be unsafe, contact the local emergency management coordinator, or the department's Environmental Emergency Response staff at 1-800-361-4827 or (573) 634-2436.
- If an above-ground storage tank is damaged, follow your facility emergency response procedures, and contact the local emergency management coordinator or the department's Environmental Emergency Response staff at 1-800-361-4827 or (573) 634-2436.

For More Information Contact

Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3443
www.dnr.mo.gov



Facts on Open Burning Under Missouri Regulations

Open burning is the burning of any materials in which air contaminants are emitted directly into the air without first passing through a stack or chimney. This fact sheet summarizes allowable and prohibited open burning under Missouri regulations. It does not include open burning restrictions that city or county governments may impose in addition to Missouri's state regulations. Prior to conducting any open burning, businesses and citizens should contact the city or county of jurisdiction for any local restrictions.

The open burning of certain trade wastes and tires is prohibited because the toxic emissions that can be released are harmful to human health. Smoke from fires also typically produces large amounts of small particulate matter that can be inhaled, causing respiratory problems. The burning of common household trash, including paper products and food wastes, can also have severe consequences. Studies have indicated the open burning of an individual household's trash could release pollutants in higher levels than the burning of the trash of thousands of homes by a municipal waste incinerator because the lower combustion temperatures prevent complete incineration. These pollutants can include dioxins, volatile organic compounds, acetaldehyde, formaldehyde, hydrogen chloride and naphthalene. Open burning exposes individuals to toxic emissions that may irritate the eyes, skin and upper respiratory tract. The central nervous system can also be affected causing headaches, dizziness and fatigue.

Because of these potential dangers, the Missouri Department of Natural Resources strongly discourages open burning of any material prior to investigating alternatives. Some rural areas can participate in a "green box" service, which provides a trash collection point near a centrally located county road for local residents to use. Green boxes are usually picked up or emptied once a week. Other options include waste disposal services, waste diversion, recycling and composting. Contact your local Solid Waste Management District for assistance in implementing these safer alternatives to open burning.

Prohibited Open Burning Under State Regulation

Any waste generated by a business, trade, industry, salvage or demolition operation cannot be burned without a permit issued by the Department of Natural Resources or its delegated local agency. Permits will only be considered for untreated wood wastes. Wastes that may not be burned include but are not limited to tires, rubber products, hazardous materials, styrofoam, plastics, petroleum based products, demolition waste, treated wood and any asbestos-containing material.

Allowable Open Burning Under State Regulations

Note: Local governments may have stricter laws and policies

Open Burning of Household Refuse

General Provisions: Missouri allows open burning of household refuse from four dwelling units or less provided it originates and is burned on the same premises. This exemption does not apply to mobile home parks or apartment complexes. Residential waste is solid waste produced by routine household activities, such as paper waste and garbage from daily activities. This does not include home remodeling wastes, wastes from home businesses, durable goods such as old appliances, carpets or furniture, tires or other nonroutine household waste. Materials such as tires or used oil may not be used to start the fires or be burned in the fires.

Kansas City and St. Joseph metropolitan areas: Open burning is allowed provided it occurs within an area zoned for agricultural purposes and outside the portion of the metropolitan areas surrounding the corporate limits of Kansas City and St. Joseph and their bordering municipalities.

Outstate area: No special day, time or location restrictions.

Springfield-Greene County area: Open burning is allowed provided that burning takes place outside the corporate limits of Springfield and only within areas zoned A-1, Agricultural District.

St. Louis metropolitan area: Open burning of household refuse is prohibited in the St. Louis metropolitan area.

Open Burning of Yard Wastes

General Provisions: Missouri allows open burning of yard wastes from sites provided it originates and is burned on the same premises. Materials such as tires or used oil may not be used to start the fires or be burned in the fires. Yard waste includes trees, tree leaves, brush or other vegetation.

Kansas City metropolitan area: Open burning of trees, tree leaves, brush or any other type of vegetation requires an open burning permit.

St. Joseph metropolitan area: Open burning of residential yard wastes is allowed only during a three week period in spring and during a three-week period in fall between 10 a.m. and 3:30 p.m. The two, three-week periods are to be determined by the city along with state agencies and the state fire marshal.

Outstate area: No special day, time or location restrictions.

Springfield-Greene County area: Open burning of trees, brush or any other type of vegetation requires an open burning permit. The open burning of leaves is prohibited.

St. Louis metropolitan area: Open burning of trees, tree leaves or brush is allowed only in areas outside of incorporated municipalities from Sept. 16 to April 14 of each calendar year. These brush piles are limited to a base of 16 square feet and the burning is allowed from 10 a.m. through 4 p.m.

Open Burning for Fire Training Purposes

Missouri allows fires set for the purpose of training fire fighters provided they are conducted in accordance with National Fire Protection Association Standards 600 and 1403. Timely notification should be provided to the appropriate regional office or delegated local agency.

All fire training exercises involving donated or acquired structures must be conducted in compliance with 40 CFR part 61 subpart M, *National Emission Standard for Hazardous Air Pollutants-Asbestos*. The use of donated or acquired structures for training is discussed in Publication 2029. All petroleum based products and asbestos containing materials must be removed from donated or acquired structures prior to any burning.

Open Burning in Agricultural, Natural Resource or Land Management Operations

Missouri allows agricultural burning throughout the state. However, several exceptions apply. Materials such as tires or used oil may not be used to start the fires or be burned in the fires. Any burning that creates a health hazard, nuisance or produces smoke that impairs visibility for those operating motor vehicles or airplanes is prohibited. Contact the St. Louis Regional Office before burning in the St. Louis metropolitan area from April 15 to Sept. 15. Botanical nursery operations (greenhouses) are not considered agricultural operations.

Open Burning in Land Clearing Operations

Open burning of tree trunks, tree limbs and vegetation from land clearing operations is allowed without an ACD or permit in the outstate area if the burning takes place outside the city limits of any incorporated area or municipality and at least 200 yards from the nearest inhabited dwelling. Materials such as tires or used oil may not be used to start the fires or be burned in the fires. Permits containing special conditions may be issued by regional offices or local agencies for sites unable to comply with the requirements above. See the Required Open Burning Permits section below for exceptions in the Springfield-Greene County area, and Kansas City and St. Louis Metropolitan areas.

Open Burning at Wood Processing Facilities

Open burning of untreated wood waste from wood processing facilities is allowed if production is less than 8,000 board-feet per day and the facility was in existence as of March 25, 1976, but has not relocated to a new site. The burning also must be done at least 200 yards from the nearest occupied structure.

Open burning of untreated wood waste from wood processing facilities is allowed if production is less than 8,000 board-feet per day and the facility has relocated or from new wood processing facilities not in existence as of Sept. 18, 1970, and the facility and the burning are at least one mile outside city limits. The burning also must be done at least 200 yards from the nearest occupied structure.

Open Burning for Recreational Purposes

Campfires and other fires used solely for recreational purposes, ceremonial occasions or for outdoor noncommercial preparation of food are allowed in Missouri. Fires shall include only vegetative woody materials or untreated wood products.

Required Open Burning Permits

The open burning of certain trade wastes, primarily untreated wood wastes such as pallets or crates, throughout the state, and vegetation from land clearing operations in the Springfield-Greene County area and the Kansas City and St. Louis Metropolitan areas, may be permitted only when it can be shown that open burning is the only feasible method of disposal and that disposal is in the public interest. In the St. Louis nonattainment area, permits will not be issued

unless it can be shown that emissions from open burning would be less than any other waste management or disposal method. The open burning permit requires the facility, in most cases, to use an air curtain destructor.

Commercial and municipal utility tree trimming operations must submit a request to the appropriate regional office for an annually renewable open burning permit. The request must describe the general size, condition and age of the tree trunks and tree limbs to be open burned. Air curtain destructors are generally required at dedicated sites where burning occurs.

Commercial and municipal utility tree trimming operations must submit an application for an open burning permit to the appropriate regional office or local agency.

The information provided in this fact sheet should not be construed to permit open burning that causes or constitutes a public health hazard, nuisance or a hazard to vehicular or air traffic or violates any other rule or statute.

Definitions

St. Louis metropolitan area: The geographical area comprising St. Louis, St. Charles, Jefferson and Franklin Counties and the city of St. Louis. These counties are also currently a nonattainment area for ground-level ozone.

Springfield-Greene County area: The geographical area contained within Greene County.

Kansas City metropolitan area: The geographical area comprising Jackson, Cass, Clay, Platte, Ray and Buchanan counties.

Outstate area: The geographical area comprising those counties not contained in the St. Louis metropolitan area, the Springfield-Greene County area or the Kansas City metropolitan area.

Air Curtain Destructor: An air pollution control device designed to increase burning efficiency, reducing air contaminant emissions during open burning.

Open Burning Permit: A permit that must be applied for and then granted in order to open burn or open burn with restrictions. Permit applications must be sent to the Regional Office or local agency that has jurisdiction over your area. Applications are available at www.dnr.mo.gov/forms or any regional or local agency office.

Untreated Wood: Lumber and other wooden materials that have not been chemically treated for resistance to moisture, fire, fungi, insects and other pests or has not otherwise been treated or manufactured with chemicals, or that does not contain adhesives or resins. Untreated wood does not include plywood, particleboard, chipboard or wood with other than minimal amounts of paint, coating or finish.

