

# A Nuclear Services and Waste Management Company

Retrieval and Treatment of Problematic MLLW Streams

Renee Echols  
Senior Vice President



# Locations



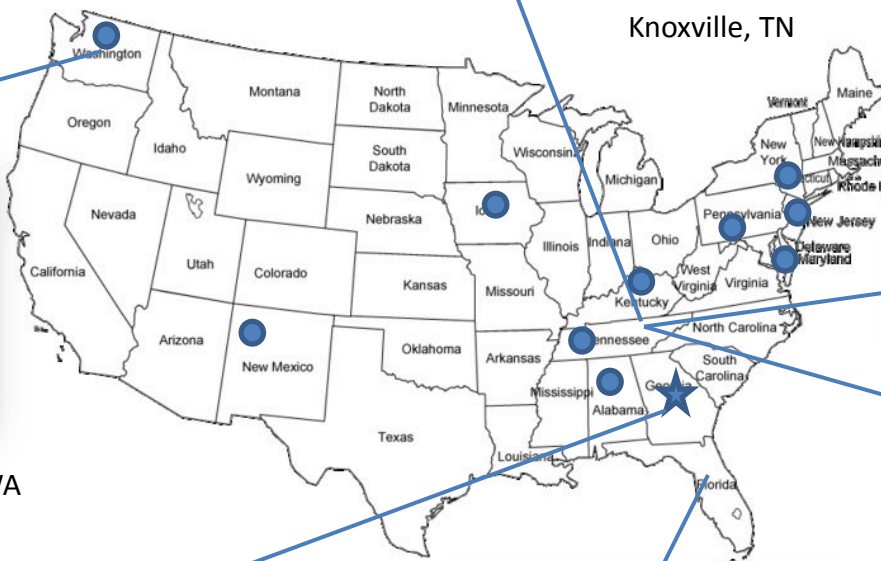
Perma-Fix North West - Richland, WA



Perma-Fix Business Center  
 Knoxville, TN



DSSI - Kingston, TN



**Perma-Fix Headquarters**  
 Atlanta, Georgia



M&EC - Oak Ridge, TN



Perma-Fix Florida - Gainesville, FL



Perma-Fix United Kingdom



Perma-Fix Canada



Nuclear



Waste



Technical

# Perma-Fix Environmental Services



Perma-Fix Environmental Services, Inc., an international nuclear services company and leading provider of nuclear waste management services, provides an integrated, nationwide, network of treatment, storage and disposal facilities, transportation services, site remediation teams, government service centers and unique mixed waste management services. The company's focus is on providing nuclear waste management services to hospitals, research labs and institutions, federal agencies (including the Department of Energy and the Department of Defense), and nuclear utilities.



