Preparing for Extreme Cold Weather Conditions

Public Water System (PWS)

When preparing for severe winter weather, use these tips to minimize your system's exposure to freezing conditions. Instituting the following precautions before, during, and after a severe winter weather event can help mitigate the severity as well as enhance the overall safety of the facility. Keep in mind that this is not an exhaustive list, and your water system may have to perform additional measures to prepare for severe winter weather.

Actions Prior to Freezing Temperatures
General Precautions
Keep track of your local and national weather. Stay weather aware.
Consider expanding personnel coverage for treatment plant and facilities.
Locate your emergency response plan (with emergency contacts and numbers) and be ready to implement.
Contact your electrical provider and confirm that you are designated as "critical infrastructure" and you understand where your system is prioritized for restoration of power if power is lost.
Contact mutual aid and emergency response partners to ensure appropriate communication is established ahead of winter weather event.
Identify and verify communication pathways used to share important information to health-care related customers (e.g., hospitals, nursing homes, etc.).
Establish methods of communication (reverse 911, email, website, social media) to share important information to your customers about protecting plumbing, conserving water, and status of water system/supply.
If a boil water notice has to be issued during the event, establish a method of communication to keep customers informed about the status of the boil water notice.
Treatment and Booster Plants
Insulate and protect exposed pipes with heat tape and insulation.
Insulate and protect critical treatment plant control/monitoring valves and equipment. Be sure to insulate specialized water lines used for valve control.
Lubricate and grease all critical components according to manufacturer's specifications. Cold weather increases viscosity and can restrict lubrication flow to bearings.
Ensure that buildings are insulated, windows are closed, and weather stripping is installed to prevent drafts from entering the buildings.
Make sure that electric heaters and thermostats are properly functioning in the plant, pumping facilities, and chemical feeding buildings.
Where possible, provide alternative heating sources (e.g., catalytic or propane heaters) for critical infrastructure (e.g., chemical feed rooms, pump rooms, etc.) in case of a loss of power being careful to avoid creating a hazard.
Insulate and protect exposed backflow prevention devices (e.g., RPBAs, double check valves, etc.) ensuring not to inhibit functionality.
Install temporary wind blocks or housing for equipment exposed to north winds.

Actions Prior to Freezing Temperatures
Identify measures necessary for manually controlling the plant in case of a loss of power.
For treatment plants that do not operate continuously and where demand will allow it, consider lowering flow rates so that the plant can run for longer cycles to help to prevent standing water from freezing.
Fuel
Top off generators and fuel storage.
Top off extra fuel cans.
Add fuel additives where appropriate to prevent fuel gelling and contamination.
Generators
Check fluid levels (e.g., oil, coolant, etc.).
Check antifreeze strength.
Check batteries to make sure that they are charged.
If your generator is equipped with a heating block, check to make sure that it's properly installed and functional.
Test your generator prior to the storm to ensure that it's functional. Make sure to operate it under a load.
Ensure that automatic switchover equipment is functional.
Check pigtail connections for portable generators.
Check tires on trailer-mounted portable generators. Make sure that wheel bearings are greased.
Provide multiple length extension cords and surge protectors for hooking equipment up to generators.
If you have a contract with a company or water system to provide a portable generator, reach out to them to see if it's available and whether they can deliver it to your location in the event of a power outage. When power outages are expected, consider if it is necessary or practicable to have it delivered ahead of the storm.
Chemical Supplies
Top off chemicals.
Locate and prepare spare parts (e.g., solenoid valves, feeder lines, fittings, and valves) and pumps.
Provide temporary housing for feeding pumps that are exposed to weather.
Insulate or house chemicals feeders and storage that are susceptible to freezing (e.g., caustic).
Ensure that heaters in the chemical feed rooms are working properly.
Heat tape and insulate chemical feed lines, solenoid valves, and motive water lines (for feeding gas chemicals) to prevent freezing.
Wrap transfer lines from bulk to day storage tanks.
Storage Tanks

Actions Prior to Freezing Temperatures
Top off storage facilities.
Insulate and protect exposed piping, valves, and online monitoring equipment (e.g., inlet/outlet piping, overflows, pressure transducers/gauges, altimeter gauges, etc.).
Make sure that pressure relief valves and vents are protected from freezing in the closed position. Hydropneumatic tanks are very dangerous when unable to release built-up pressure.
Vehicles/Heavy Equipment
Top off vehicles with fuel.
Check fluid levels and strength.
Ensure all necessary water sampling equipment and reagents are available.
Locate weather preparedness and response tools including:
Fire Extinguisher
Ice scraper
First aid kit
Flashlights and batteries
Chainsaws and axes
Blankets
Snow chains
Snow shovels
Snacks and bottled water
Tools, spare parts, and pipe for making repairs.
Electronics
Protect SCADA controls and electronics with surge protection.
Ensure that critical communications equipment is protected by uninterrupted power supplies.
Miscellaneous
Locate weather radios.
Locate and prepare cots and/or inflatable mattresses for plant personnel staffing the plant on long shifts.
Gather meals ready to eat (MRE) and other non-perishable items.
Ensure staff have the appropriate cold weather clothes and boots.