For More Information

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-4817 office
(573) 751-2706 fax
www.dnr.mo.gov/env/apcp/index.html

Missouri Department of Natural Resources
Solid Waste Management Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-5401 office
(573) 526-3902 fax
www.dnr.mo.gov/env/swmp/index.html



Natural Disaster Assistance for Missouri Citizens

Household Chemicals and Household Hazardous Waste

1-800-361-4827

Department of Natural Resources fact sheet

3/2006

Damaged or Unusable Household Chemicals

- Homeowners repairing or recovering possessions from their homes may find products used to care for home and property that are damaged and unusable.
- Products labeled with words such as POISON, DANGER, WARNING or CAUTION contain hazardous chemicals. Examples of such products are cleaning solutions, drain cleaners, pesticides, solvents, oil-based paint and fuels. These wastes, commonly referred to as “household hazardous wastes,” should be separated from other wastes before disposal if possible.
- Use extreme caution when cleaning up household products in leaking or damaged containers. Wear rubber gloves and avoid breathing any fumes or dust. Do not work around these damaged products in confined or poorly ventilated areas.
- The Missouri Department of Natural Resources encourages counties and municipalities to use household hazardous waste collection programs for these wastes. Use of these collection programs will ensure that wastes are disposed of in a safe and environmentally sound manner.
- Check with your local officials and use a household hazardous waste collection program if one is available in your area. If a collection program is not available, this waste may be disposed of in a permitted sanitary landfill. **For your own safety, do not burn these materials as they may produce toxic smoke.**

For More Information Contact

Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens

How to Construct a Sandbag Emergency Levee

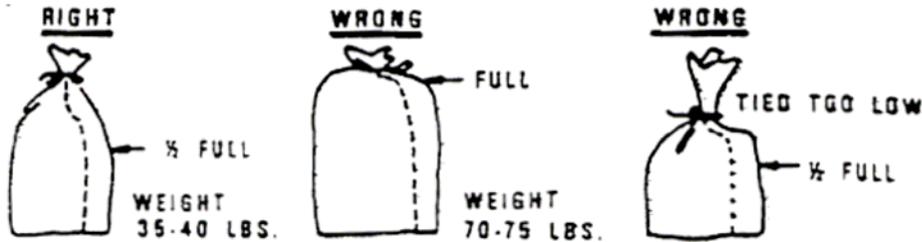
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Department of Natural Resources fact sheet

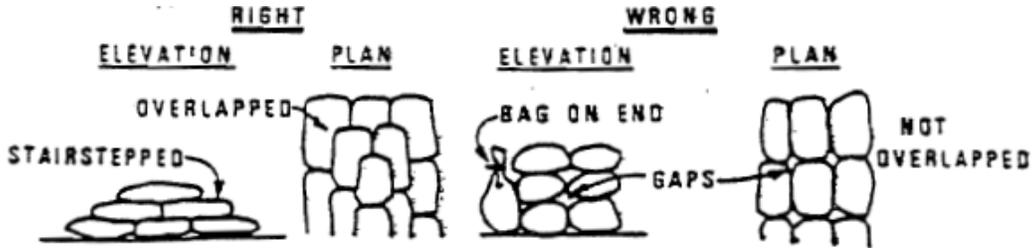
How to Fill Sandbags

Fill sandbags 1/2 to 2/3 full, tie at top so bag will lay flat when put in place. (Overfilled bags leave gaps in levee allowing water to seep through.)



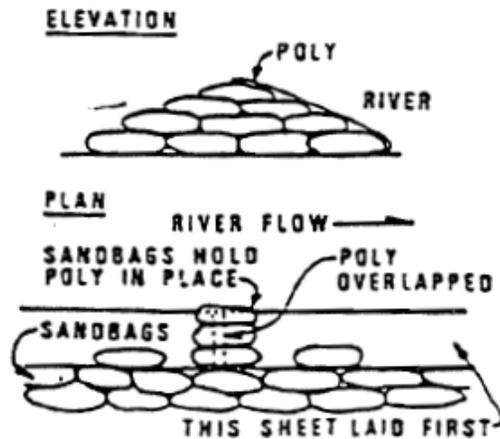
Placing Sandbags

Sandbags should be placed flat on ground, overlapped, tamped into place, and stairstepped.



Polyethylene

Polyethylene (poly) comes in rolls 20 ft. wide and 100 ft. long. It's used to wrap sandbag levees to prevent seepage. Poly should be placed on downstream portion of levee first, then worked upstream with a two- to three-foot overlap. Poly is held in place with sandbags.



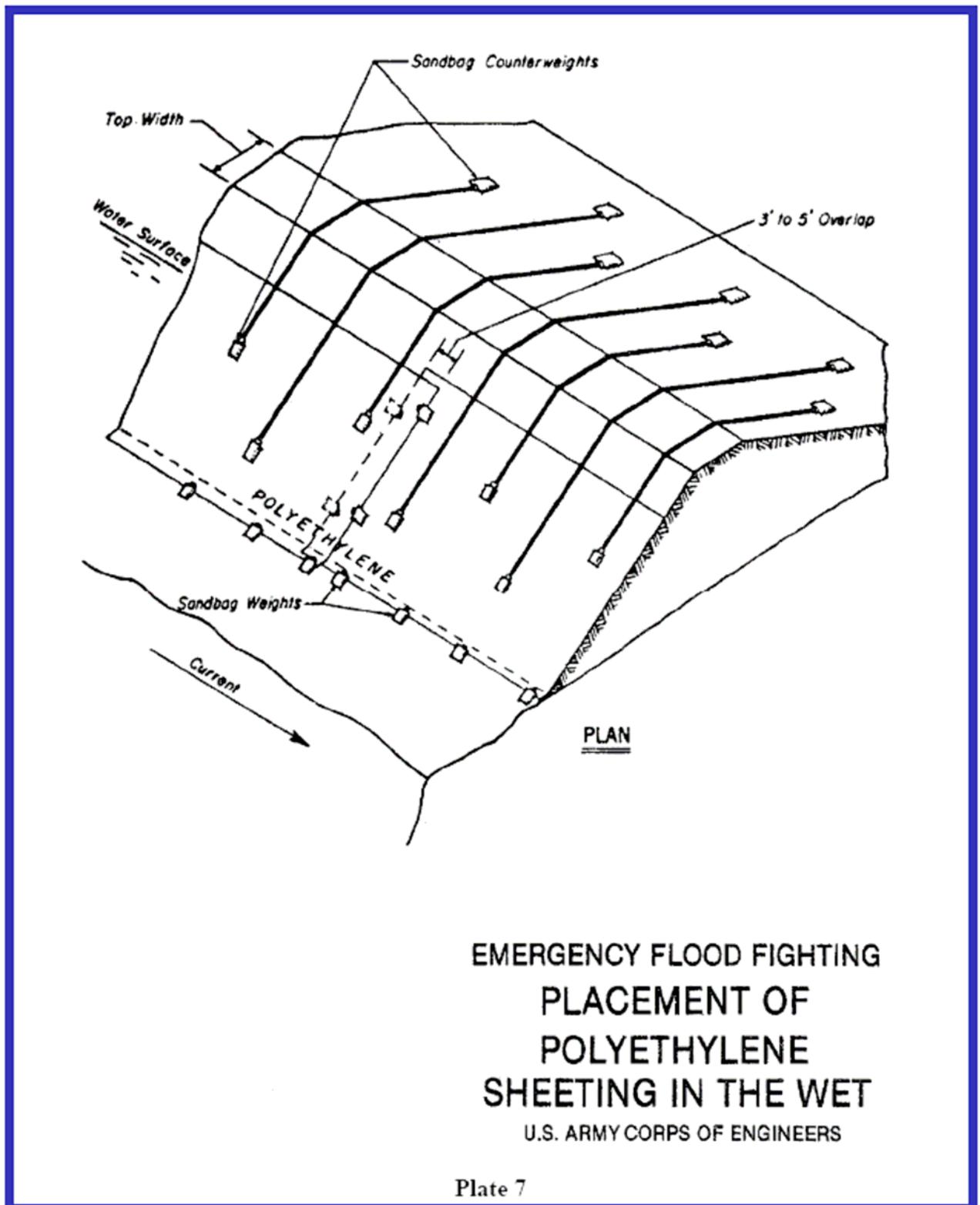
Estimated number of sandbags per linear foot of wall.

Height in Feet	Bags Required
1	5
2	10
3	21
4	36
5	55

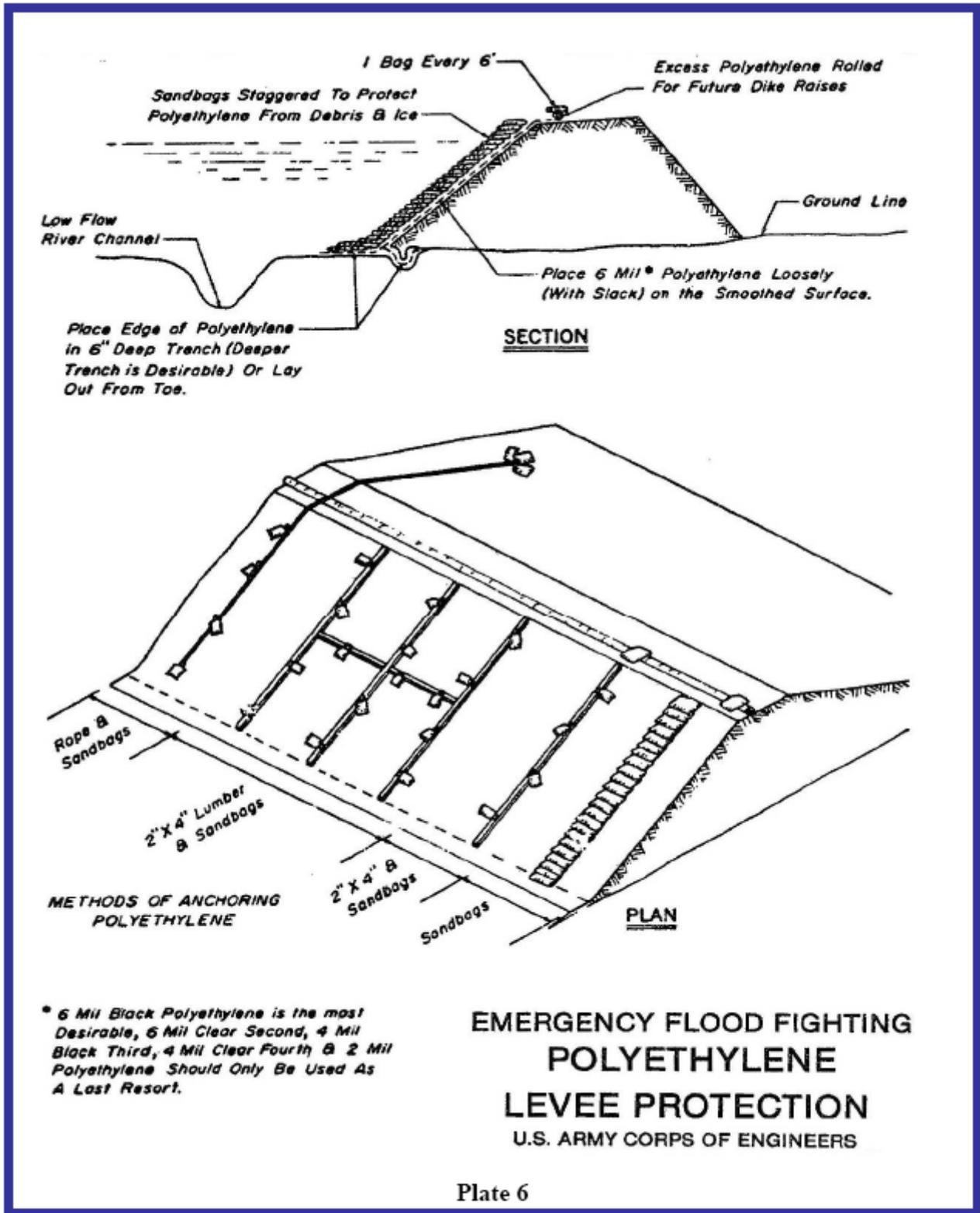
Five feet is the practical limit of a sandbag levee. If a higher levee is needed, alternative means of construction should be considered. Note: Preferred levee limit is 3 feet.