Nuclear



Waste



Technical

# Problematic Mixed Low-Level Waste

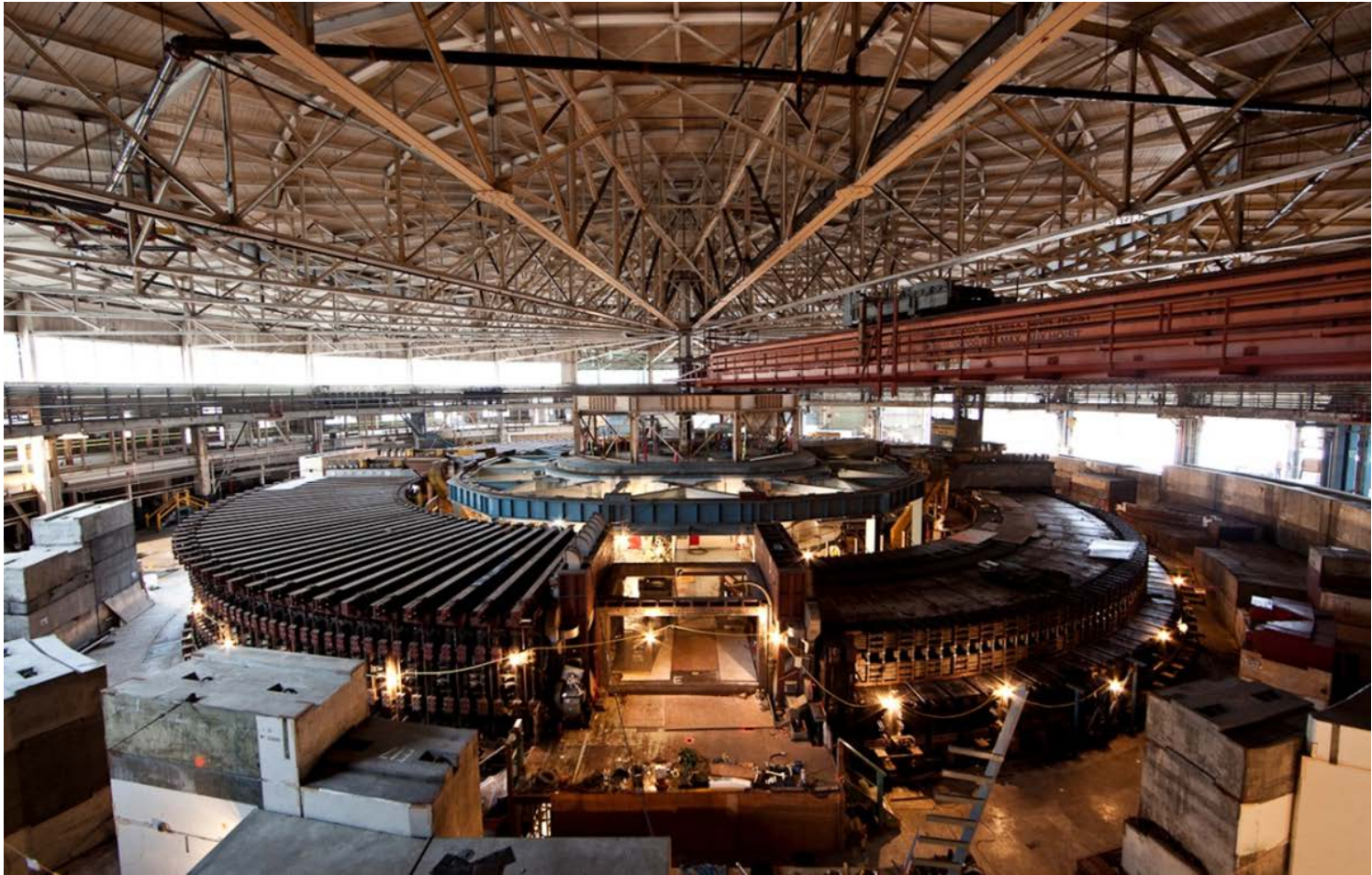
Problematic waste streams exist at government and commercial sites around the world that pose challenges due to:

- Problems for treatment
  - Safety issues at treatment facility
  - Characterization information lacking
  - Multiple treatment steps/systems needed to meet LDR/disposal WAC
- Problems for access
  - Tanks – difficult to retrieve (hardened material, confined space)
  - Vessels/cylinders (pressurized)
  - Gloveboxes (high activity, layered shielding)
- Problems for transportation
  - Dose rate limitations, road closures
  - No available DOT/DOE approved packaging
  - International regulations





# Characterization Challenges – LBNL Bevatron



Nuclear



Waste



Technical



# Multiple Treatment Steps



Nuclear



Waste



Technical

# TRU Glovebox from Hanford



Nuclear



Waste



Technical



# TRU Glovebox from Hanford



Nuclear



Waste



Technical



# TRU Component Foamed for Shipping



Nuclear



Waste



Technical

# Air Stripper from CNF Oak Ridge



Nuclear



Waste



Technical



# Pressure Vessels - CNF Oak Ridge



Nuclear



Waste



Technical

# Troxide Tank at Paducah



Nuclear



Waste



Technical



# High Activity Waste from LANL



Nuclear



Waste



Technical

# TRU boxes from Hanford



Nuclear



Waste



Technical



# Conclusion

Perma-Fix has developed characterization methods, treatment technologies/protocols, retrieval approaches, transportation approaches, etc. to support treatment of some of the most difficult waste streams that generators face. It is what we do and excel at and we look forward to future innovations that may be needed to deal with WIPP's return to operation, Hanford Low Activity tank waste, and the legacy of wastes that prevent clean-up or closure of nuclear facilities around the world.



Nuclear



Waste



Technical