EMERGENCY ACTION PLANS

INTRODUCTION

The purpose of this section is to give guidance for emergency reporting and property conservation procedures as well as to address the various emergencies that may arise at any facility. It is to be used with the other PRC.1.7.0 manual sections.

To help locate the various emergencies that may have to be addressed, Table 1 notes the pages on which the guidance for the various plan elements for each emergency can be found.

TABLE 1
Plans For Emergency Action During Various Emergencies

POSITION

Reporting An Emergency

Every employee within a facility must clearly understand the procedures established within the facility for reporting emergencies. If the reporting of an emergency is delayed, the threat to life, property, the environment and business can be greatly increased.

Historically, one of the major reasons for the severity of fire emergencies has been the delay in reporting of the emergency. To ensure that this does not happen, each facility must develop an emergency reporting procedure that everyone understands.

Emergency plan should include the following:

- Establish an emergency reporting phone number within the facility;
- Post the emergency reporting number throughout the facility and on each phone;
- Ensure that all employees are familiar with the number;
- Ensure that personnel understand who is to alert on-site and off-site emergency response organizations and agencies;
- Ensure that fire notification is transmitted to the appropriate agency:
  - Call the fire emergency number or operate the nearest manual fire alarm station;
  - Follow up any alarm sent from a manual fire alarm station with a telephone call;
  - If a sprinkler system is operating when the emergency is discovered, employees should not assume that the alarm has been transmitted to the fire department;
  - If an automatic fire alarm system is operating when the emergency is discovered, employees should not assume that the alarm has been transmitted to the fire department.
- Provide a means of notification of personnel within the facility for evacuation purposes.

Property Conservation And Salvage

Property conservation is the term applied to procedures taken during or after an incident to stop any further damage to property or to minimize any damage already done to property. Detailed property conservation procedures should be prepared well in advance of any emergency, especially in those cases involving materials highly susceptible to damage or contamination.

Property damage can be caused by the incident or during the mitigation of the incident. Not all damage is immediate. Some damage results from long-term exposure to fire byproducts and extinguishing media. Prompt intervention can reduce this secondary damage.

There is no exact point in time during an emergency when property conservation procedures should begin. Throughout the course of any emergency, the Emergency Coordinator must constantly evaluate the need for property conservation efforts. The characteristics of the incident must be evaluated to determine when property conservation efforts should begin. From a practical standpoint, they should be initiated as soon as conditions permit.

Some concerns with property conservation procedures are:

- Breaches or other unprotected openings in structure caused by the incident;
- Contamination of structures, machinery, stock or other contents caused by:
  - Water,
  - Smoke and heat from a fire, or
  - Corrosives or other hazardous materials that may have been released.
- Damage caused by water contamination can cause:
  - Steel parts and assemblies to rust;
  - Electrical equipment to breakdown;

- Certain materials to mildew.
- Damage caused by heat from a fire can cause:
  - Insulation in wall or roof assemblies to melt, thereby reducing its effectiveness;
  - Insulation on wiring to deteriorate and delicate electronic circuitry to break down.
- Damage caused by smoke contamination can cause:
  - Wide-spread contamination of structures and contents;
  - Corrosion of certain metal components;
  - Staining of surfaces;
  - Contamination of some materials with odors. Certain materials and products, such as food products, are highly susceptible to smoke contamination.

The property conservation plan should include the following:

- Maintain inventories of materials needed to effectively perform property conservation operations.
- Conduct efforts on a priority basis.
- Temporarily cover, seal or repair any breaches or openings in building walls or roofs to minimize secondary damage to contents from the elements.
- Exercise extreme care in the use of any flame- or heat-producing equipment that could result in a fire.
- Minimize the hazards associated with portable or temporary heat and light sources.
- Clean and dry any electrical devices that have been subject to water damage.
  - Rinse with clear water and dry. Low temperature blow-drying may be useful on fixed installations.
  - Portable equipment may be dried in low temperature ovens.
  - Consult the manufacturer's literature or other appropriate references.
- After cleaning and drying, have qualified personnel check the devices to ensure they operate properly. Before electrical equipment is returned to service, have qualified personnel verify the quality of the insulation and the adequacy of the cleaning.
- Remove stored material from the area involved in the incident and check for contamination. In some cases, materials may be salvageable if repackaged.
- Reduce water damage to steel or other ferrous surfaces by cleaning, wiping dry, and covering with a protective coating of oil.
- Inspect equipment for the presence of water, particularly on bearings or in lubricating oil sumps, and for residues on machined or other sensitive surfaces.
- Some materials, such as baled fibers and rolled paper, are particularly water absorbent. If they are wet, take the piles apart promptly, separating wet from dry to reduce absorption of water by dry stock.
- Examine important records, drawings, and tracings and separate the damaged ones from the undamaged. Items only partly damaged should be dried out to prevent further deterioration and facilitate recovery.
- Segregate contaminated materials from noncontaminated materials.
- Decontaminate those materials as needed.
- Clean, dry, or oil damaged stock or machinery.
- Contact a decontamination or restoration company for special needs.
- Contact a salvage company to determine if damaged goods are salvageable.

Fire Protection Equipment Impairments

A fire protection equipment impairment occurs when a facility loses part or all of a fire protection system. When an impairment occurs unexpectedly, it is considered an emergency impairment. This is a major concern and should be treated as an emergency since it increases the seriousness of the threat of fire within the facility. See PRC.1.1.0 for a full discussion of impairment procedures.

The equipment impairment plan should include the following:

- Shut down any hazardous operations in the area affected in an orderly fashion.
- Remove combustibles from the area.
- Eliminate smoking and any hot work in the unprotected area.
- Begin necessary repairs immediately.
- Contact outside contractors as needed.
- Initiate property conservation procedures if needed.
- Notify the appropriate personnel/ agencies of the extent of the impairment:
  - The Shift ERT leader;
  - The Shift Commander of the public fire department;
  - The alarm company which provides surveillance of the facility;
  - The AXA XL Risk Consulting Impairment Hotline +1 800 243 8222, +49-69-66127-8222, or +1 972-383-7161.
- Fill out an AXA XL Risk Consulting RSVP “red” Impairment Tag:
  - Hang the “Shut-Off” portion of the RSVP tag on the impaired equipment.
  - Display the “office reminder” portion of the RSVP tag in the office of the person responsible for supervising the impairment.
- Have responsible individuals make fire patrols of the affected area(s) at least every 30 min.
- Use whatever measures possible to maintain as much of the fire protection in service as possible during the impairment.
- Provide charged handlines and other manual fire suppression within the area affected.
- Have members of the Fire ERT stand by in the area.
- Restore complete protection to the area as soon as possible.
- Work continuously through all shifts, if necessary, until repairs are complete.
- Ensure that contractors follow proper hot work fire precautions and procedures.

Fire Protection Equipment Restoration

Once a fire emergency has been terminated, the restoration of fire protection equipment to its normal operational mode is extremely critical to the well-being of the facility should a fire reignite or a separate fire occur.