The Missouri Department of Natural Resources is not responsible for any harm or accident caused by the construction or use of a sandbag levee, including failure of such levee and including failure of the levee to withstand floodwaters.

Placement of Polyethylene



The Missouri Department of Natural Resources is not responsible for any harm or accident caused by the construction or use of a sandbag levee, including failure of such levee and including failure of the levee to withstand floodwaters.





Natural Disaster Assistance for Missouri Citizens - How to Handle Asbestos Containing Debris

Asbestos

Asbestos is a naturally occurring mineral fiber. Due to its unique properties, it was used in a number of different building materials into the 1970s and may still be found in some products currently being manufactured. It is estimated that manufacturers used asbestos in more than 3,000 different commercial applications.

Examples of these materials include:

- Cementitious siding and wallboard (transite).
- Asphalt and vinyl floor tile and sheet flooring.
- Flooring mastics.
- Textured paints.
- Acoustical plaster.
- Ceiling tiles and panels.
- Fireproofing materials.
- Heater curtains.
- Blown-in insulation.
- Boiler insulation.
- HVAC duct insulation.
- Pipe insulation.
- Chalkboards.
- Roofing shingles and felts.
- Joint compound spackling compounds.
- Brake pads.

Potential Health Effects from Asbestos Exposure

There is no known safe level of asbestos exposure. Asbestos fibers are very small and can migrate through the body's natural defense system into the lungs, where they can cause damage to the respiratory system.

There are three major health risks associated with asbestos exposure:

- Asbestosis, which is a scarring of the lungs.
- Mesothelioma, which is a cancer of the lining of the lungs and the abdominal cavity.
- Lung cancer.

Categories of Asbestos Containing Materials

There are three categories of asbestos containing materials:

- Friable asbestos containing materials.
- Category I non-friable asbestos containing materials.
- Category II non-friable asbestos containing materials.

Friable asbestos containing material is any material containing greater than one percent asbestos that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. These materials will more readily produce asbestos fibers if disturbed or removed. Examples of friable materials include sprayed or troweled materials such as acoustical ceiling spray, boiler insulation, paper pipe insulation and drop-in ceiling tile.

Category I non-friable asbestos containing material is asbestos containing packings, gaskets, resilient floor coverings and asphalt roofing products containing more than one percent asbestos. The asbestos in Category I materials is more tightly bound in the matrix of the material. These materials are less likely to generate asbestos fibers if they are in good condition and are not subject to sanding, grinding, cutting or abrading. Also, any vapor barrier on resilient floor coverings such as sheet vinyl or tile is considered friable asbestos if the flooring is removed in a manner that causes the vapor barrier to delaminate or separate from the covering.

Category II non-friable asbestos containing material is any non-friable material, other than category I materials, that contain more than one percent asbestos. The asbestos tends to be more tightly bound in the matrix of these materials. If not removed prior to demolition or renovation these materials have a higher probability of becoming crumbled, pulverized or reduced to powder, which may make it subject to regulation. If removed properly, these materials are not regulated by the department. Examples of category II materials include transite wall or roof shingles, wall board or cement pipe.

Identifying Asbestos Containing Materials

The department requires institutional, commercial, public, industrial or residential structures, excluding residential structures that contain four or fewer dwelling units, to be inspected for the presence of asbestos prior to being renovated or demolished. This inspection must be performed by a Missouri-certified asbestos inspector.

In the case of a natural disaster where a building has been damaged, this inspection should be performed prior to beginning cleanup activities to ensure asbestos containing materials are not being disturbed. Prior to inspection, the debris should be kept wet to minimize the potential for any emissions of asbestos to occur. In the event a building has become structurally unstable, demolition can proceed without first having the structure inspected. The building should be kept wet to minimize any potential asbestos emissions. After the danger of the unsafe structure has been eliminated, the resulting debris must be inspected.

For residential structures that contain four or fewer dwelling units there is an exemption from this inspection requirement, unless the demolition or renovation project involves multiple buildings under the control of the same owner or operator within close proximity to one another, or the structure is to be burned as part of a fire training exercise. However, this does not mean that asbestos found in these exempt structures is not dangerous if disturbed. If you suspect damaged material might contain asbestos, the department recommends you not further disturb the material until it can be determined if it is asbestos containing or not. For the purpose of identifying asbestos containing materials, the department recommends you obtain the services of a Missouri-certified asbestos inspector to positively identify any suspect materials or that you assume the material contains asbestos. It is recommended any debris be kept wet until an adequate determination of the presence of asbestos can be made.

Requirements for Removal of Regulated Asbestos

If the demolition or renovation to an institutional, commercial, public, industrial or residential structure, excluding residential structures that contain four or fewer dwelling units, will involve greater than 160 square feet, 260 linear feet, or 35 cubic feet of friable asbestos containing materials, then the removal of the asbestos is regulated by the department. For projects that meet these thresholds, a Missouri registered contractor and certified asbestos workers must be used to perform the abatement of the material. If buildings have been demolished or destroyed by a natural disaster prior to removing the asbestos, then any debris subsequently contaminated by asbestos must also be handled as asbestos containing waste.

The department must be notified about all abatement projects involving greater than a threshold amount of asbestos and for all demolition projects regardless of whether asbestos is present or not. Typical notification requirements would require a 10 working day notification. However, in the case of buildings that have been damaged as a result of a natural disaster, the department will waive this 10-day notice requirement. However, notice should be sent to the department within 24 hours of either starting a regulated abatement or demolition project.

There is no requirement to use a Missouri registered contractor for asbestos removal for unregulated demolition or renovation projects that involve less than the threshold levels listed above for friable asbestos containing materials, non-friable asbestos containing materials or asbestos containing materials from exempt residential structures. However, using trained professionals for the removal of asbestos containing materials is recommended.

Other agencies, such as the Occupational Safety and Health Administration, or OSHA, also have requirements for the safe handling of asbestos containing materials. For OSHA related requirements contact OSHA in St. Louis at 800-392-7743 or in Kansas City at 800-892-2674.

Precautions to Take to Minimize Asbestos Exposure

If damaged materials are suspected of containing asbestos, it is recommended the materials not be disturbed until it can be properly identified. If you elect to remove or disturb asbestos containing materials from unregulated demolition or renovation projects, proper precautions should be taken to minimize any potential exposure.

1. Seal off work areas where asbestos containing materials may be present, and take care not to track asbestos dust into other areas.
2. Always wear an approved respirator and disposable protective clothing. Decontaminate yourself before going into uncontaminated areas.
3. When working with asbestos containing material, keep the material wet to keep emission of asbestos fibers to a minimum.
4. Avoid breaking the material into smaller pieces. While smaller pieces may be easier to handle, this will increase the possibility of asbestos emissions.
5. Place any material you remove into appropriate leak tight disposal packaging or containers while the material is wet.
6. Transport the asbestos waste material to an approved disposal facility in an enclosed dumpster or truck lined with plastic sheeting.

Waste Disposal Requirements for Asbestos Contaminated Debris

All asbestos containing waste, whether from a regulated or unregulated demolition or renovation project is a waste material and must be disposed of at a permitted solid waste disposal facility that will accept the material. Asbestos containing materials should never be burned for disposal, as this will generate the emissions of asbestos fibers into the air, and is in violation of the department's open burning restrictions. For regulated projects, the department has stringent requirements for the packaging and labeling of asbestos containing waste materials. While the department has no requirements for packaging and labeling of asbestos containing waste materials from unregulated projects, you should still make arrangement with the disposal facility that you intend to use to determine what packaging and labeling requirements they may have for acceptance of the materials at their facility.

Locating Trained Asbestos Professionals

The Missouri Department of Natural Resources' Air Pollution Control Program maintains lists of all Missouri-certified asbestos inspectors and all Missouri registered asbestos abatement contractors. These lists are available on the department's website at www.dnr.mo.gov/env/apcp/asbestos.htm or by contacting the Air Pollution Control Program at 573-751-4817.

Local Agencies

Prior to proceeding with a project, you should always check with local agencies to ensure there is not more stringent requirements for asbestos removal or that permits for demolition or renovation are not required.

In Missouri, there are four local agencies to which the department has delegated asbestos related activities. If you are in one of the jurisdictions listed below you should coordinate your asbestos-related activities through the following offices:

Jurisdiction	Agency	Telephone
Kansas City	Kansas City Health Department	816-513-6314
St. Louis City	St. Louis Division of Air Pollution Control	314-613-7300
St. Louis County	St. Louis County Health Department	314-615-8924
Springfield	Springfield-Greene County Health Department	417-864-1662

Asbestos Contact Information

For more information about the department's asbestos requirements, contact the department's Air Pollution Control Program or one of the department's other offices listed below:

Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102
573-751-4817 - phone
573-751-2706 - fax
www.dnr.mo.gov/env/apcp/

Other Department Offices

Kansas City Regional Office	Lee's Summit	816-622-7000
Northeast Regional Office	Macon	660-385-8000
St. Louis Regional Office	St. Louis	314-416-2960
Southeast Regional Office	Poplar Bluff	573-840-9750
Southwest Regional Office	Springfield	417-891-4300

Additional Asbestos Related Guidance Documents

For more specific information on the department's requirements in regard to asbestos, please reference the additional guidance documents listed below. The documents can be downloaded from the department's website at www.dnr.mo.gov/pubs/index.html.

