

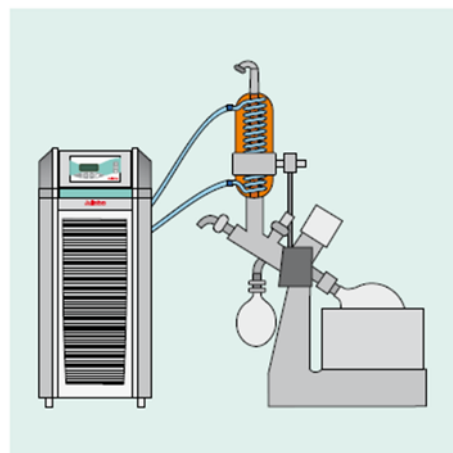
Flood Prevention in the Laboratory

Mindfulness Minute: Incorporate safety into your workflow by considering the flood risks associated with your water-cooled equipment.

Tap water is often used as a coolant for condensers and other lab equipment, but this practice should be discouraged for unattended or overnight experiments. In addition to water conservation concerns, the potential for floods is greatly increased.

Single-pass cooling is inefficient and can lead to significant water and sewer costs for the university. **Recirculating Chillers** can be expensive but are preferred for cooling laboratory equipment to conserve water and to minimize the impact of floods. To prevent freezing at the refrigeration coils, using a mixture of water and ethylene glycol as the coolant is prudent. *Note: Spills of this mixture are very slippery and must be cleaned thoroughly to prevent slips and falls.*

Most flooding occurs when the tubing supplying the water to the lab equipment disconnects. Hoses can pop off when building water pressure fluctuates, and hoses can break when the hose material has deteriorated from long-term or improper use. Floods can also result when drain hoses jump out of the sink from a strong flow pulse or sink drains are blocked by an accumulation of extraneous material. Inconsistent cooling, especially in the summer months, could lead to problems impacting research consistency.



Proper use of **hose clamps** and maintenance of the entire cooling system or alternative use of a portable cooling bath with suction feed can resolve such problems.

Plastic locking disconnects can make it easy to unfasten water lines without having to unclamp and reclamp secured lines. To reduce the possibility of overpressurization of fittings or glassware, consider installing a vented pressure relief device on the water supply.



Interlocks and water leak detection systems are also available that shut off electrical power in the event of loss of coolant flow and are recommended for unattended operations.

Reference:

National Research Council (US) Committee on Prudent Practices in the Laboratory. *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards: Updated Version*. Washington (DC): National Academies Press (US); 2011. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK55878/> doi: 10.17226/12654