The equipment restoration plan should include the following:

- Replace fused or heat-damaged sprinkler heads, and restore the system in those portions of the building where the roof or ceilings are still intact.
- Disconnect portions of the sprinkler systems that are inoperable because of broken piping or building collapse and install caps or plugs at the ends of the serviceable piping. This will allow partial restoration while the remainder of the system is being repaired.
- Devise a temporary means of supplying water to damaged mains or risers feeding sprinkler systems. Such an arrangement may include the connection of hose lines between hydrants and the sprinkler system.
- Make certain that the sprinkler and fire protection water supply control valves are fully open once systems have been restored as completely as possible.

- Refill all fire protection water storage tanks or reservoirs.
- Recharge or replace portable fire extinguishers that have been utilized.
- Restore any special extinguishing systems that have operated.
- Reset protective signaling systems.
- Dry hoselines as required, and return manual fire-fighting equipment to its normal place of storage. Supplies of expended items, such as foam concentrate, should be replenished immediately.
- Make necessary emergency repairs to the heating system. Where necessary, provide safe temporary sources of heat to prevent sprinkler systems and water tanks from freezing.

Water Damage

Water, it's a vital firefighting weapon. It's also a critical domestic and industrial utility. For easy access, every facility has piped water for any one of these uses. However, even though it's an important resource, water that escapes from a piping or proecss system can be very destructive and result in tremendous property damage and costly disruption in operations.

Fortunately, with a little attention, most water damage losses can be prevented. And losses that do occur can be significantly minimized when the right precautions are taken.

The basic measures to prevent these losses are **Design and Engineering, Prevention and Preventative Maintenance,** and **Pre and Post Emergency Planning**.

These loss prevention measures not only apply to water leakage, they can also be applied to many kinds of liquids found at facilities, as well as help to prevent water damage from floods.

Design and Engineering

When designing and building a new facility:

- Do not install domestic water lines above critical services. For example, in a hospital, a water line for an icemaker should not be located on the floor directly above an MRI machine.
- Stock materials, supplies, products on pallets or store on skids.
- Locate important processes or storage above sub-grade areas.
- Design roof drainage to anticipate a 100-year event rainfall intensity for a one hour duration.
- Locate heating system thermostats to effectively monitor or control heat in areas where piping systems are located.
- Look at water leakage detection options. There are several types available.
- Invest in backup generators, fuel gas, and/or boilers to maintain heating systems during utility failures.
- Brace piping systems properly to withstand earthquakes. (Where required)

Prevention and Preventive Maintenance

As part of a facility's regular maintenance procedures, it's important to:

- Establish freeze protection protocols.
- Ensure that windows, doors or skylights are not left open causing temperatures to drop in parts of a heated building.
- Ensure that the heating system is serviced long before cold weather is expected, and that maintenance is ongoing during the cold season.
- Test low temperature alarms regularly.
- Conduct visual inspections of water pipes for signs of leakage, deterioration, and fitting integrity.
- Clear roof drains of debris.

Pre- and Post-Emergency Planning

Mishaps happen. Successfully handling incidents like leaks and flooding require advance preparation and planning, such as:

- Know where the valves are and what they control. The loss associated with leaks can be increased multifold if no one knows how to shut off the water.
- Provide readily accessible diagrams showing what valves control which systems. Clearly label all valves. Valves that are concealed should have their location well-marked.
- Have blanket order contracts for critical suppliers and contractors. This ensures a priority response during times of increased demand and avoids haggling over contract terms and conditions in the middle of an emergency.
- Give second and third shift plant managers predefined spending authority to request emergency contractor services.
- Maintain basic salvage supplies such as plastic sheeting, wet vacuum cleaners and squeegees.

Sprinkler Leakage

Sprinkler leakage is defined as “the sudden and accidental discharge of water from sprinkler systems or from their water supply pipes.” While sprinkler leakage can technically occur within any facility protected by automatic sprinkler protection, the likelihood of this occurring is dependent on the design, installation, maintenance and testing of automatic sprinkler systems and their water supply piping.

The primary concern with sprinkler leakage is the damage done by the water to the structure and equipment. Depending on the size of the leak, water may accumulate very rapidly in what amounts to a localized flash flood.

Leakage from sprinkler heads and the interior piping supplying them can occur where:

- Sprinklers or piping are exposed to mechanical damage such as that caused by lift trucks or other such material handling equipment.
- The ambient temperature exceeds that for which sprinklers are designed.
- Inadequate heat causes water in the sprinkler system to freeze leading to the rupturing of piping, fittings, or sprinklers.
- Defective sprinklers or piping have been installed:
    - To guard against this, all piping and fittings used in sprinkler systems should be listed or approved by a nationally recognized testing agency for use in sprinkler systems.
    - If the proper equipment is utilized, this should be the least likely cause of sprinkler leakage.

Leakage from underground piping can occur where:

- Structures built over piping settle and cause piping to crack or break.
- Piping has not been buried deep enough to prevent freezing.
- Unprotected ferrous piping has been buried in poor soil conditions that lead to corrosion of the pipe.
- Piping has been improperly laid, resulting in abnormal stress when the earth around it settles.
- Piping laid under railroad tracks or roadways may be susceptible to the frequent “live” loads passing over it. This also makes maintenance on mains difficult to perform.

The sprinkler leakage plan should include the following:

For leakage from interior piping or sprinklers:

- Check to make sure there is no fire. If a fire is discovered, initiate appropriate emergency response procedures.
- If no fire is found, promptly stop the flow of water:
  - If a sprinkler is flowing, insert a plug into the sprinkler to minimize damage and reduce the extent of the impairment, or
  - If a plug cannot be used, shut the valve controlling the leaking system.
- Initiate appropriate impairment procedures. If an extended impairment is unavoidable, arrange a temporary water supply to the impaired system either from another sprinkler system or from a fire hydrant to the system's main drain.
- Disconnect power to any electrical equipment that may get wet.
- Begin repairs to the system immediately.
- Initiate property conservation procedures.

For leakage from underground piping:

- Determine the location of the leak by:
  - Looking for water coming out of the ground;
  - Listening for the sound of water flowing.
- Isolate the leak by shutting the appropriate fire protection system control valves:
  - Isolate the smallest portion of the fire protection piping system as possible to minimize the extent of the impairment.
  - Follow the Impairment Handling Procedures.
- If an extended impairment is unavoidable, arrange temporary cross-connections to impaired systems either from other sprinkler systems, fire hydrants or other water source;
- Proceed as promptly as possible with repairs.
  - If needed parts are not available, make temporary repairs.
  - The goal is to restore as much sprinkler protection as quickly as possible.