- *Asbestos: What is it and why is a Concern* – (PUB2077)
- *Asbestos Requirements for Demolition and Renovation Projects* – (PUB2157)
- *Management of Nonfriable Asbestos Containing Materials* – (PUB2156)
- *Requirements for Fire Training Exercises Involving Structures* – (PUB2029)



Management of Petroleum and Other Materials from Damaged Boats

Environmental Services Program fact sheet

1/2007

Natural disasters occurring near bodies of water can damage docks and marinas and cause boats to become submerged. This fact sheet is a guide for managing petroleum and solid wastes when removing damaged boats. Users of this information may be boat owners, marina owners or anyone providing service to them.

Petroleum Material

Federal law requires the responsible party to report any release of petroleum material if the petroleum material reaches or threatens any waterway (National Response Center, 1-800-424-8802.) Also, you must contact the department's 24-Hour Environmental Emergency Response Hotline at (573) 634-2436, if you have a petroleum product release to soil of more than 50 gallons (25 gallons, if the release is from an underground storage tank at a marina) or a release of any quantity of petroleum material into any waterway.

The petroleum material (gasoline, diesel fuel, lubricants), or any water mixture of the petroleum material from inside the boats may be hazardous because of one or more of the following characteristics:

- Ignitability - flashpoint of 140 degrees Fahrenheit or less.
- Benzene - 0.5 milligrams per liter or more when tested according to the Toxicity Characteristic Leaching Procedure (TCLP).
- Lead - 5 milligrams per liter or more as shown by a TCLP.

In general, hazardous wastes must be managed according to the Missouri Hazardous Waste Management Law and Regulations. The regulations state how the materials must be packaged, marked and labeled, how long they may be stored on-site, and how they must be transported and disposed. For more information see *Hazardous Waste Information Sources* at the end of this fact sheet.

The petroleum material inside the boats must be removed and characterized for use or disposal. If this is not done and the material in the boat is hazardous, you will be in violation of hazardous waste regulations. If the fuel lines or tanks appear to be damaged, the petroleum material should be removed from the boat prior to transport.

For wastes from inside fuel tanks, some management options and alternatives to disposal exist and are explained below:

1. Use or Recycle

Raw Product

If raw product is used for its intended purpose without interim processing, it is not a waste. Some processing of the waste may be necessary to recover product for use. A hazardous waste permit is required to treat hazardous waste. However, if option a, b, or c below is done at the damaged boat location, no hazardous waste permit is needed:

- a. Gravity separation.
- b. Simple filtration to remove particulates.
Note: The filter media may become hazardous waste.
- c. Use of an oil and water separator.
Note: The water may be hazardous waste.

After any of the activities described above, the recovered product may be resold if it meets Missouri Department of Agriculture fuel specifications; may be used in your own boat or vehicle if you choose to do so; or it may be sent to a petroleum refinery or terminal if the refinery or terminal accepts it for use in the petroleum refining process. In addition, recovered product may be sent to a fuel blender provided that no further reclamation or separation is necessary by the blender.

If it is necessary to store the water phase generated from the activities described above, the water should be stored in closed containers in good condition and be clearly marked "Petroleum Contaminated Water" until a hazardous waste determination can be made. If the wastewater is determined to be hazardous, it must be stored in accordance with all applicable hazardous waste rules and regulations until appropriately disposed or discharged. For information about managing the water phase, see management option numbers 2, 3, 4 or 6.

2. Petroleum Refinery/Terminal

Petroleum Wastes

If each of the following conditions are met, petroleum wastes are exempt from solid and hazardous waste regulations:

- The petroleum refinery or terminal accepts the waste for reuse or recycling.,
- The transporter takes it from the generator's location directly to the refinery or terminal (no interim storage or treatment facilities used except for transfer facilities meeting hazardous waste regulations) and
- The material is reused in the petroleum refining process.

The generator (boat owner, marina owner, etc) must follow Department of Transportation regulations when shipping the material to the refinery or terminal. To properly claim this exemption, the tank or property owner must keep documents showing his or her agreement with the refinery with records showing when the waste was generated and taken to the refinery or terminal.

3. Domestic Sewage Exemption

Tank Water and Rinsate from the boats

If the generator has connections to a sanitary sewer on-site and has written permission from the Publicly Owned Treatment Works (POTW) operator to place the waste into the sewer, the waste is exempt from solid and hazardous waste regulation once it is discharged.

Be aware that not all sewer systems go to a POTW system. Hazardous wastewater must be managed in accordance with all applicable hazardous waste rules and regulations until it is discharged. If the material cannot be discharged as is, the treatment plant operator may agree to accept it after it has first been gravity separated, filtered or run through an oil and water separator. The recovered product may then be used if it meets fuel specifications or may be sent to a refinery or terminal.

Note: The filter media may be hazardous waste.

You should also take care to avoid spills and releases that would have to be cleaned up. Any material contaminated by a spill would have to be tested prior to disposal and appropriately disposed.

Contact the department's Water Protection Program to ask if the process you intend to use requires a permit. Installing and operating systems to treat hazardous wastewater requires a permit from the Water Protection Program. A general permit for treatment and discharge of "Fuel Spill Cleanup" wastewater is available for many such projects. Site specific permits may also be required if necessary to protect waters of the state, which includes groundwater.

4. Permit by Rule POTW

Tank Water and Rinsate from the boats

The wastewater may be transported to a POTW using a licensed hazardous waste transporter and manifests. The POTW must be in compliance with all terms of the Permit by Rule found in 40 CFR 270.60(c). At the time this document was printed, there were no POTWs in Missouri that met the Permit by Rule standards. There are POTWs in other states that meet the Permit by Rule standards.

5. Sanitary Landfill

Non-hazardous Waste from the boats

If petroleum waste inside the boat is tested and found to be nonhazardous, it may be disposed in a permitted sanitary landfill subject to special waste disposal requirements.

Note: Landfills cannot accept waste with free liquid. The generator may add nonhazardous absorbents.

The generator must contact the individual landfill(s) to determine what conditions are placed on special waste and in what form the landfill may be willing to accept it.

6. Treatment, Storage or Disposal Facility

Hazardous Wastes from the boats

If the waste is hazardous and none of the above mentioned management options are available or possible, the waste must be sent to a Missouri certified resource recovery facility or to a Treatment, Storage or Disposal facility permitted to accept the hazardous waste. Cement kilns or fuel blenders that are permitted to accept hazardous waste may be used. The waste must be managed in accordance with all applicable hazardous waste rules and regulations.

A list of commercial Hazardous Waste Treatment, Storage and Disposal facilities in Missouri is available from the Department's Hazardous Waste Program or visit www.dnr.mo.gov/env/hwp/permits/facilities.htm.

Do's

- Use petroleum products for their originally intended use if possible.
- Recycle reclaimable petroleum by returning it to a petroleum refinery or terminal if possible.
- Avoid spills and releases. Containment booms, absorbent booms and pads should be used as a precaution if any petroleum material is removed from the boats while on the water.
- Clean up any spills and releases immediately. Dispose of product-contaminated soil, debris, booms, and pads at a sanitary landfill as soon as possible. Obtain the landfill operator's approval before taking the material off site. Under certain conditions soil may be thermally treated with prior approval of the department's Air Pollution Control Program and Hazardous Waste Program.
- Keep copies of shipping papers and agreements with POTWs, petroleum refineries or treatment storage and disposal facilities that document your management of the waste.

Don'ts

- Don't consider waste gasoline, diesel, lubricants, water, sludge and scale to be "used oil". It does not meet the regulatory definition of "used oil."
- Don't assume wastes from the fuel tanks are nonhazardous. In most cases laboratory analysis will be required to prove the wastes are nonhazardous unless the wastes are exempt from hazardous waste regulation by proper management under options 1, 2 or 3 in this fact sheet.
- Don't dispose of petroleum contaminated materials in storm sewers or septic tanks.
- Don't dispose on soil or in surface water.
- Don't use for vegetation control.
- Don't use to start brush pile fires or tire fires.
- Don't treat by air sparging, bubbling, agitation or otherwise driving air through the waste to lower the benzene concentration (i.e., illegal without a hazardous waste treatment permit).
- Don't deliberately dilute the waste or add material to it for the purpose of making it nonhazardous.
- Don't take the waste to another site for storage or treatment before sending it to the refinery or terminal.
- Don't remove a tank that has not been properly cleaned, purged and made inert from the site.
- Don't use engine exhaust to inert a fuel tank. This is not effective and can be dangerous.
- Don't store hazardous waste greater than 90 days (180 days if small quantity generator).

Test Methods

Flashpoint - Pensky-Martens Closed Cup Tester, Method in ASTM - Standard D-93-79 or D-93-80, or as determined by an equivalent test method approved by the Administrator under procedures set forth in 40 CFR 260.20 and 260.21.

Test for Free Liquids - Paint Filter Liquids Test - Method 9005 - Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, Publication SW-846 of the U.S. Environmental Protection Agency.

Toxicity Characteristic Leaching Procedure (TCLP) – Method 1311. Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods Publication SW-846 of the U.S. Environmental Protection Agency.

Boats and Related Material

All solid waste originating from damaged docks or boats must be removed from the water and properly salvaged, recycled or disposed per Section 260.210.1 of the Missouri Solid Waste Management Law. Also, per Water Quality Standards of 10 CSR 20-7.031, waters shall be free from oil, scum, floating debris, used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste. In summary, sunken or damaged boats cannot be abandoned in the water.

The department encourages salvaging and recycling of waste wherever possible. Scrap metal may be taken to a scrap metal yard. Unencapsulated dock foam may be recycled, or disposed of in a permitted landfill or transfer station. Remaining solid waste must be taken for disposal at a permitted landfill or transfer station. For more information on recycling dock foam or other waste management questions or options, contact the department's Solid Waste Management Program. Permitted landfills and transfer stations are listed on the program's Web site at www.dnr.mo.gov/env/swmp/facilities/sanlist.htm and www.dnr.mo.gov/env/swmp/facilities/tranlist.htm.

Hazardous Waste Information Sources

Missouri Secretary of State

The Missouri Hazardous Waste Management Law and Regulations are available from the Missouri Secretary of State's Office. Call (573) 751-4015.

