



World Class. Face to Face.

**2011 USTUR Scientific Advisory
Committee Meeting
July 19 – 20th, On-line Meeting**

FY11:Radiochemistry Status Report

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***“Learning from Plutonium and Uranium
Workers”***

Outline

- **Laboratory Operations**
- **New Equipment**
- **Tissue Preparation**
- **Wound Counting – Case 0706**
- **New Procedures**
- **Plan for FY 2012**



Laboratory Operations

- **Ventilation Systems Repair and Retrofit**
 - Odor problem noted during ashing
 - Investigation and problem resolution
- **Dust Contamination**
 - Heavy dust deposits in autopsy and radiochemistry lab
- **Radiochemistry Laboratory Setup and equipment repair**



New Equipment

- **Phoenix Scientific Model EP-12 Electroplater**
- **Anton Paar Multiwave 3000 Microwave Digester**
 - **8XSF100 Eight Position Rotor**
 - **1DRY Rotor**
 - **Vapor Cleaning Device**
 - **NIST Standard Bone Ash Digestion**
- **Demonstrations**
 - **Phoenix Microwave Ashing System (CEM Corp)**
 - **Fibrous ceramic crucibles**



Tissue Preparation

- **Ashing and Digestion**
 - **Case 846**
 - 24 Samples – 23 bone, 1 liver
 - 8 bone samples microwave ashed
 - 9 bone samples and liver microwave digested
 - Bone marrow separation and preparation from three samples
 - **Case 1060**
 - 4 bone samples microwave ashed and digested



^{241}Am External Counting

- **Case 0706**
 - **Gamma counting of undissected finger June 2009 at PNNL's In Vivo Radiobioassay and Research Facility (IVRRF)**
- **Dissected samples wound site skin, muscle, and distal phalange counted April 2011 at IVRRF**
- **Findings (activity)**
Muscle 80.6% - Skin 16.4% - Phalange 3%

Procedures

- **New Procedure – Microwave Digestion**
 - **NIST Standard Bone Ash trial**
 - **Ash preparation – reagent selection**
 - **Aqua Regia v. Nitric Acid**
- **Radioactive materials use authorization**
 - **USTUR Procedure 810 – Lab Surveys**
 - **USTUR Procedure 1000 – Waste Management**
 - **USTUR Procedure 1050 – Radioactive Waste**



Plans for 2012

- **High temperature ashing**
 - **Crucible trial**
 - **Fiber Crucibles**
 - **In-house production of solid crucibles**
- **Bone component separation trial**
 - **Surrogate trials**
 - **Analysis of Case 846 marrow samples**
- **Reagent quality upgrade**
 - **Semiconductor grade and ultrapure acids**
- **Walk-in freezer**
- **Complete procedure updates**