Fire Response

The fire response plan should include the following:

When a fire occurs:

- Initiate the appropriate incident reporting.
- Evacuate nonessential personnel from the danger area.
  - Identify the emergency area internally using the intercom or some other audible alarm.
  - Alert employees in the danger area to evacuate to their assigned evacuation area.
  - Account for personnel in each evacuation area.
  - Use all available means of fire extinguishment.
- Ensure that all protective equipment is operating properly.
  - Verify that all fire protection systems are in service, fire protection control valves are open, and fire pumps are running.
  - Assign personnel to stand by at each **exterior** fire protection control valve that may require operation during the emergency. They are to operate the valve only on the direct orders from the Incendent Commender.
- Take whatever actions are necessary to minimize the severity of the fire.
  - Assign someone to meet the public fire department or other emergency response agencies at the facility entrance and direct them to the emergency area.

- Ensure that emergency response personnel and vehicles have access to the incident scene.
- Notify insurance conmpany of the incident as soon as possible.
- Handle any impairment to fire protection equipment in accordance with Fire Protection Impairment Procedures.
- Secure the building and establish patrols in the emergency area to be on the alert for possible reignition.
- Expedite property conservation operations in peripheral areas.
- If incendarism or arson is even remotely suspected, immediately secure the fire scene so no evidence is disturbed. Notify the proper authorities. Restore protection promptly, as the arsonist may strike again. Intensify security, especially in such vulnerable sectors as control rooms, computer facilities, and utility distribution areas.
- Ensure that all impaired fire protection equipment is promptly restored to service.
- Provide guard or watch patrols in the affected areas when fire protection equipment cannot be restored.
- Have fire suppression personnel stand by with charged handlines, until the threat of reignition is eliminated.
- Provide security forces if conditions are such that unauthorized entry is possible.
- Initiate property conservation procedures as soon as possible.

On-Site — Haz-Mat Incident

Hazardous materials are any substances that may pose an unreasonable risk to health, safety or the environment. Throughout the past two decades, the world has become increasingly concerned with the accidental releases of materials proven to be detrimental to life and the environment.

The release of a hazardous material during normal facility operations, where the material can be absorbed, neutralized, or otherwise controlled by employees or maintenance personnel, usually does not require an emergency response because there is no potential safety or health hazards, such as fire, explosion, or chemical exposure. However, if a release becomes significantly worse, it may be considered an uncontrolled release and be reclassified as an emergency, requiring assistance from a Haz-Mat Response Team.

The Hazardous Material Response Team is a group organized of employees expected to control actual or potential leaks or spills of hazardous materials. At least some members of this team must be trained to the Haz-Mat Technician level.

On-site Haz-Mat incident plan should include the following:

For personnel discovering a release which requires an emergency response

- Initiate emergency reporting procedures
- Instruct employees to follow safe shut-down procedures in their assigned areas.
- Evacuate personnel in the incident area to a safe location.
- Deny personnel entry to the incident area.
- Assess the presence of hazardous materials from a safe distance, if possible, including:
  - Container type, size and shape;
  - Presence of placards or labels;
  - Any signs of materials release.

For first-responder-operations emergency response personnel

- Establish command of the incident.
- Assess the presence of hazardous materials from a safe distance:

    - Container type, size and shape;
    - Presence of placards or labels;
    - Any signs of materials release.
- Initiate the facility Haz-Mat emergency response plan.
- Initiate defensive procedures to limit damage from the release.
- Eliminate ignition sources located downwind, if the material is a flammable liquid or gas.
- Initiate property conservation procedures if possible.

For Haz-Mat ERT response

- Assume command from incident commander.
- Establish control zones.
- Identify the problem.
- Evaluate the risk presented by the incident.
- Determine actions required to mitigate incident.
- Select the level of personnel protective equipment required.
- Initiate mitigation procedures.
- Initiate decontamination procedures.
- Initiate property conservation procedures.
- Initiate recovery from the incident.

Transportation-Related — Haz-Mat Incident

Incidents involving hazardous materials that are foreign to a facility may occur due to transportation incidents either adjacent to the facility or in some cases on the facility property. This procedure is intended to provide guidance for such emergencies.

In the event of such an incident, identification and recognition of the hazardous materials involved and information with regard to initial actions required to deal with the material(s) is critical. CHEMTREC provides emergency responders with information related to hazardous materials emergencies in transportation.

CHEMTREC operates in two stages:

- Provides immediate advice on the nature of the material and steps to be taken in handling the early stages of a problem;
- Contacts the shipper of the material involved for more detailed information and appropriate follow-up, including on-scene assistance when feasible.

The transportation-related Haz-Mat incident plan should include the following:

For personnel discovering a release requiring an emergency response:

- Initiate facility emergency reporting procedures.
- Initiate community emergency response plan.
- Instruct employees to follow safe shut-down procedures in their assigned areas.
- Evacuate nonessential facility personnel within the area to a safe location;
- Deny personnel entry to the incident area;
- Assess the presence of hazardous materials from a safe distance if possible;
    - Mode of transport;
    - Container type, size and shape;
    - Presence of placards or labels;
    - Any signs of materials release.

For first-responder-operations emergency response personnel:

- Establish command of the incident;
- Assess the presence of hazardous materials from a safe distance.
  - Mode of transport;
  - Container type, size and shape;
  - Presence of placards or labels;
  - Any signs of materials release.
- Initiate the facility Haz-Mat emergency response plan;
- Initiate defensive procedures from within the cold zone to limit damage if possible;
- Eliminate ignition sources located downwind if the material is a flammable liquid or gas.

For Haz-Mat ERT:

- Assist community response;
- If material is foreign to the facility, follow initial guidelines in DOT's North American Emergency Response Guidebook: A Guidebook for First Responders During the Initial Phase of a Hazardous Materials/Dangerous Goods Incident.
- If no public response is available, assume command of the incident;
- Institute procedures to limit damage within facility;
- Contact CHEMTREC (the Chemical Transportation Emergency Center) for assistance at 800-424-9300 (toll free in U.S.), in Washington, DC 483-7616, or 202-483-7616 (call collect). Information needed:
  - Name of product;
  - Nature of problem;
  - Name and number of caller;
  - Location of problem;
  - Shipper or manufacturer;
  - Container type;
  - Rail car or truck number;
  - Carrier name;
  - Consignee;
  - Local conditions.

An emergency action plan form for transportation-related accidents can be found in PRC.1.7.0.1.A.

Floods

Flooding can occur whenever water rises and overflows the land that normally confines it. See PRC.15.4 for a full discussion of floods. Flooding can be:

- Sudden in the form of flash floods which occur because of extraordinarily heavy localized rain;
- Slow developing as rivers and streams swell and spill over their banks;
- Caused by the a failure of a man-made containment such as a dam or a levee;
- Due to storm surges associated with hurricanes and tropical storms.

The potential for flooding to occur at any given facility must be evaluated by using special flood maps. In the United States these are maintained by the Federal Emergency Management Agency (FEMA). These maps indicate flood plains and show the expected susceptibility of specific areas to flooding.

In the United States, the National Weather Service issues advisories in the form of flood watches and flood warnings.

A **flood watch** implies that flood conditions are a real possibility but are not imminent.

