

Earthquake protection, preparation, response and recovery

Contrary to public perception, earthquake preparedness is not just an issue in California. All Pacific coast states; the inland western states; the New Madrid region along the Mississippi and Ohio valleys; the Charleston, South Carolina area; the New England region; Alaska; Hawaii and many others have exposure to earthquake damage. California has a greater frequency and severity, but California companies are generally better prepared. Is your facility prepared?

Protection and preparation

- Avoid fault zones and unstable soils when choosing building sites or locations.
- Ensure that the building(s) meet or exceed current building code requirements for seismic resistance. Have a professional engineer with seismic-structural expertise evaluate the buildings, equipment and storage systems. Act on the recommendations.
- Check for existing wall, beam and foundation cracks, and slumping, heaving or other building faults that will cause quick failure in an earthquake. Note that these may be signs of past quake damage.
- Check the suitability of the vertical support and sway bracing of all tall and roof-mounted equipment. Anchor and brace floor-mounted equipment to prevent sliding. Make similar checks of rack and shelf storage systems' bracing and anchors.
- Provide barriers on shelves to prevent stock slippage. Keep heavy materials on lower shelves.
- Ensure all sprinkler piping meets the seismic requirements of NFPA 13, Standard for Installation of Automatic Sprinkler Systems. Locate sprinkler control valves outside. Use diesel drivers for fire pumps; place the fire pump in a separate seismic-resistant pump house. For additional information, refer to the Travelers Risk Control document Earthquake Protection for Sprinkler Systems.
- Install flexible connections and seismic shut-off valves on all chemical, flammable liquid, and gas lines. Provide diking around flammable liquid tanks. Ensure all liquid petroleum gas tanks are strapped to their saddles.
- Use flexible couplings and braces for pipe protrusions through walls and floors.
- Train and drill employees on earthquake survival techniques, such as where to stay, where not to go, and "duck, cover and hold."

Response

- Earthquakes do not typically give any warning. If you are inside, you should stay there. It is best to take cover under a sturdy object and hold on. If you are outside, drop to the ground and stay clear of buildings, trees and power lines.
- Wait until the shaking stops, then evacuate.
- If you are inside a vehicle, pull over and stop. Do not stop on or under any bridge or overpass. Also keep away from trees, street lights, power lines and traffic signals.

Recovery

Account for all employees; comply with evacuation orders.

- Survey the site for any damage. If structural damage has occurred, bring in a structural engineer to evaluate before entering the building.
- Attend to hazardous material spills and other leaks and report to the appropriate agencies as required.
- Check for downed power lines.
- Shut down any leaking sprinkler systems; post a fire watch.
- Activate business continuity plan.
- Be prepared for aftershocks.
- Restore fire protection systems.
- Start salvage operations.
- Cover and secure openings in roofs and walls.
- Use hot work permit system for repairs involving cutting and welding.

Additional resources

- USGS – Earthquake Preparedness
- Ready.gov - America's Preparathon
- Red Cross – Earthquake Safety Checklist
- Centers for Disease Control and Prevention

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