

CLOSE ENCOUNTERS OF THE LAB KIND

THE SANTAYANA REPORT

George Santayana was a Spanish-American philosopher, essayist, poet, and novelist. In 1905, he penned the famous aphorism “those who cannot remember the past are condemned to repeat it.” More than a century later, the saying reverberates with professionals the world over. The following is a summary of a recent incident at Columbia University. The information presented is intended to provide awareness and help readers plan against the occurrence of a similar situation in their laboratory or work area.

Avoiding Meltdown

Freezers are one of the most common pieces of equipment found in laboratories and are, on the whole, so well designed and engineered that we might take their performance for granted. This, of course, is where the danger lies. A failure of such equipment for any amount of time could result in loss of critical research materials, or the inadvertent release of a hazardous material.

We were reminded of this when a researcher retrieving a sample from an ultra-low temperature (-80°C) freezer discovered the freezer filled with mold. With no alarm, no warning signs, and no notification of malfunction, the freezer had experienced a meltdown. The meltdown is believed to have occurred more than a week prior to being discovered. The entire contents of the freezer which housed over a decade’s worth of research materials were lost.

Losses like this can result in research interruption, lead to significant financial expense, and compromise many years’ worth of valuable data needed for publications or future research grants. Additionally, a freezer meltdown may result in the inadvertent release of hazardous chemicals, radioactive materials, or viable microorganisms that may have previously been bound in frost. Simple actions can be taken to mitigate the risk of freezer losses including: increased use of alarms and back-up freezers, maintenance of sample inventories, and proper freezer storage and maintenance. It is important to remember that even the best systems can fail so regular freezer inspections are crucial.

Lessons Learned

- Check freezers regularly, never rely solely on alarms. A zombie freezer may still run and appear “normal” like a living freezer.
- Consider investing in monitoring and alarm systems. Several companies offer 24 hour monitoring services with text, email, or phone call alerts.
- Keep emergency contact information posted and updated on all freezers, cold rooms, etc.
- Maintain sample inventories. Keeping detailed inventories of freezer contents and exact locations is valuable in the event of a failure.
- Maintain proper spacing. Manufacturers recommend keeping at least 8” of clear space on the top, and at a minimum of 5” of clear space in the rear and on both sides to allow heat to dissipate and maintain “proper” ventilation. Additionally, boxes and material stored on top of freezers may choke off rising heat and force it back into aisles and freezer intakes.
- Consider backup freezers, which can be run at lower temperatures when not in use.

For further information on this or any other safety related matter, please contact the [EH&S office](#).