A **flood warning** for a river implies that a flood is imminent or in progress upstream and that immediate precautions should be taken in your area.

Some basic concerns are:

- Undermining of foundations;
- Structural damage;
- Water damage to machinery and contents;
- Disruption of utilities;
- Increased potential for fire.

To prepare for flooding, develop a detailed flood checklist. A sample checklist may be found in PRC.1.7.0.1.A.

The flood plan should include the following:

When a Flood Watch has been issued:

- Activate the emergency operations center.
- Maintain communications with local emergency management authorities.
- Monitor the Emergency Broadcast System and weather reports issued by the National Weather Service.
- Determine if the conditions warrant a partial or total facility shutdown.
- Determine the order to shut down processes and secure the facility.
- Ensure that the time allotted to accomplish pre-flood tasks is sufficient to allow them to be completed before flood waters approach.
- Provide alternate power or nonelectric drives for vital equipment so that the electrical distribution system can be shut down before hazardous conditions develop.
- Initiate emergency process shut-down procedures, as necessary.
- Move important machinery, stock and records to higher, safe elevations as determined by past flood history.
- Coat machinery that cannot be moved with oil or grease.
- Drain open tanks of flammable or combustible liquids.
- Fill the fuel tanks of emergency equipment such as back-up generators and diesel-driven fire pumps.
- Check travel brakes on movable cranes and bridges and anchor them in accordance with the manufacturers' instructions.
- Clean yard drains and catch basins.
- Move vital records to a safe location.
- Brace unsupported structural members at construction sites.
- Anchor any yard items that could be moved by flood waters, such as trailers, lumber, or loose yard storage.
- Barricade critical outdoor equipment with sandbags to provide protection against floating debris.
- Ensure that all fire protection equipment is in service.
- Barricade vulnerable building openings with sandbags.
- Shut off all lines carrying flammable or combustible liquids or gases at their sources.
- Properly support any exposed piping.
- Make sure above- and belowground tanks are properly anchored to prevent flotation.

  - Fill empty tanks with product or water.
  - Extend vent lines on active tanks above the anticipated maximum water level.
- Shut down boiler and other fuel fired equipment.
- Maintain emergency supplies of the following in a secure location;
  - Emergency medical equipment;
  - Emergency lighting equipment;
  - Nonperishable food;
  - Bottled drinking water;
  - Emergency communications equipment.
- Assemble emergency supplies at a secure location:
  - Emergency lighting equipment;
  - Lumber and nails;
  - Sand bags;
  - Roofing paper;
  - Portable pumps and hose;
  - Mops and squeegees;
  - Power and hand tools;
  - Shovels and axes;
  - Chain saws;
  - Tarpaulins.
- Shut off electrical power at the main building disconnect when building flooding is imminent.

After Flood Waters Recede:

- Conduct a damage assessment, paying particular attention to undermining or other damage to foundations.
- Initiate property conservation procedures.
- Begin temporary repairs to prevent further damage.
- Repair damaged fire protection equipment immediately.
- Make temporary repairs to any openings caused by debris.
- Exercise care around damaged or submerged power lines. Advise the utility company of necessary repairs;
- Clear drains of any debris.
- Forbid the use of any flame or heat-producing equipment in any area where flammable liquids or gases could be present.
- Inspect and test electrical power systems for ground faults before turning them on.
- Inspect motors, switchgear and cables for damage.
- Clean and dry electric motors, switchgear and cables before allowing them to be energized. Even if electrical equipment has not been immersed, it may have absorbed sufficient moisture to reduce its insulation resistance to a dangerously low level.
- Examine steam and process lines and any refractory-containing equipment for wet insulation. If insulation is contaminated, it may require removal rather than being allowed to dry in place.
- Test sources of boiler and process feed and cooling water, and any materials in underground storage tanks for contamination before use.
- Clean mechanical equipment and open its casings to inspect for any hidden damage.
- Check mechanical equipment shafts for proper alignment.

- Flush mechanical equipment lubricating systems.
- Service and slowly dry boilers before firing them.
- Remove and replace wet insulation or carefully dry it.
- Clean and dry all test equipment, motors, and transformers before energizing them.
- Clean, inspect and test safety, relief and other types of valves before placing systems in service.
- Initiate boiler start-up procedures.
- Clean and purge gas lines.
- Change fuel filters, drip legs and strainers on fuel trains.
- Clean, dry and lubricate burners.
- Flush and preserve machined surfaces and other equipment, until they can be properly serviced.

A sample checklist for floods may be found in PRC.1.7.0.1.A.

Arctic Freeze And Cold Weather

Cold weather and associated winter storms are normal occurrences each year for much of the world. In some areas, cold weather is not usually considered a matter of concern. This lack of concern is becoming less justifiable. AXA AL Risk Consulting loss experience indicates that shifts in the jet stream can cause bitterly cold Arctic air masses to press deeply into the warmer climes, sustaining freezing temperatures for periods of a week or more. At the same time, these unusual Arctic air masses cause temperatures in those areas which are normally cold to drop well below freezing. This phenomenon has been labeled “Arctic freeze.”

An Arctic freeze is an unusual mass of Arctic air which creates a sustained period of subfreezing temperatures. The air mass extends into areas which do not usually have long periods of freezing temperatures. An Arctic freeze is not associated with a winter storm.

Facilities located in all but tropical areas must give careful consideration to precautions against Arctic freeze that must be taken each year before the cold weather season. In addition to routine precautions, these facilities should determine what steps must be taken or what special facilities must be made available if the temperature drops 15°F – 20°F (8°C – 11°C) below what is considered the normal cold temperature and stays there for one or more weeks. See PRC.15.5 and PRC.15.5.1 for a full discussion of freezing hazards.

Freezing weather/Arctic Freeze creates several concerns, which include:

- Freezing of automatic sprinkler protection and fire protection water supplies, leaving the facility without proper protection.
- Freezing of process piping.
- An increase in the likelihood of a fire due to the use of portable heating appliances or over-worked heating systems.
- Possible overload of heating and freeze protection systems.
- Reduced natural gas pressure due to heavy demand or freezing of liquids in lines.
- Freezing of public water lines and sewers.

The most important way to deal with freezing weather/Arctic Freeze emergencies is with detailed planning in advance. A sample checklist for Arctic Freeze may be found in PRC.1.7.0.1.A.

The arctic freeze plan should include the following:

For general freezing weather/arctic freeze preparedness

- Ensure that all doors, windows, skylights, ventilators, and other openings are weather-tight.
- Heat areas subject to freezing, if cold conditions could cause damage.

