NIH GREEN ZONE NEWSLETTER
The Newsletter of the NIH Environmental Management System

JUNE 2021

NIEHS Ultra-Low Temperature Freezer Replacement and Direct Donation Initiatives

An FY2020 initiative from NIEHS to replace old and inefficient ultra-low temperature (ULT) freezers has provided outstanding and encouraging results. This initiative, called the NIEHS Ultra-Low Temperature Freezer Replacement Project, replaced 35 existing ULT freezers on the NIEHS campus in Research Triangle Park, North Carolina with new Energy Star certified ULT freezers. The RTP campus houses over 400 cold storage units to fulfill the research needs of NIEHS. The Freezer Replacement Project scoured the freezer inventory to select candidates for replacement that were old and inefficient with higher maintenance and operating costs. Each of the replaced freezers was between 12 and 24 years old. Upgrading these freezers presented an opportunity to better protect scientific samples, while also saving money and energy.

The 35 new ULT freezers are estimated to significantly reduce electricity use, operating costs and greenhouse gas emissions. An estimated total of over 200,000 kWh of electricity will be saved annually, which corresponds to the annual electricity use of 20 U.S. households. Operating costs are estimated to be lower by nearly $13,000 annually. Greenhouse gas emissions will be reduced by 64% annually, compared to their old counterparts. This is an annual reduction of 150 metric tons of carbon dioxide, which is equal to the emissions from driving a passenger car around the world 15 times. The anticipated savings from this set of upgrades helped lead the way for a second round of upgrades the following fiscal year, replacing 10 more ULT freezers and 13 more lab grade freezers.

The Freezer Replacement Project is the beginning of a proactive freezer lifecycle management program at NIEHS that aims to provide a modern, reliable, and energy efficient fleet of freezers. In addition to replacing older freezers with Energy Star certified units, NIEHS is developing a standardized label to help improve freezer management, emergency response, and sustainable freezer operation. Label prototypes are being developed in collaboration with lab staff and include the year the freezer was purchased, the freezer location, shelf contents, owner(s), emergency contacts, steps to take for a freezer failure, and sustainability tips. Sustainability tips include choosing the correct size and number of freezers based on need, sharing freezer space, labeling and maintaining a searchable sample inventory, discarding unneeded samples, routine defrosting, storing samples at appropriate temperatures, and increasing the ULT set point from -80°C to -70°C.

The upgrades resulted in surplus freezers, with some of these units still operational or readily repairable. NIEHS worked with the NC Federal Surplus Property program to provide a direct donation of 11 surplus ULT freezers to the North Carolina Department of Health and Human Services (NC DHHS) to support their COVID-19 vaccination efforts. The donation will lessen their reliance on storing COVID-19 vaccines in shipping containers and dry ice for county public health agencies that do not have ultracold storage capability. As a result, more communities in the state are equipped to receive and store doses of the Moderna and Pfizer COVID-19 vaccines.

The freezer replacement and subsequent donation initiatives were a collaborative effort across multiple divisions and branches of NIEHS. The main contributors to these initiatives were Andrea Davis, Rachel Faison, Brian Harris, Kerri Hartung, Paul Johnson, Kim Jones, Chris Long, Steve Novak, Michael Spencer, Rachel Scroggins, Tom Sliwa, Steven Smith, John Sours, and Rick Weaver. The NIEHS ULT Freezer Replacement Project was recognized with an FY2020 HHS Green Champion Award for Sustainable Acquisitions. You can read about all of the NIH recipients of FY2020 HHS Green Champion Awards in the “Staff Spotlight” article of this issue. You can also learn more about the surplus freezer donation in the NIH Record. Please join us in congratulating these staff on their achievements!

STAFF SPOTLIGHT

NIH Recipients of an FY2020 HHS Green Champion Award

The FY2020 HHS Green Champion Awards featured many strong efforts from NIH staff. Please take a moment to read about the phenomenal work from throughout the NIH and to recognize the contributors!

LEARN MORE

TAKE ACTION

NIEHS Green Researcher Program

NIEHS has developed a program for their IC to recognize the green efforts of individual researchers. If you work in NIEHS, read more to learn how you can join this program and have your work rewarded!

LEARN MORE

NEMS TRAINING

Did you know? Increasing the temperature of your ULT freezer from -80 °C to -70 °C decreases energy consumption by 15-30%.[1] At this increased temperature, the time to respond to a freezer failure or a power outage is reduced by only 2 hours.[1] To learn more about energy consumption at the NIH, please visit the NEMS Training webpage to view a short (20 minute) NIH environmental awareness training video.