

# Sustainable Acquisition Success Story

## Process Spotlight on Savannah River Site & Y-12 National Security Complex

### DOE Sites Collaborate to Reuse R-123

In December 2021, the Energy Savings Performance Contract project at Y-12 National Security



Complex (Y-12) in Oak Ridge, Tennessee, replaced 11 outdated chillers containing R-123 refrigerant, with energy efficient models. The conversion to newer more efficient models resulted in a surplus of 16,794 pounds of the refrigerant. Regulation requires excess refrigerants from a Federal project to be offered to other Federal sites before it can be sold or recycled to the commercial market.

Therefore, Y-12 queried other DOE sites to see if any had use for the surplus R-123 refrigerant.

R-123 is a hydrochlorofluorocarbon (HCFC) that was introduced to the market in the early 1990s. It was seen as an ideal alternative to R-11 in centrifugal chillers. R-123 was appealing due to its higher efficiency, but after large scale adoption across the U.S., studies showed that long term inhalation led to an increase in health concerns. Many facilities still use equipment that requires R-123 to operate despite the phase-down of R-123 and other HCFCs. Until that equipment is ready for replacement, like the 11 chillers at Y-12, sites with equipment using R-123 will still need the refrigerant.



New Trane Chiller not needing R-123  
Image Credit: Y-12

Y-12 contacted the Office of Environment, Health, Safety and Security's Office of Sustainable Environmental Stewardship (EHSS-21) to assist with finding a new home for the surplus R-123. EHSS-21 chairs the DOE Clean Air and Fugitive Emissions Work Group, where cross-sharing of information and best practices among DOE sites is common. EHSS-21 reached out to the

Working Group members to find interested recipients for Y-12's surplus of R-123. Two DOE sites expressed interest and of the two, Savannah River Site (SRS) was chosen due to its closer proximity to Y-12.

EHSS-21 facilitated the transfer of the refrigerant to SRS through a national reclamation company. The reclaimed R-123 was delivered in two batches over the course of two years and the total charge to SRS was \$167,772, at \$9.99 per pound, to safely transport, reclaim, and



R-123 Cylinder  
Image Credit: Y-12

package 16,794 pounds of R-123. After the first of the two shipments, in early 2024, SRS reported that the cost savings so far were \$131,537.

- How to find a reuse for 16,794 pounds of unneeded R-123
- How to safely and effectively transfer that quantity of R-123
- How to acquire R-123 for older equipment

#### **Solutions**

- Coordinate transfer of R-123 to site still in need of the refrigerant

#### **Results/Benefits**

- Safe removal of unneeded R-123
- Supply of reclaimed R-123 for existing equipment
- Cost savings of \$131,537 seen from the first of two shipments

#### **Key Stakeholders**

- DOE Office of Sustainable Environmental Stewardship
- Savannah River Site
- Y-12 National Security Complex

#### **Points of Contact:**

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