  - Maintain at least 40°F (4°C) in areas protected by wet-pipe sprinkler systems.
  - Maintain at least 40°F (4°C) in fire pump houses, and all dry pipe, deluge and pre-action valve closets.
  - Check boiler rooms, areas housing water-cooled engines, and compressor stations for proper heat.
- Check the entire heating system(s) and correct any problems.
  - Clean burners, boilers, and flues.
  - Remove any obstructions from pipes, radiators, and unit heaters.
  - Ensure that all heating equipment controls are operating properly by testing them and repairing as needed.
- Ensure that fuel supplies for heating systems are adequate.
- Make sure heating systems operate properly.
- Maintain safe clearances between heating system components and combustible floors, walls, partitions, platforms, and contents.
- Drain air conditioning systems as needed.
- Install heat tracing tape on piping that is expected to freeze.

For fire protection equipment — freezing weather/arctic freeze preparedness:

- Check outside control valves to ensure they turn freely and do not leak.
- Check tank heating systems, thermometers and temperature controls for proper operation.
- Check fire pump room/house heating systems for proper operation.
- Check concealed spaces and other voids that contain piping for heat sufficient to prevent freezing.
- Convert wet-pipe sprinkler systems in areas that are inadequately heated to dry-pipe or pre-action systems. See PRC.12.1.1.4.
- Drain low points and auxiliary drains of dry pipe sprinkler systems. Drain excess priming water from dry pipe valves.
- Test solutions in anti-freeze systems and add anti-freeze if needed.
- Drain wet standpipe systems in unheated areas.
- Ensure that connections to water motor gongs and fire department connections are drained.
- Check all fire protection water storage tanks for leakage.
- Ensure that all fire protection water storage tanks are properly heated.
- Ensure that all fire hydrants and pump test headers are drained.
- Check all fire protection control valves for leaks.
- Ensure that all valve and meter pits are dry and frostproof.
- Ensure that portable fire extinguishers located in cold areas are suitable for such locations or are in heated cabinets.
- Ensure that motorized fire apparatus has been prepared for winter operations.

For fire protection equipment when freezing weather is predicted:

- Restore heat where it has been reduced or eliminated. Provide additional heat for normally cold areas.
- Expedite any needed repairs to the heating system.
- Forgo any scheduled heating system or boiler inspections until the danger of the severe cold has passed.
- Add heat-trace tape to protective system and process piping that might freeze.

- Check insulation on piping and structures to be certain it will protect them against the extreme cold temperatures.
- Where processes are shut down, drain piping and tanks to prevent freezing.
- Establish tours of the facility to check.
  - Outside air dampers and other possible sources of outside air leakage that could result in freezing.
  - Steam tracing and electric heating systems for outside vessels and piping.
  - Heating systems in remote areas.
- Arrange for a reliable source of portable heaters, heating blankets or other auxiliary or emergency anti-freezing devices.
- Arrange for emergency generators and other equipment as may be needed to assure continued functioning of heating systems, realizing that electric utility lines are frequent casualties of winter storms.
- Anticipate utility outages.
- Ensure that energy conservation measures do not increase the likelihood of storm or freeze-related damage.
- Ensure that circulating hot water in boilers is not allowed to cool excessively because it can cause cracking or other damage to the boilers when they are started.
- Drain tanks and lines to prevent freezing where processes are shut down.

For fire protection equipment during the freezing weather or arctic freeze:

- Check all areas of the facility to be certain that sufficient heat is being maintained to prevent freezing of sprinkler systems, process equipment and piping and utility systems. Pay particular attention to:
  - Concealed spaces above suspended ceilings;
  - Sprinkler-protected entry ways and remote stair towers;
  - Cooling jackets on engines and compressors in remote locations;
  - Check less obvious sources of freeze damage such as water in air system drains and gas drip legs.
- Eliminate any unusual drafts created by winter storm winds.
- Ensure that heat to vital areas is not compromised.

For fire protection equipment after the freezing weather or arctic freeze:

- Once the temperatures begin to rise, inspect areas within the facility that were most likely to have suffered freeze damage.
- Look for any cracks or leaks in piping to prevent major damage when liquids are released from thawed and damaged pipes.

Winter Storm Or Blizzard

Cold weather associated with freezing weather can be further complicated by the presence of the snow and ice that comes with winter storms.

Winter storms are strong low pressure weather disturbances which occur during late fall, winter or early spring and have strong (gale force) winds. In coastal areas, storm surges may cause coastal flooding and the low temperatures bring the additional perils of freezing and snow.

A **blizzard** is a very severe winter storm that brings heavy snow, high winds, and low temperatures. Outside activity during a blizzard may be very dangerous.

A **winter storm warning** implies that strong winds, heavy snow and/or icing is imminent.

Basic Concerns. Winter storms create many concerns, which include:

- Freezing of automatic sprinkler protection and fire protection water supplies, leaving the facility without proper protection;
- Freezing of process piping;
- Hazardous road conditions, which hamper emergency response and evacuations;
- Decreased accessibility to fire protection valves, hydrants, hose houses and fire pumps;
- Increased likelihood of a fire;
- Increased roof loading due to snow and ice build-up that may lead to structural collapse; (see PRC.2.0.3 for a discussion of snow loading);
- Possible overload of heating and freeze protection systems;
- Power failure due to ice build-up on power lines;
- Reduced natural gas pressure due to heavy demand or freezing of liquids in lines.

The winter storm plan should include the following:

For winter storm preparedness:

- Initiate freezing weather/arctic freeze preparedness procedures;
- Plan for snow removal services.

When a winter storm warning is issued:

- Arrange for constant surveillance in the facility to monitor all areas of the facility for signs of impending trouble.
- Provide personnel with an up-to-date list of emergency numbers to call in the event of trouble.
- Activate the emergency operations center.
- Monitor storm advisories issued by the Emergency Broadcast System. Assign snow plowing and shoveling personnel.
- Install snow fences and marker poles at fire hydrants and fire protection control valves.
- Establish tours of the facility to check for dangerous snow accumulations.
- Call in outside plowing contractors and other assistance as needed.
- Arrange for emergency generators and other equipment as may be needed to assure continued functioning of heating systems, realizing that electric utility lines are frequent casualties of winter storms.
- Anticipate utility outages.

During the storm:

- Assess the need for early closing or delayed opening of the facility.
- Request outside plowing assistance as needed.
- Establish communication with employees on the premises, snow plow operators and emergency crews.
- Continue to monitor weather advisories.
- Clear snow from exits, fire protection equipment, and utilities.
- Remove snow from roofs in areas subject to drifting, especially at the junctions of buildings with different roof heights.
- Inspect roof drains and roof-mounted cooling equipment to be sure there is no ice buildup.

After the storm:

- Assess the damage;
- Initiate property conservation procedures;
- Make temporary repairs;

- Remove remaining snow, with priority given to fire protection valves, hydrants, fire pump houses, and emergency response access routes.

Hurricanes, Cyclones and Typhoons

The terms hurricane, cyclone and typhoon are used in certain parts of the world to refer to weather systems that involve cyclonic circulation over tropical waters. See PRC.15.1.1. These weather systems are known as:

- **Hurricanes** when they occur in the Atlantic Ocean and eastern Pacific Ocean.
- **Cyclones** when they occur in the Indian Ocean.
- **Typhoons** when they occur in the Western Pacific Ocean.

