

## A New Service for Decommissioning Legacy Gloveboxes

A key task in legacy waste cleanup is the decommissioning of laboratory gloveboxes, many of which contain transuranic (TRU) wastes or Intermediate Level Waste (ILW) with Plutonium Contaminated Materials (PCM). The cost of TRU or ILW (PCM) disposal is substantial and requires that gloveboxes be dismantled, placed in 55-gallon (200 litre) drums, and in the US, characterized as TRU and shipped to the Waste Isolation Pilot Plant (WIPP). In the UK, the waste must also be placed in 200 litre drums and be characterized as ILW (PCM) and subsequently placed in interim storage.

Recently, a pilot decommissioning project at the Argonne National Laboratory (ANL) in the US employed significantly improved decontamination technology with comprehensive radio-assay and, as a result, two TRU gloveboxes were decommissioned and re-assessed as low-level waste (LLW). For alpha contaminated waste in the United States (US), the TRU – LLW threshold is 100 nCi/g (3,700 Bq/g) and in the United Kingdom (UK) the ILW (PCM) - LLW threshold is 4,000 Bq/g (108 nCi/g) so that the sentencing levels are very similar in the two countries.

Three leading expert technology companies in the field of decommissioning have created a partnership that has taken Glovebox decommissioning to the next level. ANTECH Corporation and its parent company in the UK, (ANTECH), Environmental Alternatives, Inc. (EAI) and InstaCote, Inc. have formed a team focused on Glovebox Deinventory, Deactivation, Decontamination, Assay and Disposition. The improved approach incorporates ANTECH's Best-in-Class Radiation Measurement Technology, EAI's highly effective chemical decontamination process, and InstaCote's structural foam and industrial coating expertise to provide a Turn Key solution for highly alpha contaminated Glovebox Deactivation.

This partnership successfully decommissioned two Gloveboxes with very high levels of Alpha activity that had been in use for nearly 35 years, and used for multiple separate research activities.

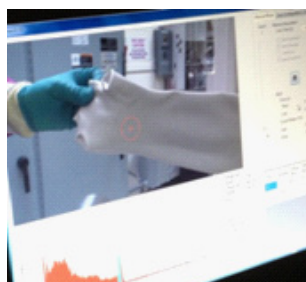
The project team managed the deinventory, characterization of the contents and the Glovebox structure, the decontamination of all interior surfaces, the disposition of Contact Handled (CH) and Remote Handled (RH) Transuranic (TRU) wastes, the disposition of LLW and MLLW, the stabilization of the boxes with structural foam, and all final shipment preparations.

The successful outcomes of this project include:



- Two large TRU Gloveboxes were deinventoried and decontaminated (to SCO-1 for the lowest)
- Both boxes were characterized with TRU activity less than 100 nCi/g, (3,700 Bq/g) and shipped to NNSS as LLW
- The boxes were managed largely intact during the entire Project
- Overall potential risks were greatly reduced by avoiding cutting contaminated boxes
- Overall cost and schedule requirements were significantly reduced
- Volume of TRU Waste reduced to lowest possible level
- Work Performed with Zero recordable injuries and Zero Contamination events

ANTECH, EAI, and InstaCote are now able to offer the same turnkey solution to both Government and Commercial industry that have a need for safer, more efficient, cost effective, compliant, and comprehensively managed Glovebox Decommissioning and Disposition process.



ANTECH is a provider of high quality radiation measurement equipment, technical support and measurement services for the nuclear industry worldwide. For over 21 years, ANTECH has been providing measurement services at DOE sites and has years of experience of both LLW and TRU waste assay including measurements for complex decommissioning and deactivation projects. With the combination of high purity Germanium (HPGe) assay instruments and the new RadSearch LaBr3 based Gamma Camera, ANTECH has unique measurement capabilities for both Remote and Contact Handled TRU (RH and CH TRU) waste and ILW with PCM. Using these tools, ANTECH has developed efficient procedures for both survey and assay measurements of Gloveboxes combined with effective data analysis processes to satisfy regulatory and compliance requirements.

In addition to measurement technology, ANTECH can provide Program Management and Technical Direction for all decommissioning project work. ANTECH employees have direct & relevant experience in a range of waste management activities, having executed very similar scopes of work on time, and under budget, at other DOE National Laboratory Facilities. Several key approvals for decommissioning work were negotiated by ANTECH Staff, and stand as unique capabilities in the DOE Complex.

EAI has unparalleled experience addressing some of the most challenging nuclear decontamination projects in the U.S., for both nuclear power utilities and for government agencies. Their vast experience in this critical area translates into reliable, effective solutions for even the toughest decontamination challenges, together with a thorough knowledge of compliance and health and safety issues. EAI is known for pioneering innovative, new technologies and tools for safer, more effective, and more efficient decontamination and surface & component cleaning. EAI is dedicated to continually explore and develop new technologies and techniques to meet the needs of their clients. This commitment to solutions-focused innovation has led to a number of industry firsts for EAI, including winning an R&D 100 Award in 2011 in the US.



InstaCote is a leading provider of chemical barrier systems, structural foams and application systems, and has had many years of successful project work supporting the DOE with contamination control products and radioactive waste shipment solutions. InstaCote is consistently improving and expanding its products to meet the critical needs of its customers, and has been a pioneer in the application of custom chemistry supporting unique Deactivation projects.



Strategic planning, regulatory compliance, radiation measurement quality, field effectiveness, radiation & industrial safety performance are the major components of this turn-key solution.

Our team of competent, dedicated professionals is prepared to take on any Glove Box Deactivation Project regardless of size or scope, and will provide the leadership, technical expertise, & personnel to support successful project outcome.

Please contact the ANTECH Program Team who will be pleased to provide additional information and answer any questions.

**United States: Dan Pancake**  
 ANTECH Corporation  
 9050 Marshall Court  
 Westminster, Colorado, 80031  
 Tel: (937) 618-2020  
[pancake.dan@antechcorp.com](mailto:pancake.dan@antechcorp.com)

**United Kingdom: John Mason**  
 A. N. Technology  
 Unit 5/6 Thames Park  
 Lester Way, Wallingford, Oxfordshire, OX10 9TA  
 Tel: (01491) 824444  
[mason.john@antech-inc.com](mailto:mason.john@antech-inc.com)

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