Missouri Department of Natural Resources publications

www.dnr.mo.gov/pubs/index.htm

- *Hazardous Waste in Missouri* fact sheet -- PUB919
www.dnr.mo.gov/pubs/pub919.pdf
- *Does Your Business Generate Hazardous Waste?* fact sheet -- PUB117
www.dnr.mo.gov/pubs/pub117.pdf
- *Management of Conditionally Exempt Quantities of Hazardous Waste* - fact sheet -- PUB128
www.dnr.mo.gov/pubs/pub128.pdf

For More Information

Missouri Department of Natural Resources
Hazardous Waste Program

P.O. Box 176

Jefferson City, MO 65102 0176

1-800-361 4827 or (573) 751-3176

(573) 751-7869 fax

www.dnr.mo.gov/env/hwp/index.html

Missouri Department of Natural Resources
Air Pollution Control Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-4817 office

(573) 751-2706 fax

www.dnr.mo.gov/env/apcp/index.html

Missouri Department of Natural Resources
Solid Waste Management Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-5401

(573) 526-3902 fax

www.dnr.mo.gov/env/swmp/index.html

Missouri Department of Natural Resources
Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 751-1300 office

(573) 751-9396 fax

www.dnr.mo.gov/env/wpp/index.html

Transportation Questions

Missouri Department of Economic Development - Division of Motor Carrier and Railroad Safety.

Call (573) 751-7117.



Natural Disaster Assistance for Missouri Citizens - Natural Disaster Recovery for Historic Buildings

Department of Natural Resources fact sheet

9/2010

The destruction to historic buildings caused by natural disasters can be significant.

A moderately severe tornado, for example, is capable of lifting the roof off a historic building and, in the process, widely scattering its contents. The most intense tornado can lift a frame building in its entirety. Often, when a tornado passes over a structure, the rapid reduction in air pressure will cause the higher pressure inside to cause the building to explode.

Evaluation of damage to buildings is one of the first and most essential steps to undertake after a natural disaster. Building departments and private engineers will determine which damaged buildings are safe to enter.

In the rush to repair communities, it may be easier to demolish damaged historic buildings than to undertake repair, but understanding laws and policies for disaster relief often enables communities to restore these buildings.

Immediate Post-Disaster Actions for Historic Buildings

After an historic building has been deemed safe to enter, immediate steps should be taken to stabilize the structure:

- Ensure gas, electricity and water are shut off.
- Consult a licensed engineer or preservation architect about structural stability of buildings and chimneys.
- Check walls and ceilings for misalignment from the foundation.
- Temporarily secure broken boards with plywood. Secure doors and window openings with appropriate coverings. Keeping additional moisture out of the building is a key step in preserving the structure.
- Salvage from debris broken historic elements such as bricks or decorative elements for reuse or replication.
- Maintain protective roof coverings. Continued attention must be paid to temporary repairs. Repairing gutters and downspouts will help move water away from the building.

Maintaining Preservation Standards

Common effects of disasters on historic places, such as cracked walls, roofs that have been removed, water-damaged plaster and wet furnishings, usually can be repaired. Although the aftermath of a disaster is not “preservation as usual,” generally accepted standards should be followed even in the rush to repair.

For historic buildings, general and broad rules-of-thumb are good guides after disasters, as well as before:

- Repair rather than replace. Retain original features and materials wherever possible. Repair is historically and economically preferable to replacement.
- Replace with similar features. If replacement is necessary, use items that match the original in design and materials
- Retain historic character. If matching replacements are impossible because features are unavailable or too expensive, try to reproduce the salient visual characteristics of the original, such as material, composition, proportion and color.
- Return to the original. When possible, replace previously missing parts and remove inappropriate modernizations.

Repairing Storm-Damaged Historic Buildings

Roofs

Roofs form the first line of defense of any historic building and are vital in keeping damaging moisture out of the building.

- Because a roof is damaged does not mean it is a complete loss. Get expert advice, particularly because damage may not be visible.
- Metal roofs may be more difficult to repair, especially when they have become bent out of shape due to wind damage. Portions may be reusable.
- Metal flashings at parapets, chimneys, dormers, valleys, ridges and porches, are especially vulnerable and should be checked thoroughly.

Masonry and Mortar Repairs

Mortar in an historic building can be weakened by the damaging winds of a tornado. Settlement can lead to cracking in masonry walls, which can compromise the structure.

- Compatibility of materials is important. Similar brick types should be used in repairs. Portland cement mortar or stucco should be avoided.
- A good type of mortar to use for most brick is one composed of lime, sand and portland cement. A typical mix appropriate for historic buildings might include three parts lime, one part portland cement and 10-to-12 parts sand.
- The use of portland cement for stucco repair may cause the old material around the patch to powder and deteriorate. It is important when patching stucco to use as dry a mix as possible to avoid shrinking and cracking.

Wood

- Be sure the building is fastened to its foundation, and tie together roof, walls and floors to strengthen the structural system.
- Reinforce rotted or insect-infested beam-ends by adding flitch plates or “sisters.”
- If the disaster recovery is used as an opportunity to upgrade the utilities in an historic structure, avoid drilling multiple holes through joists and beams, thus destroying or weakening the historic fabric.

Windows and Doors

Windows and doors can be among the most important and decorative features in an historic building. If replacement of windows and doors is determined to be necessary, a partial replacement of components such as window sash alone should be considered. If window or door frames are replaced, the exterior trim should closely match the original.

Restoration Hazards

- Fire: Never use an open flame or heat gun when working on wooden trim; both present a severe fire hazard.
- Asbestos: Wind and water damage, or work to repair this damage, can cause asbestos fibers, which were used in thousands of different construction materials, to become airborne. Missouri asbestos regulations differ for regulated and unregulated structures.
- Regulated structures (includes institutional, commercial, public, industrial or residential structures that contain more than four dwelling units) – A Missouri-certified asbestos inspector must perform an inspection for the presence of asbestos prior to the structure being renovated or demolished. Additional requirements such as notification or use of asbestos professionals may be required depending on the results of the inspection.
- Unregulated structures (a residential structure of less than four units) – While an asbestos inspection is not required, it can be a good idea. If asbestos-containing materials are detected on the site of a disaster, make sure all work halts immediately and professionals are brought in to clean it up.

Detailed information is available in the *Asbestos Requirements for Demolition and Renovation Projects* fact sheet (PUB2157), online at dnr.mo.gov/pubs/pub2157.pdf, or by contacting the Air Pollution Control Program at 800-334-6946.

- Lead Paint: Any stripping or scraping of paint on old buildings may uncover lead paint and release lead-contaminated dust, which is potentially poisonous to children. Equally dangerous is the use of heat guns or flames, which vaporize the lead in old paint.

Financial Assistance for Recovery

Federal and state tax incentives exist for the rehabilitation of historic buildings. Most rehabilitation costs incurred as part of disaster recovery efforts may qualify for these credits.

- Federal Historic Rehabilitation Tax Credit: A 20 percent federal rehabilitation tax credit exists for substantially rehabilitated historic buildings. The credit applies to income-producing, depreciable structures only. Properties must be listed individually in the National Register of Historic Places or be a contributing element of a National Register Historic District. Rehabilitation must be substantial, meaning rehabilitation costs must exceed either the greater of \$5,000 or the adjusted basis of the building. All rehabilitation work must meet the Secretary of the Interior's "Standards for Rehabilitation."
- A 10 percent federal credit also exists for non-historic buildings.
- Missouri Historic Rehabilitation Tax Credit: A 25 percent Missouri rehabilitation tax credit exists for substantially rehabilitated historic buildings. The credit applies to income-producing, depreciable structures or to an owner's personal residence. Properties must be listed individually in the National Register of Historic Places or be a contributing element of a National Register Historic District. Rehabilitation must be substantial, meaning rehabilitation costs must exceed 50 percent of the basis of the property. All rehabilitation work must meet the Secretary of the Interior's "Standards for Rehabilitation."

Bibliography

The information in this publication was prepared by the Missouri Department of Natural Resources' State Historic Preservation Office, with assistance from the National Park Service, Preservation Assistance Division.

Carl L. Nelson, *Protecting the Past From Natural Disasters*, Washington, D.C., The Preservation Press, 1991.

Safeguarding Your Historic Site: Basic Preparedness and Recovery Measures for Natural Disasters. Federal Emergency Management Agency, Region 1, 1993.

For More Information

Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-3443
www.dnr.mo.gov



Natural Disaster Assistance for Missouri Citizens

Restoring Drinking Water

Contact your public water supply directly for further information and consult the local news media for notification when any health advisories have been issued or lifted. Your local water supplier has the most up-to-date information about problems in your area, such as broken water mains, low water pressure or any other possible sources of contamination. As long as adequate water pressure has been maintained through the flood, you should need only to flush your water pipes.

Flushing Home Water Lines

1. The best and easiest way to begin flushing your water lines is to use a garden hose and wash off your driveway or patio for half an hour. This will avoid overloading your public or private sewage system.
2. Water pipes in your home that have been submerged in water may be extremely dirty. Clean the exterior of pipes and faucets with regular household cleaner. Briefly turn on hot and cold water at all faucets to remove dirt that may have settled just inside the faucets. Next, squirt a solution of 50 percent water and 50 percent household bleach into the faucets. Then flush all water pipes as described in Step 3. Never mix bleach with a household cleaner containing ammonia. The mixture can create a deadly chlorine gas.
3. Sequentially flush out all water pipes inside the house. Begin at the faucet nearest the point where the waterline enters the building. This is usually the sink nearest the water meter. Turn on both hot and cold faucets at full blast for three to five minutes. Do not use water until it becomes clear. You may wish to catch water in buckets if you are concerned about overloading your septic tank. Proceed to the next nearest faucet and repeat. Continue until all faucets have been flushed. To avoid wasting hot water, wait until you have flushed all your lines to turn on your hot water heater.
4. Your tap water should now be safe to drink.

Disinfection of Unsafe Drinking Water

The following procedures will destroy the usual bacteria and other microorganisms that may be present in water obtained from a contaminated public water supply system or from alternate emergency sources. Boiling is best way to disinfect unsafe water. If chemical disinfection is the only option, use of bleach is preferable to iodine.