For the purpose of this section the term hurricane will be used.

The primary threats these weather systems represent are:

- Winds in excess of 74 mph (119 km/h) or 64 knots;
- Coastal flooding due to the storm surge;
- Inland flooding resulting from heavy rains that are usually part of the weather system;
- Weather conditions that can lead to tornadoes.

TABLE 2
Hurricane Categories

Category	Sustained Winds	Storm Surge	Damage
1	74-95 mph	4-5 ft above normal	Minor
2	96-110 mph	6-8 ft above normal	Moderate
3	111-130 mph	9-12 ft above normal	Major
4	131-155 mph	13-18 ft above normal	Severe
5	above 155 mph	>18 ft above normal	Catastrophic

SI Units: 1 ft = 0.305 m; 1 mph = 0.45 m/s

Weather systems of this type usually occur during the warmest months of the year, and are expected from June to November in the northern hemisphere and from December to April in the southern hemisphere. In the United States, hurricane advisories in the form of hurricane watches and hurricane warnings are issued by the National Weather Service's National Hurricane Center in Miami, Florida. In other countries, weather services issue advisories for their respective territories.

A hurricane **watch** is an advisory that hurricane conditions pose a possible threat to a specified area within 36 h.

A hurricane **warning** is a an advisory that sustained winds of 74 mph (119 km/h) or 64 knots or higher are expected in a specified area within 24 h. See Table 2 for hurricane categories and their effects.

The basic concerns related to weather systems of this type are:

- Winds in excess of 74 mph (119 km/h) or 64 knots;
- Heavy rain;
- Flash flooding of inland facilities;
- Tidal surge along coastal areas;
- These storms may spawn tornadoes;
- Once the "eye" of the storm passes, winds will rise rapidly from the opposite direction.

Preparedness. While these types of weather systems can cause great damage, they can be predicted and monitored usually hours and possibly days in advance. Use a detailed checklist to plan for these weather systems. A sample Hurricane checklist and Tracking Chart may be found in PRC.1.7.0.1.A.

The hurricane plan should include the following:

Hurricane preparation once a hurricane watch has been issued:

- Activate the emergency operations center;
- Determine whether a complete or partial shutdown of the facility is required;
- Determine the order in which processes are to be shut down and the facility secured;
- Initiate process emergency shut down procedures;
- Inspect roofs:
  - flashings
  - coverings
  - drains
  - gutters
  - edge strips
- Clear debris and unrestrained materials from roofs;
- Inspect and repair sign and stack supports, guy wires and anchors;
- Inspect and repair weak door or window latches or hardware and insecure wall panel fastenings;
- Protect windows from flying debris;
- Brace unsupported structural members at construction sites;
- Move important records to locations protected from wind, debris, and rain;
- Fill all aboveground tanks to capacity with product or water;
- Anchor structures, such as cranes, that may move in high winds;
- Fill the fuel tanks of emergency equipment such as back-up generators and diesel-driven fire pumps;
- Ensure that all fire protection equipment is in service;
- Anchor structures in the yard that can be moved by high winds, such as trailers, cranes, lumber, or any loose yard storage;
- Take extraordinary measures to secure outdoor traveling cranes and bridges in accordance with manufacturers' instructions. In addition to setting rail clamps, secure with wedges and cable anchors. Clean yard drains and catch basins.
- Assemble emergency supplies at a secure location:
  - Emergency lighting equipment
  - Lumber and nails
  - Sand bags
  - Roofing paper
  - Tape for windows
  - Caulking compound
  - Power and hand tools
  - Shovels and axes
  - Chain saws
  - Tarpaulins
- Maintain emergency supplies of the following in a secure location:
  - Emergency medical equipment
  - Emergency lighting equipment
  - Nonperishable food

- Bottled drinking water
- Emergency communications equipment

After the hurricane:

- Initiate search and rescue procedures.
- Assess the damage from fire, flooding, and impairments to fire protection equipment immediately.
- Initiate property conservation procedures.
  - Protect building contents from rain damage.
  - Temporarily repair openings in roofs and walls.
  - Cover building contents with tarpaulins to minimize rain damage.
- Be alert for downed or damaged power lines. Notify the electric utility company of needed repairs.
- If roofs are safe to stand on, clear debris from roof drains to prevent ponding of water.
- Prohibit the use of any flame or heat-producing equipment in any area where the presence of any flammable liquids or gases is suspected.

A checklist and tracking information for hurricanes can be found in PRC.1.7.0.1.A.

Tornado

A tornado is defined as a wind spout spawned by severe thunderstorms or hurricanes. Winds within the spout may approach 300 mph (483 km/h). In the United States, tornadoes usually travel from the southwest to the northeast at an average ground speed of 35 mph (56 km/h), although speeds as high as 70 mph (113 km/h) have been recorded. In the spring when strong cold fronts collide with humid warm fronts conditions are favorable for severe thunder storms and tornadoes. Preparation for a tornado must be done far in advance since there is usually little time to prepare for an approaching tornado.

A **tornado watch** implies that conditions are favorable for tornadoes to develop.

A **tornado warning** means that tornadoes have been sighted in the area.

The tornado plan should include the following:

When a tornado watch has been issued:

- Alert all employees that a tornado watch has been issued.
- Activate the emergency operations center.
- Assign personnel equipped with two-way radios to watch for funnel cloud formation, to alert the emergency operations center of its characteristics and travel.

When a tornado warning has been issued, or a funnel-cloud sighted, alert all employees to immediately move to designated tornado shelters.

Once the tornado has passed:

- Begin primary search and rescue operations immediately.
- Conduct a damage assessment.
- Begin temporary repairs to prevent further damage.
- Pay special attention to possible fire, flooding, or impairment of fire protection equipment.
- Temporarily cover openings in the building or cover the contents of the building with tarpaulins to minimize rain damage.
- Initiate property conservation procedures.
- Exercise care around damaged power lines. Advise the utility company of necessary repairs.

- Clear roof drains of debris to prevent water from ponding on the roofs, which could lead to roof collapse.
- Forbid the use of any flame- or heat-producing equipment in any area where the presence of any flammable liquids or gases is suspected.

Earthquakes

History has proven time and time again that earthquakes can be the one of the most disastrous emergencies that can occur in certain geographic parts of the world. Coupled with their consequences is their unpredictability. Unlike hurricanes and other natural events which can be predicted hours or days before they occur, earthquakes occur without warning. The key to surviving an earthquake is anticipation and preparedness.

Most damaging earthquakes are caused by the movement of the earth's crust as the rock structures adjust to tectonic forces. Many parts of the world are susceptible to earthquakes. The earthquake potential of any area is evaluated on the basis of its proximity to known earthquake activity. Earthquakes that occur on the ocean floor may result in tidal waves called "tsunami." Additional discussion of earthquakes can be found in PRC.15.2.

