Title: After Hours Water Leak from Laser Chiller

Summary:
Using an unlimited water source for unattended after-hours operations, even when hoses are clamped, could cause unsafe conditions and result in major damage to equipment and infrastructure. In addition to regular inspection of the functionality of your equipment, utilizing monitoring devices, and/or equipment to limit the amount of water for laboratory applications is critical in reducing the severity of a potential flood.

Discussion:

During the night of October 21, 2020, a Tigon® hose connected to the building's low conductivity water (LCW) system became dislodged from an unattended EK- SPLA laser chiller unit in building 66-427 at Lawrence Berkeley National Laboratory (LBNL). The water flowed for several hours, releasing approximately 1,000 gallons and flooding labs and offices throughout the west side of the building. The flood resulted in approximately $500K to $1M in water damage and clean-up costs as well as research and operational impact. In addition, there were limited operations for Molecular Biophysics and Integrated Bioimaging (MBIB) Division and Materials Sciences Division (MSD) researchers from October 22, 2020 to December 2, 2020. Researchers were either displaced, reassigned to alternate locations or could not perform work during the shutdown period.

Lessons Learned:

- Identify and replace (where feasible) continuous flow water sources with a fixed volume loop water system.
- Where feasible, plumb overflow drains to countertop sinks, floor sinks, or floor drains.
- Develop a regular inspection program to identify worn parts in need of repair or replacement.
- Develop a preventive maintenance program based on the manufacturer's recommendations.
- Employ water sensors (in building systems as well as in labs) with remote monitoring capabilities and leak warnings capable of 24/7 notifications. Water sensors can trigger a faster response and thus minimize water damage.
- For more information, or to request assistance for equipment inspections, improvements, or upgrades, please visit this page: https://engineering.lbl.gov/water-leak-prevention-infrastructure-equipment/