Heat Disinfection (boiling):

1. Strain water through a clean, tightly woven cloth into a clean container to remove any sediment or floating matter.
2. Boil water vigorously for three minutes prior to use for cooking or drinking.
3. Allow water to cool. To improve the taste, add a pinch of salt to each quart of boiled water or try pouring it back and forth from one clean container to another several times.

Chemical Disinfection:

If boiling is not possible, strain the water through a clean, tightly woven cloth into a clean container to remove any sediment or floating matter and purify it with one of the following chemicals. Choice of chemical is based on availability:

1. Unscented household bleach such as Purex®, Clorox® or other hypochlorite solutions:

Read the label to ensure the solution contains 4 to 6 percent chlorine and determine the amount needed to disinfect each gallon of water from this table:

Available Chlorine	Clear Water	Cloudy Water
4 to 6 percent *	1/8 teaspoon per gallon	1/4 teaspoon per gallon

*common household bleach

Mix thoroughly by stirring or shaking water in container. Let stand for 30 minutes. A slight chlorine odor should be detectable in the water. Water is safe to use.

2. Iodine: Use USP tincture of iodine. Iodine from the medicine cabinet is suitable. Add two to three drops to each quart of clear water or eight to 10 drops to each quart of cloudy water. Mix and let water stand for 30 minutes before using.

Note: Commercially prepared iodine or chlorine tablets or filtering kits available in drug and sporting goods stores can also be used for disinfecting drinking water. Follow the instructions on the package.

Purified Water Storage

Water purified by either boiling or chemical disinfection should be stored in clean, noncorrodible, tightly covered containers. Containers suitable for water storage include empty vinegar bottles, soft drink jugs and plastic milk containers that have been thoroughly washed and rinsed with the purified water.

Freezing does not disinfect water; ice cubes must be made from water disinfected as described above.

If You Have a Private Well

Wells that are destroyed, totally filled with mud or suffered extensive damage must be plugged because they may cause further damage to the groundwater supply. If you want to have the same well redrilled, you will need to contact a permitted well driller.

Wells that are partially damaged or partially filled with mud can be cleaned out by a permitted pump installer or driller. They can also determine if other repairs are necessary.

Wells that are undamaged should be disinfected following the procedures listed below.

If muddy water is present, contact a permitted well driller for use and start-up procedures.

A list of permitted drillers is available from the department's Wellhead Protection at 573-368-2165.

Private Well Emergency Disinfection Procedures

1. Pump well until water is clear.
2. Pour one gallon of liquid bleach into the top of the well, making sure to wash down the inside of the well casing with water.
3. Pump chlorinated water through all household water lines until there is a noticeable chlorine odor. If chlorine odor is not detected, add additional chlorine until you smell it.
4. Wash down the interior and the exterior of the well with chlorinated water using a hose.
5. Let chlorinated water stand in the well and in pipes for 24 hours.
6. Run water until the chlorine smell is no longer detectable.
7. Have water tested for bacteria. Any water for temporary use should be boiled for three minutes for drinking until you receive satisfactory test results.
8. If water fails the bacteria test, rechlorinate your well and retest.
9. Before using the water for drinking, you should have two consecutive safe bacteria samples. These samples should be taken at least 48 hours apart.

Caution: Use caution when working on your well to avoid electrical shock from the pump.

For More Information

Missouri Department of Natural Resources
Public Drinking Water Branch
P.O. Box 176
Jefferson City, MO 65102-0176
800-361-4827 or 573-751-5331
www.dnr.mo.gov/env/wpp/dw-index.htm

or your nearest regional office at:

Kansas City Regional Office	816-622-7000
Northeast Regional Office - Macon	660-385-8000
Southeast Regional Office - Poplar Bluff	573-840-9750
Southwest Regional Office - Springfield	417-891-4300
St. Louis Regional Office	314-416-2960

A map of regional offices is located on the department's Web Site as
www.dnr.mo.gov/regions/regions.htm



Reducing the Impact of Flooding – Agricultural Chemicals

Department fact sheet

4/2011

When Flooding is Inevitable

Unlike other natural disasters that strike Missouri (e.g. tornadoes, thunderstorms, ice storms), severe flooding usually can be predicted, giving those in the effected areas the opportunity to prepare. One important form of preparation is to take steps to minimize the environmental effects agricultural chemicals would have if exposed to flood waters. The suggestions below are taken from [Reducing the Impact of Flooding – Agricultural Chemicals](#), a fact sheet created by the Minnesota Department of Agriculture. In addition to agricultural chemicals, those living in rural areas affected by flooding should take steps to secure propane and other fuel tanks. Additional information related to securing and preparing propane tanks is available in the department's fact sheet, *Reducing the Impact of Flooding – Propane Tanks*.

Anhydrous Ammonia Storage

- Move nurse tanks and other ammonia equipment out of the flood zone.
- Drain line and remove pumps and other system components.
- Lock and protect tank valves.
- Have plan to move product out and ship to terminal or other storage facility.
- Turn power to ammonia system off when unattended.
- Secure storage tanks to prevent movement or damage by flood waters.
- Prominently display firm manager's name and telephone number.

Bulk Liquid Fertilizer or Pesticides

- Lock and protect valves.
- Close and lock site gauge valves on bulk fertilizer storage tanks.
- Inventory all stored products.
- Accelerate or postpone shipments.
- Prominently display firm manager's name and telephone number.
- Road restrictions could limit the speed at which product can be removed.
- All agricultural chemical bulk tanks should be anchored in some manner if empty.

Small Packaged Pesticide Containers

- Keep containers off the floor and secured.
- Inventory products.
- Move grain fumigants to an area not within the flood zone.
- Move products to an area protected from flood waters and away from drains.
- Postpone incoming shipments.

Waste Pesticides

- Protect all pesticides including any unusable or unwanted herbicides, insecticides or other pesticides from rising water or other water damage.
- Repackage or overpack all paper bags to protect dry product from water damage.
- Repackage or overpack older containers, liquid products or containers in poor condition to protect from water damage.
- Use rigid plastic or metal containers to repackage or overpack containers.
- Store pesticides damaged by water or otherwise rendered unusable for proper disposal. Do not throw pesticides into trash or dump onto ground.
- Contact the waste pesticide collection program for information on the disposal of damaged or unusable pesticides.

Bulk Dry Fertilizer

- Construct barriers at flood water entrances to prevent water from entering bins.
- Delay shipments or temporarily move product to higher ground.
- Spring road restrictions could limit the speed at which product can be removed.

For More Information Contact

Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-4932



Reducing the Impact of Flooding – Private Water Wells

Department fact sheet

4/2011

Private water wells are vital to farmers and rural residents who do not have access to water from public water systems. In times of flooding, these wells can quickly become conduits for floodwaters – and the pollutants they carry – to contaminate the groundwater that serves not only the farm or residence from which the contamination originated but any well that draws from the same aquifer.

When flooding is imminent, these actions are to be taken by owners of private water wells:

Ensure the well cap is free from cracks and is secured to the well casing. It should fit snugly so potential pollutants don't find their way into the well system and contaminate groundwater.

Additional guidance regarding water wells that have vents

- Turn off power to the well
- Seal the vent (and any other opening) with silicone caulk or equivalent (this will need to be removed before restarting the well)
- Discontinue operation until floodwaters subside

Additional guidance regarding water wells that do not have vents

- Turn off power to the well
- Ensure electrical wire hole, drop pipe hole or any other opening in the well cap is sealed with silicone caulk or equivalent (this will need to be removed before restarting the well)
- Discontinue operation until floodwaters subside

For More Information Contact

Department of Natural Resources
Division of Geology and Land Survey
573-368-2165



Reducing the Impact of Flooding – Propane Tanks

Department fact sheet

4/2011

The Missouri Department of Natural Resources urges citizens in flood-prone areas to secure propane tanks properly and mark the tanks to help identify them and avoid safety problems in the event of local flooding.

Unsecured propane tanks can float, and can be carried away by flood waters. Flood waters can be much more powerful than the strength of connecting pipe or tubing, and may cause a propane tank to float off its foundation if it is not secured.

If a business or citizen is in an area that may be affected by flooding and has a propane tank, the following actions are recommended.

Before the storm or flood:

- Secure your propane tank to a strongly secured stationary object such as a tree. Secure the tank by running a chain or cable through the legs or lifting lugs of the tank. Cable or chain instead of rope is recommended.
- If you own the tank, mark the tank with your name, address and phone number in case the tank is carried away. Contact your propane provider if you are not certain if you are the owner of the tank.
- Take a picture of your propane tank manufacturer's nameplate. It might be good to have a picture in case your tank is recovered after floating away.

If you have to evacuate to higher ground:

- Close the service valve on the propane portable cylinder or permanent tank by turning the handwheel clockwise. If flooding causes a propane tank to break away from its location, any gas in the container will be lost if the service valve remains open.
- Turn off the service valve and the shutoff valve on all propane appliances. Be sure to check first with your propane supplier if you don't know where the shutoff valves are located.

After the storm or flood:

- Your tank's service valve should be left off until the system and appliances have been checked by a qualified service person. Do not attempt to restore service yourself—contact your propane provider to arrange for service to be re-stored, pilot lights lit and so on. Missouri state regulations require a safety inspection for

- any propane systems that have experienced an interruption of service. Only your propane provider is qualified to do this.
- Your propane supplier should inspect propane-powered household appliances, farm equipment or vehicles with controls or regulators that have been underwater before being put back into service.
 - If your propane tank has moved, do not attempt to move it. This is a job for propane service professionals.
 - If abandoned propane tanks are discovered once floodwaters have receded, contact the department's Environmental Emergency Response section at 573-634-2436.
 - If you smell propane gas, leave the area immediately and contact your fire department to inform them of the situation.