Because earthquakes provide little or no warning prior to their occurrence, the key to surviving them lies in a facility's preparedness efforts. An earthquake checklist may be found in PRC.1.7.0.1.A.

Unlike some natural events, earthquakes occur with virtually no warning. The basic concerns are:

- General panic and confusion;
- Structural damage or collapse;
- Entrapment of people;
- Disruption of utilities;
- Loss of public fire protection water supplies;
- Reduction or total loss of outside emergency response services;
- A high likelihood of fire caused by the quaking;
- A high likelihood that the facility will have to survive on its own emergency resources for what may be an extended period of time;
- A likelihood that an earthquake will result in extensive property damage, physical destruction, disruptions of utilities, entrapment of personnel, and potential mass casualties.

The earthquake plan should include the following:

Structural considerations:

- Conduct a seismic hazard appraisal of all buildings and structures within the facility. If any question arises as to the seismic health of the facility, have a structural engineer conduct an appraisal.
- Inspect signs, tanks, stacks and chimneys for proper support.
- Upgrade structural strengthening where necessary.
- Identify or design safe employee shelter and assembly areas. Designate both primary and secondary shelter and assembly areas as well as "duck," "cover," and "hold" locations along evacuation routes.
- Designate at least two safe evacuation routes from each area of the facility to shelters and assembly areas.

Nonstructural considerations:

- Conduct an earthquake hazard/safety appraisal of buildings and operations.
- Brace tall cabinets, shelves, tall machinery and equipment or other top-heavy objects which could topple.

- Brace and adequately support overhead fixtures, drop ceilings, piping, heaters or other overhead devices.
- Protect fuel-fired appliances from rupturing fuel lines.
  - Bolt down and restrain appliances.
  - Provide flexible connections to fuel supplies.
- Ensure that isolation valving for piping systems is easily accessible under emergency conditions.
- Ensure the reliability of vital equipment and services, such as communications and lighting.
  - Provide safe, independent, alternate energy sources.
  - Provide auxiliary and backup equipment.
- Restrain and adequately support mainframe computers.
- Safeguard records vital to restoring business operations to normal.
- Provide earthquake survival training to all employees.
- Ensure that one person in each department on each shift is trained and capable of taking charge of their work groups immediately when an earthquake occurs.
- Ensure that all plant personnel are involved in all facets of earthquake response and are drilled in properly reacting when an event occurs.
- Ensure the continuation of plant security.
- Maintain emergency supplies of the following in a secure location:
  - Emergency medical equipment;
  - Emergency lighting equipment;
  - Nonperishable food;
  - Bottled drinking water;
  - Emergency communications equipment.
- Assemble emergency supplies at a secure location:
  - Emergency lighting equipment;
  - Lumber and nails;
  - Sand bags;
  - Roofing paper;
  - Portable pumps and hose;
  - Mops and squeegees;
  - Power and hand tools;
  - Shovels and axes;
  - Chain saws;
  - Tarpaulins.
- Plan for customer/client/supplier awareness and develop contingency plans for continued business operations. Include plans for:
  - Alternate office facilities;
  - Financial procedures;
  - Data processing;
  - Communications;
  - Transportation.
- Establish an earthquake preparedness program as a section of the pre-emergency plan. Base this program on the premise that an earthquake will eventually occur without warning.

- Assign specific duties and responsibilities for:
  - Accounting for personnel;
  - Checking for injuries;
  - Building damage assessment;
  - Checking for fire and fire hazards;
  - Checking for leaking gas or flammable/hazardous materials;
  - Safe equipment shutdown;
  - Shutting off fuel lines;
  - Disconnecting power;
  - Dealing with hazardous materials;
  - Evacuating the premises.
- Provide an emergency communications system of portable two-way radios for use in communicating with the emergency operations center following an earthquake.

When an earthquake occurs:

- Have employees evacuate the facility, shutting down hazardous operations as they evacuate.
- Have employees report to their pre-assigned areas to ensure all personnel are accounted for.

After the earthquake:

- Establish control of the situation and demonstrate authority and organization;
- Anticipate aftershocks - they are frequently as dangerous as the initial earthquake;
- Assign a reconnaissance team(s) to conduct a primary search of the facility;
- Shut off all power and isolate hazardous liquids and gases;
- Attempt to control or extinguish any fires;
- Establish a communications link with local emergency management authorities;
  - Advise them of conditions at the facility.
  - Alert them to the need for emergency assistance.
- Establish communications with neighboring businesses.
- Determine the extent and severity of the damage. Be especially alert for the potential for fire.
- Assess the damage sustained to utilities in order to formulate and initiate a recovery plan.
- Initiate property conservation procedures.
- Keep nonemergency personnel out of structures until the extent of the damage has been thoroughly assessed.
- Secure the property from looting and vandalism. Get outside assistance as needed.
- Establish an emergency transportation pool. Do not attempt transportation beyond the local premises until accessibility is known.

Forms for earthquake preparedness and an earthquake inventory can be found in PRC.1.7.0.1.A.

Utility Outages

Planned or emergency interruption of utilities can create emergency conditions at facilities. Of primary concerns are:

- Public Water Supplies
  - Impairment or loss of fire protection water;
  - Partial or complete curtailment of operations due to loss of service water.
- Electric Power
  - Exposure to the dangers of a crash shutdown;

- Loss of control power to processes that can result in dangerous conditions;
- Impairment or loss of fire protection equipment;
- Partial or complete curtailment of operations;
- Brownout causing reduced power consumption.

- Fuel Supply
  - Loss of fuel to processes that can result in freezing of molten processes, such as chemical solutions, metals, glass and ceramics;
  - Partial or complete curtailment of operations;
  - Potential freezing of fire protection equipment;
  - Impairment or loss of fire protection equipment.

The utility outage plan should include the following:

Public water supply outage:

- Contact officials of the water authority to determine:
  - The estimated extent and duration of the outage;
  - What is being done and what the facility can do to expedite repairs.
- Notify the facility's emergency response team(s) and the Shift Commander of the public fire department so they can alter their pre-fire plans accordingly.
- Increase guard patrols to provide additional fire protection surveillance.
- Ensure the safe shutdown, provide a backup, or closely monitor the operation of equipment that uses the public water supply for primary or emergency cooling.
- Verify sufficient boiler feedwater or arrange boiler load reduction or shutdown. If there is danger of freezing, promptly obtain another source of properly treated water.
- Develop a priority list for water usage should conservation of available supplies become necessary.
- Reserve all private fire protection water supplies for fire use only.
- Defer normal sprinkler and fire protection system testing and maintenance until the water supply is restored.
- Initiate Fire Protection Impairment Procedures if a fire protection impairment results.

Electric Power Outage

Widespread Outage

- Determine the magnitude of the outage and its estimated duration.
- Monitor the operation of fire pumps or emergency generators.
- Secure and patrol all potential points of entry.
- See that increased guard patrols are provided for security and fire protection surveillance.
- Have as many circuits as possible disconnected so that the system will not overload when power is restored.