For More Information Contact

Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or 573-751-3443



Natural Disaster Assistance for Missouri Citizens

Water Pollution

1-800-361-4827

Department of Natural Resources fact sheet

5/2007

Contaminated Surface Water

- Keep contact with floodwaters to a minimum. Flooded rivers and streams are contaminated with sewage, animal wastes and other harmful contaminants.
- Stay out of floodwaters; do not swim, wade, tube or have other recreational contact.
- Avoid recreational boating on rivers and streams in flood stage. Rapidly flowing floodwaters can contain unpredictable currents, eddies and can conceal submerged or moving objects that can damage a boat.
- Vacate buildings if electric, gas, drinking water and wastewater systems are not working due to flood conditions.
- If contact with floodwaters is unavoidable, shower or bathe with anti-bacterial soap afterward.
- If you are injured while working in floodwaters, contact your doctor to see if you need a tetanus shot.
- After floodwaters recede, wash flooded buildings with clean water and biodegradable detergent. Thoroughly check and clean all natural gas, electric, drinking water and sewage disposal systems before returning to service. Outdoor areas should be washed or sluiced with river water or clean water from hydrants.
- Floodwaters trapped behind levees or pooled in low areas may be released or pumped back to the adjacent river or stream without special permission or permits. Use care to avoid damage or harm to neighbors.
- If you suspect flood waters may be contaminated with petroleum products or other chemicals, contact your local emergency response agency or the nearest regional office of the Missouri Department of Natural Resources at

Kansas City Regional Office (816) 622-7000

Northeast Regional Office (660) 385-8000

Southeast Regional Office (573) 840-9750

Southwest Regional Office (417) 891-4300

St. Louis Regional Office (314) 416-2960

For guidance on mosquito abatement, contact the Missouri Department of Health and Senior Services at (573) 751-6113.

For guidance on dead animal removal, contact the Department of Agriculture's Division of Animal Health at (573) 751-5608.



Natural Disaster Assistance for Missouri Citizens

What to do After the Flood - Regulatory and Permitting Requirements

1-800-361-4827

Department of Natural Resources fact sheet

5/2007

Public Water Supply Systems

Permits are not required for restoring power supply, including raising electrical service and equipment to a higher elevation. The repair of washed-out stream crossing, repairing or replacing existing water mains, and repairing or replacing water distribution systems will be considered maintenance, and will require no permit. Repair of flooded water supply wells and water treatment plants using identical parts and components will not require a permit.

Other improvements such as raising portions of the water treatment plants, water supply wells or backwash discharge lines should be reviewed by the department and issued an approval permit.

Municipal officials are encouraged to rely upon the knowledge and expertise of their own staffs. Department of Natural Resources operations specialists and engineering staff are also available for onsite consultation and advice.

Laboratory Testing

Analysis of drinking water samples will be the highest priority for both the Department of Natural Resources and the Department of Health and Senior Services. Lab testing requirements for public water systems will be coordinated by the department's Public Drinking Water Branch. Private well testing will be coordinated by the Department of Health and Senior Services. Containers for sampling private drinking water wells are available through the county health departments or your district sanitarian. If you need assistance call the Department of Health and Senior Services' State Public Health Laboratory at (573) 751-0633.

Septic Tank Failures

See the department's fact sheet Disaster Response for On-Site Wastewater Systems to assist individuals with septic tank failures available on the Web at <http://www.dnr.mo.gov/disaster.htm>.

Contact your local county health department or the Missouri Department of Health and Senior Services, Bureau of Environmental Regulations and Licensure, at (573) 751-6095, with questions about on-site wastewater system repair or replacement.

Wastewater Treatment Plants

Construction permits are not required for emergency measures to return sewage collection or treatment facilities to service or to replace identical parts or components to sewage collection or treatment facilities.

Construction permits are required for facilities that are repaired or rebuilt to a design that is different from the previous facility or for new facilities.

Municipal officials are encouraged to rely upon the knowledge and expertise of their own staffs. Department of Natural Resources operations specialists and engineering staff are also available for onsite consultation and advice.

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Rehabilitation

Damaged or Unusable Hazardous Chemicals at Businesses

- Owners, managers and employees returning to a business that has been affected by a natural disaster may find materials or products that are damaged and unusable.
- Products labeled with words such as POISON, DANGER, WARNING or CAUTION contain hazardous chemicals. Materials used in business activity, manufacturing or maintenance may have hazardous characteristics. They may be TOXIC, EXPLOSIVE, IGNITABLE OR CORROSIVE.
- If possible, recover these materials for use for their intended purpose. If this is not possible, the damaged or unusable hazardous materials should be separated from other debris or solid waste and placed in containers so that further human contact and release to the environment is minimized. Permanently mark the outside of the container with the name of the material inside and the potential hazard (e.g., Endrin Waste – TOXIC).
- Use extreme caution when cleaning up hazardous materials in leaking or damaged containers. Wear protective garments and emergency breathing apparatus if necessary. Do not work around these damaged products in confined or poorly ventilated areas. Obtain professional hazardous materials response and cleanup services if appropriate.
- Storm or building debris that is contaminated with hazardous materials may need to be handled and disposed of as hazardous waste.
- Disposal of hazardous materials as hazardous waste must be in accord with the Missouri Hazardous Waste Management Law and Regulations using a licensed hazardous materials transporter at a permitted hazardous waste disposal facility.
- Contact one of the department's regional offices or the Hazardous Waste Program if specific guidance is needed on determining whether a waste is hazardous and how to properly manage and dispose of the waste.

Drums, Tanks and Barrels

- Most barrels that wash up in a flood are open-burn barrels, trash barrels or dock barrels.
- There may be danger in sealed barrels, drums or tanks with unknown contents. These should be handled by trained professionals. If you find sealed drums, barrels or tanks of unknown contents, call the department's Environmental Emergency Response staff at (573) 634-2436.

- If a propane tank is in flood debris, a company distributing gas may be able to identify the tank and return it to its proper location. Propane tanks have serial numbers that help to identify owners and locations.
- If propane tanks are present or are found and there is reason to believe that they may be unsafe, contact the local emergency management coordinator, or the department's Environmental Emergency Response staff at 1-800-361-4827 or (573) 634-2436.
- If an above-ground storage tank is damaged, follow your facility emergency response procedures, and contact the local emergency management coordinator or the department's Environmental Emergency Response staff at 1-800-361-4827 or (573) 634-2436.

Flood Debris

The following suggestions may assist in collection, separation, transportation and disposal of flood debris and water damage items.

- Perform a visual survey of the flooded areas and determine the basic types of waste and estimated quantity. Common major categories are general household waste, household chemicals or hazardous wastes, structural debris and lumber, dead animals, major appliances, tires, wood or vegetative waste and sandbags. All major categories of waste should be separated to prevent dangerous chemicals from mixing and for ease of handling and recycling of solid waste.
- Begin arranging for the processing, transportation and disposal of all categories of waste planned for collection as soon as possible.
- Locate suitable areas for accumulation and temporary storage of debris. Allow adequate space for separately storing different types of debris, on-site processing and adequate turn around space for semi-trailers.
- Arrange for transfer trailers to be located at collection centers and publicize these drop-off locations.
- Notify neighborhoods of specific collection schedules for different types of flood debris.
- Remove flood debris to areas that will not be further flooded, so it does not get washed into streams or rivers
- Monitor the drop-off sites and control access to prevent mixing the wastes and dumping of hazardous materials.
- County and City officials must notify the Department of Natural Resources of all temporary waste transfer locations. To notify by telephone, call the appropriate Regional Office.

For more information, see the department's fact sheet What to do with Disaster Debris available on the Web at <http://www.dnr.mo.gov/disaster.htm>.

Trapped or Poned Flood Waters

Flood waters trapped behind levees or ponds in low-lying areas may be pumped or released back to the adjacent river or stream without obtaining a discharge permit from the Department of Natural Resources. If there is reason to believe that the trapped flood water is contaminated with agricultural fertilizers or pesticides, petroleum products or other chemical contaminants, contact the department's Environmental Emergency Response hotline at (573) 634-2436.

REGIONAL OFFICES

The Department of Natural Resources' Regional Offices provide field inspections, complaint investigation and front-line troubleshooting, problem solving and compliance assistance on environmental issues and emergencies.

Kansas City Regional Office

500 NE Colbern Road
Lee's Summit, MO 64086-4710
(816) 622-7000
(816) 622-7044 fax

Counties served: Andrew, Atchison, Bates, Benton, Buchanan, Caldwell, Cass, Clay, Clinton, Daviess, DeKalb, Gentry, Harrison, Henry, Holt, Jackson, Johnson, Lafayette, Nodaway, Pettis, Platte, Ray and Worth.

Northeast Regional Office

1709 Prospect Dr.
Macon, MO 63552-2602
(660) 385-8000
(660) 385-8090 fax

Counties served: Adair, Audrain, Boone, Callaway, Carroll, Chariton, Clark, Cole, Cooper, Grundy, Howard, Knox, Lewis, Linn, Livingston, Macon, Marion, Mercer, Moniteau, Monroe, Osage, Pike, Putnam, Ralls, Randolph, Saline, Schuyler, Scotland, Shelby and Sullivan.

Southeast Regional Office

2155 N. Westwood Blvd.
P.O. Box 1420
Poplar Bluff, MO 63901
(573) 840-9750
(573) 840-9754 fax

Counties served: Bollinger, Butler, Cape Girardeau, Carter, Crawford, Dent, Dunklin, Howell, Iron, Madison, Maries, Mississippi, New Madrid, Oregon, Pemiscot, Perry, Phelps, Pulaski, Reynolds, Ripley, Scott, Shannon, St. Francois, Ste. Genevieve, Stoddard, Texas, Washington and Wayne.

Southwest Regional Office

2040 W. Woodland
Springfield, MO 65807-5912
(417) 891-4300
(417) 891-4399 fax

Counties served: Barry, Barton, Camden, Cedar, Christian, Dade, Dallas, Douglas, Greene, Hickory, Jasper, Laclede, Lawrence, McDonald, Miller, Morgan, Newton, Ozark, Polk, St. Clair, Stone, Taney, Vernon, Webster and Wright.

St. Louis Regional Office

7545 S. Lindbergh, Suite 210
St. Louis, MO 63125
(314) 416-2960
(314) 416-2970 fax

Counties served: Franklin, Gasconade, Jefferson, Lincoln, Montgomery, St. Charles and St. Louis.



If a historic building damaged by a disaster has been deemed safe to enter, immediate steps should be taken to stabilize the building: ensure gas, electricity and water are shut off; consult a licensed engineer or preservation architect about structural stability of buildings or chimneys; check walls and ceilings for misalignment from foundation; temporarily secure broken boards with plywood; secure door and window openings with appropriate coverings; salvage broken historic elements for future repair or reuse; and maintain protective roof coverings.