Local Outage

- Determine the magnitude of the outage and its estimated duration.
- Make sure that affected circuits are properly isolated and that repairs are underway.
- Determine that all "critical" equipment and systems (see PRC.1.13.0), protective signaling systems, fire pumps, and key process equipment receive priority treatment when planning restoration.
- Make sure that the operation of diesel-engine driven fire pumps is monitored if they are arranged to start when the power fails. Emergency generators also should be monitored.

- Insure smooth transfer to back-up (turbine or engine) equipment where provided.
- Verify that process valves and controllers that will fail on loss of power have done so in the safe position.
- Close doors and otherwise reduce load on refrigeration systems.
- If possible, isolate boilers to minimize cooling and therefore minimize both the time to return the boiler to service and the likelihood of damaging it by overheating in the process.
- Check to be sure that all circuits are properly repaired, including a test for correct phase relationship, before they are restored to service.
- Have the power load reduced to a minimum before power is restored. Also be certain that large motors are isolated to prevent damage due to possible under-voltage starting.

Brownout

- Determine the magnitude of the brownout and its estimated duration.
- Reduce electrical consumption as much as possible.
- Identify equipment which may be sensitive to low voltage, and take positive steps to prevent its damage.
- Be alert to the possibility of a “single-phase condition.” If this condition exists, shut down all three-phase electrical equipment until a balanced supply can be restored.

Fuel Supply Outage

- Establish the minimum quantities of the various fuels required for maintaining proper fire protection.
  - Maintain at least the minimum quantities of fuels in reserve;
  - The reserve should contain sufficient fuel to prevent freezing of water systems.
- Thoroughly evaluate any proposed arrangements for using alternate fuels to ensure that the storage, transfer, and actual use conform to applicable codes and standards.
- Thoroughly evaluate any proposal for increasing the quantity of fuels stored on site to ensure that the storage facilities conform to applicable codes and standards.
- Reduce building temperatures as needed, taking precautions to:
  - Establish controls to prohibit the use of unauthorized portable heating appliances on the premises;
  - Make sure that there is sufficient heat to prevent sprinkler systems from freezing. Areas such as attics, concealed spaces, or those near frequently opened outside doors should be closely monitored during cold weather. (See PRC.15.5.1.)
- Operate production equipment intermittently rather than continuously.
  - Evaluate equipment start-up and shut-down procedures to be sure they are safe.
  - Ensure that the allowable number of start/stop cycles is not exceeded for large motors.
  - Consider changes in the amount of heat generated by operation of such equipment when evaluating the amount of heat required to maintain safe building temperatures.
- Reduce operating hours in selected areas.
- Extend the guard or protective signaling service to ensure proper surveillance is maintained in these areas during the idle periods.

Terrorism/Bomb Threats

Although history shows that most bomb threats turn out to be hoaxes, all bomb threats must be taken seriously.

The bomb threat plan should include the following:

Dealing with a bomb threat:

- Ensure telephone operators understand how to properly handle bomb threats and to:
  - Obtain as much information as possible from the caller.
  - Complete a Bomb Threat Checklist. See PRC.1.7.0.1.A.
  - Attempt to find out how many devices are involved and when they are due to detonate.
  - Immediately notify the appropriate personnel within the facility.
- Activate the emergency operations center.
- Instruct employees to report any suspicious package, action, or condition that would lead them to suspect a bomb's presence.
- Evacuate personnel from the affected area.
- Alert the appropriate law enforcement agencies. If no agencies are available, alert the appropriate Bomb Squad.
- Determine who will look for the bomb. Many public fire departments feel that their responsibility is to stand by should their services be needed and do not join the search;
- Identify likely places in which to hide a bomb. Bombs may be placed in areas where they will cause the most disruption, such as boiler rooms, electrical substations, control rooms, and computer rooms.
- Alert local fire and emergency medical response agencies.

If a suspected bomb is discovered:

- Activate the Emergency Operations Center;
- Evacuate personnel;
- Alert the appropriate law enforcement agencies. If no law enforcement agencies are available, alert the appropriate Bomb Squad;
- Alert local fire and emergency medical response agencies;
- Have facility emergency response team(s) stand by in a safe location and prepare for emergency duties.

Emergency action plan forms for a bomb threat check list and list of military ordnance disposal centers can be found in PRC.1.7.0.1.A.

Civil Disturbances

Civil disturbances in the community where a facility is located can result in emergency conditions at the facility. They may include looting, rock throwing, localized vandalism, acts of pranksters, and actual acts of aggression.

The civil disturbances plan should include the following:

Minor disturbances:

- Alert facility security personnel.
- Alert the local law enforcement personnel.
- Request special exterior patrols from local law enforcement officials.
- Encourage employees and neighbors to alert security personnel promptly of any suspicious persons in the area.
- If any building damage is done:
  - Repair any building damage promptly, since unrepaired damage could invite further vandalism;
  - Initiate property conservation procedures.

Major disturbances:

- Activate the Emergency Operations Center.

- Alert local law enforcement agencies.
- Shut down the facility if required. Be certain employees:
  - Lock up vital information;
  - Secure their work areas as they would for an extended holiday;
  - Draw curtains on windows;
  - Lock their desks and doors.
- Escort employees to their cars as necessary.
  - Vehicles should be kept within the facility gates, if possible.
  - Maintain accessibility for emergency vehicle response.
- Summon necessary security personnel from off site, if necessary, to maintain facility security.
- Secure utilities and fire protection equipment.
- Request special exterior patrols from local law enforcement officials.
- Secure and patrol all potential points of entry.
- Increase guard patrols to provide for security and fire protection surveillance.
- Inspect all fire protection valves and equipment to ensure they have not been sabotaged or intentionally impaired.
- Institute daily inspections of utility and fire protection equipment to reduce the possibility of sabotage.

Labor Unrest

A strike or other job action brought about because of labor unrest can present unique challenges to a facility and its ability to deal with emergencies. Not only may those involved in the labor unrest not be available to respond to or deal with emergencies, but they may also take actions that increase the likelihood of an emergency at the facility. An incident of this type can leave a facility critically short of staff and totally unable to deal with any emergency.

The labor unrest plan should include the following:

Labor dispute is expected/occurs:

- Activate the Emergency Operations Center;
- Assess the need to stabilize or shut down the facility. The safest course of action may be to shut down the facility as soon as this can be accomplished safely.
- Alert local law enforcement agencies.
- Request special exterior patrols from local law enforcement officials.
- Summon necessary security personnel from off site, if necessary, to maintain facility security.
- Secure and patrol all potential points of entry.
- Tour the facility to look for any evidence of sabotage that may have been created by employees.
- Inspect all fire protection valves and equipment to ensure they have not been sabotaged or intentionally impaired.
- Secure utilities and fire protection equipment as much as possible.
- Increase guard patrols to provide for security and fire protection surveillance.

Institute daily inspections of utility and fire protection equipment to reduce the possibility of sabotage.