Missouri Department of Natural Resources
State Historic Preservation Office

www.dnr.mo.gov
1-800-361-4827

Imagine turning on your faucet and discovering you're without water. After a power outage, earthquake, tornado, drought or other disaster, this could be a reality for your community. If you have a water hauling truck and would be willing to help, you may be the local hero. E-mail drinkingwater@dnr.mo.gov or call (573) 751-5331 to provide contact information and water hauling capabilities in case your community or a nearby community needs you.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827



After a disaster, animal producers should dispose of dead animals within 24 hours or as soon as it is safe to do so. Use the following methods, in order of most preferable: processing at a rendering plant, on-site composting as recommended by University of Missouri Extension, disposal in a sanitary landfill, incineration in a UM service-designed agricultural incinerator or a state-permitted commercial incinerator, or on-site burial following state law's standard loading limitations. Some of these options may not be realistic following a disaster, so be conscientious but practical.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827

After a disaster, animal producers should assess the effects on their animals and property. View the site and make a written self-estimate of damage. Be sure to take photos. Note the number of animals originally on site, the approximate number and size of dead animals, uninjured animals and their needs, animals that remain unaccounted and the condition of confinement buildings or enclosures. This information will help when talking to agencies and organizations, as well as creating cleanup plans.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827





If a propane tank is found in disaster debris, a gas distribution company may be able to identify the tank and return it to its place of origin. Propane tanks have serial numbers to help identify owners. Unknown propane tanks and cylinders can be associated with methamphetamine drug production and could be dangerous. Do not handle unknown tanks. If a propane tank or above-ground storage tank is believed to be unsafe, call the local emergency management coordinator or the Missouri Department of Natural Resources' Environmental Emergency Response at (573) 634-2436 for assistance.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827

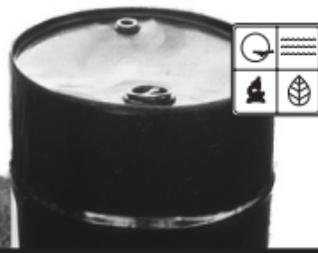
After a disaster, sealed tanks, drums and barrels may be scattered onto neighboring properties. These should only be handled by trained professionals, as they may contain dangerous materials. Call the Missouri Department of Natural Resources' Environmental Emergency Response at (573) 634-2436 or your local fire department for assistance. For more information, visit the department's Web site at www.dnr.mo.gov.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827

After a disaster, business owners may find hazardous chemicals that are damaged or unusable. These chemicals should only be cleaned up by workers trained in the proper procedures. Always work in a well-ventilated area and wear protective garments and emergency breathing apparatus if necessary. Do not combine chemicals. Spills or wastes should be put in containers. Waste chemicals should be separated from other debris. Mark the outside of each container with the name of the product and the potential hazard. Regulated hazardous wastes also should be marked "hazardous waste."



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827

Disasters may leave behind damaged household chemicals. Extreme caution should be used when cleaning up damaged containers and chemicals.

Wear rubber gloves, avoid breathing fumes or dust and only work in a well-ventilated area. Do not combine

products. Household hazardous wastes should be separated from other wastes before disposal. Do not dump chemicals down drains, storm sewers or toilets. Never burn these products. If a collection program is not available, household hazardous waste may be disposed of at a permitted sanitary landfill.



Missouri Department of Natural Resources
www.dnr.mo.gov

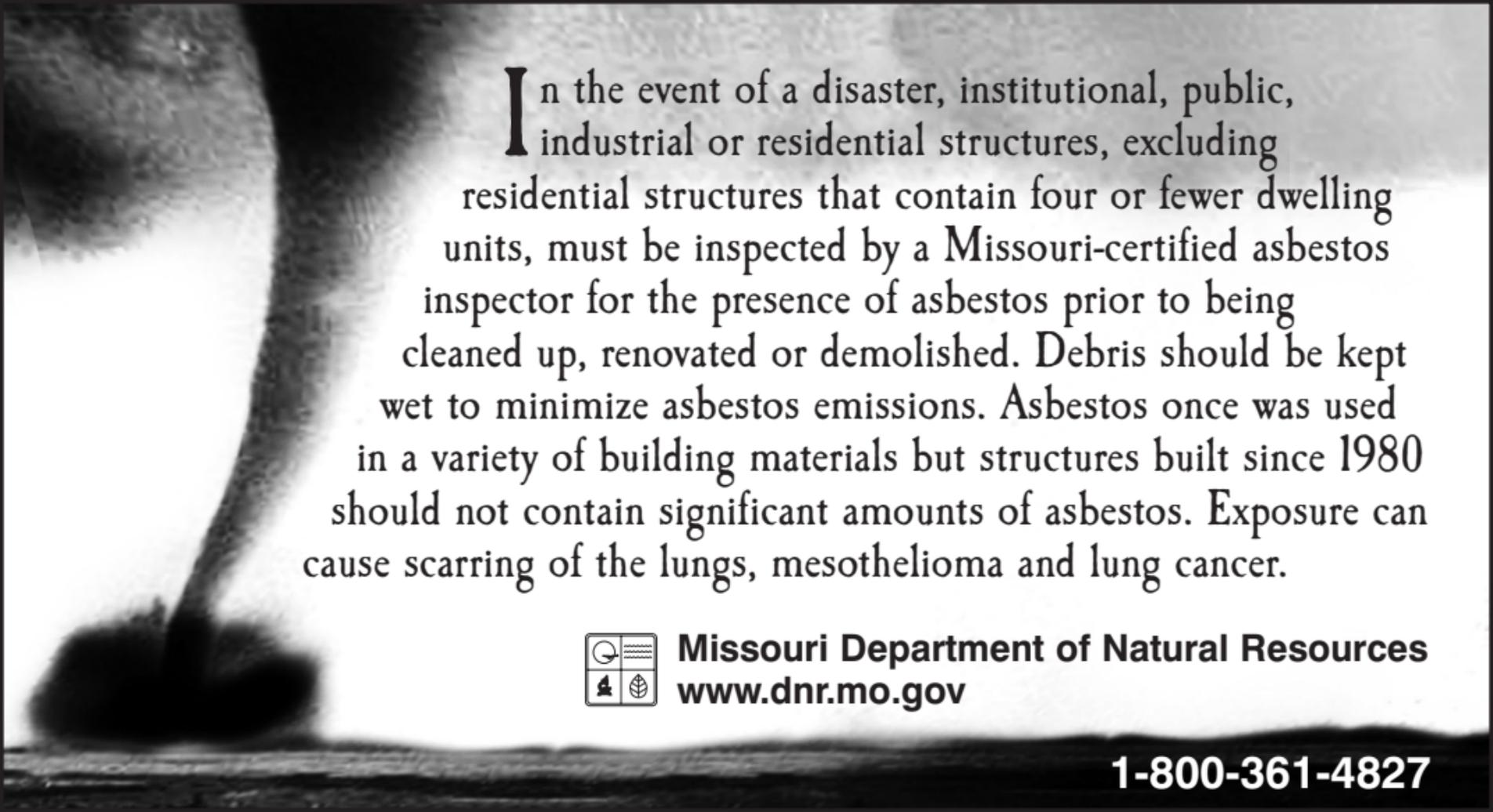
1-800-361-4827

Disaster-damaged residential structures that contain four or fewer dwelling units are not required in Missouri to be inspected for asbestos prior to demolition or cleanup, unless the demolition or cleanup involves multiple buildings under the control of the same owner within close proximity to one another. Though an inspection is not required for residential structures, asbestos-containing materials still may pose a significant health threat. Structures built since 1980 should not contain significant amounts of asbestos. If you suspect debris may contain asbestos, contact a Missouri-certified asbestos inspector. Also, keep materials wet to reduce asbestos emissions.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827



In the event of a disaster, institutional, public, industrial or residential structures, excluding residential structures that contain four or fewer dwelling units, must be inspected by a Missouri-certified asbestos inspector for the presence of asbestos prior to being cleaned up, renovated or demolished. Debris should be kept wet to minimize asbestos emissions. Asbestos once was used in a variety of building materials but structures built since 1980 should not contain significant amounts of asbestos. Exposure can cause scarring of the lungs, mesothelioma and lung cancer.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827

The Department of Natural Resources has created a door hang-tag that may help operators of public water systems communicate with their customers if water systems have been compromised by a disaster. It is available on the department's Web site at www.dnr.mo.gov/env/wpp/boil/boilnotice-example.pdf. Public water system staff or volunteers can use this by making copies and then folding and punching holes where indicated. Rubber bands can then be slipped through the holes so they may be hung on the doorknobs of affected residences.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827



**BOIL ALL
DRINKING
WATER**

Hiervan el agua antes de

Your public water system is under a voluntary water advisory. You may need to take the following precautions:

1. Boil water vigorously for three minutes. Use only boiled water for drinking, brushing teeth, diluting fruit juices and all other food preparation. Use of bottled water may be a more feasible, though relatively expensive, alternative to boiling tap water when under a boil water advisory.
2. Do not use ice from a household automatic ice maker or use any ice made with unboiled water from the public water system. Remake ice cubes with water that has been boiled or buy ice.
3. Disinfect dishes and other food contact surfaces by immersing them for at least one minute in clean water that contains one teaspoon of unscented household bleach per gallon of water.
4. **LET WATER COOL SUFFICIENTLY BEFORE DRINKING.**

Water used for handwashing should be boiled for 3 minutes.

After a natural disaster, appliances rendered unusable should be recycled. Cities and counties should coordinate collection of damaged appliances so refrigerants can be legally recovered from air conditioners, freezers and refrigerators before recycling. Waste materials like brick or block can be used as clean fill. Tires can be separated for recycling or cut into thirds and disposed of in a permitted sanitary landfill. They may not be burned or buried on site.



Missouri Department of Natural Resources
www.dnr.mo.gov

1-800-361-4827



Common effects of a disaster on a historic building usually can be repaired following these steps. Repair rather than replace by retaining original features whenever possible. If replacement is necessary, replace with similar features using items that match the original. If matching replacements is impossible because originals are no longer available or are too expensive, retain the historic character by reproducing the salient visual characteristics of the original. When possible, return to the original by replacing previously missing parts and removing inappropriate modernizations.



Missouri Department of Natural Resources
State Historic Preservation Office

www.dnr.mo.gov
1-800-361-4827