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APPLICATION OF MICROWAVE-ASSISTED TECHNIQUES FOR HUMAN TISSUE SAMPLES PREPARATION FOR ACTINIDE ANALYSIS



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and Uranium Workers”*

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Sample Processing Workflow



Drying



Ashing



Sample Processing Workflow

Digestion



Dissolution



Extraction
Chromatography



Preservation



Electrodeposition



Equipment

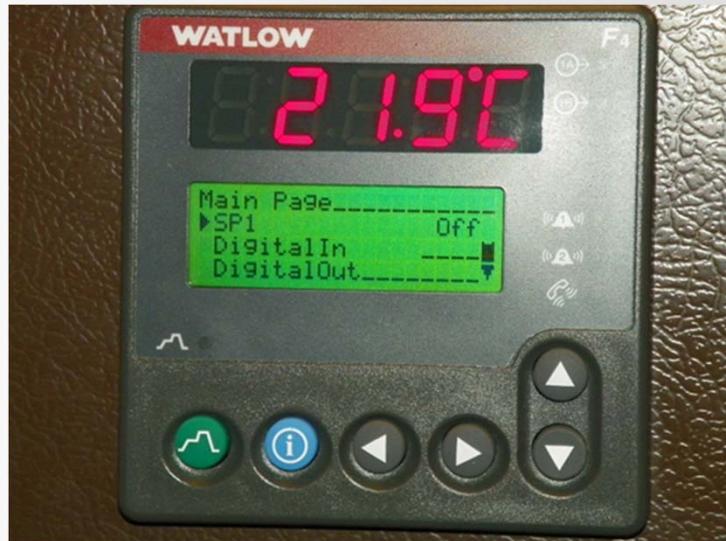
- Anton Paar MW-3000 Microwave*
- Anton Paar Vapor Cleaning Device
- Eichrom vacuum box
- SCP Sciences hot block, custom
- Environmental Express SC-150 hot block
- Thermolyne Big Bill shaker table
- Watlow F4s Controller
- Phoenix EP-12 Electro-Plater, modified

*Anton Paar EcoWave now available



Furnace Controller

Watlow F4s



Microwave Processing

Anton Paar Multiwave 3000



Microwave Accessories

Rotor 1DRY



Seal Forming Device



Rotor 8NXF100



Vapor Cleaning Device



Hotblocks and Supplies

SCP Sciences DigiPREP MS

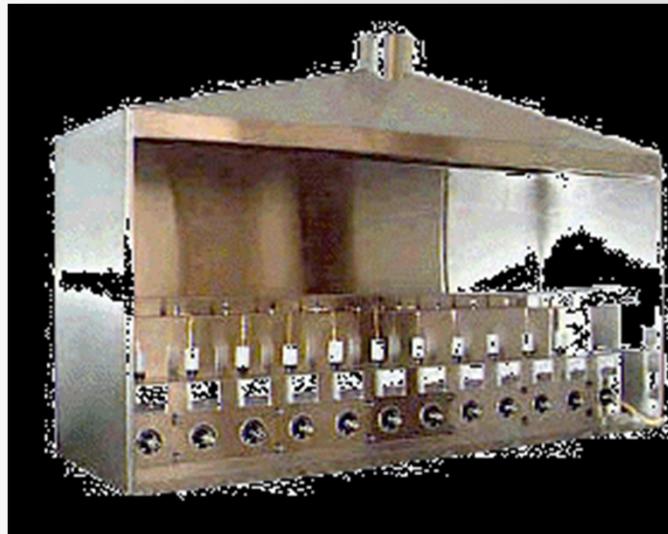


Environmental Express SC-150

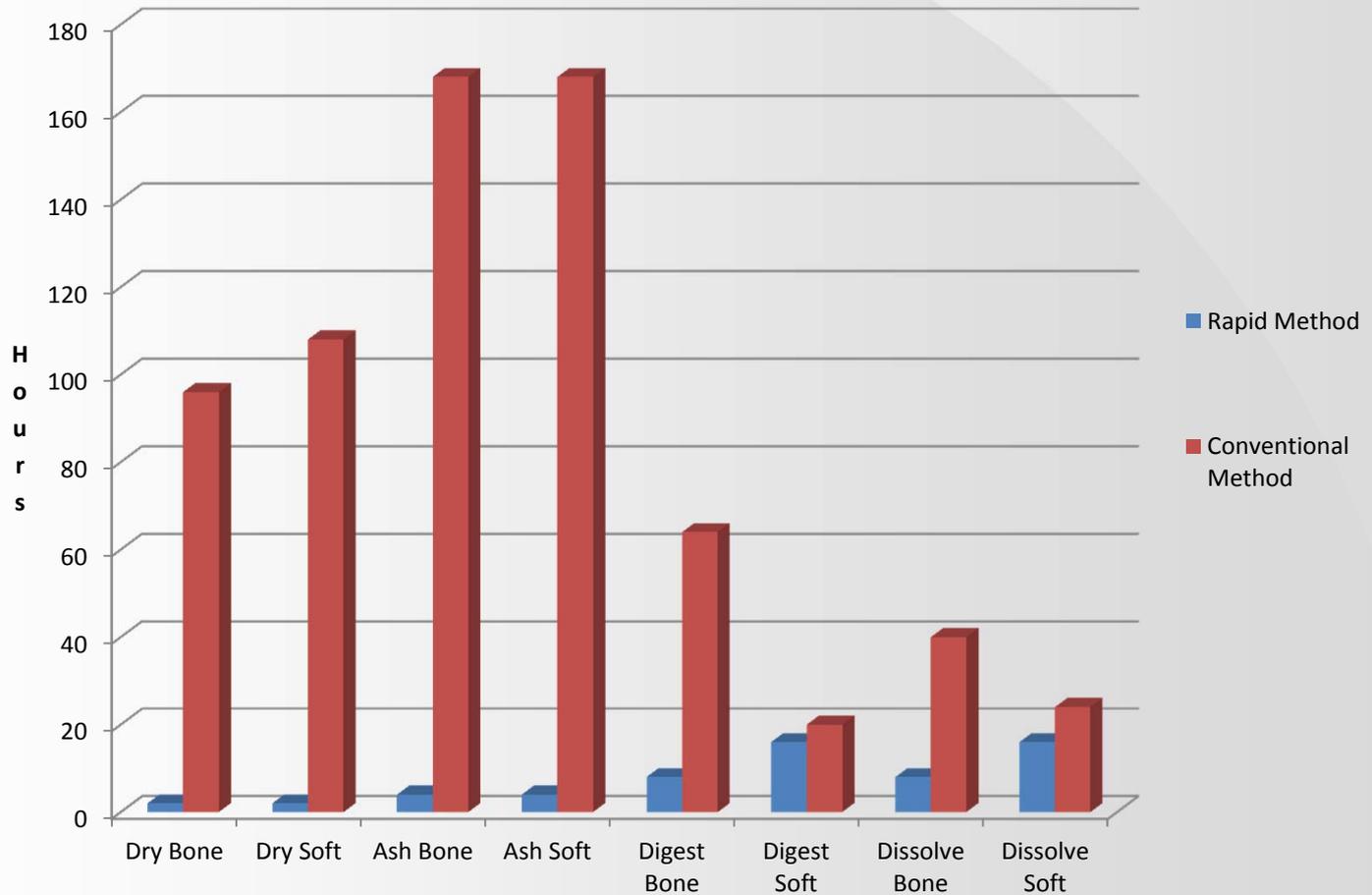


Electrodeposition

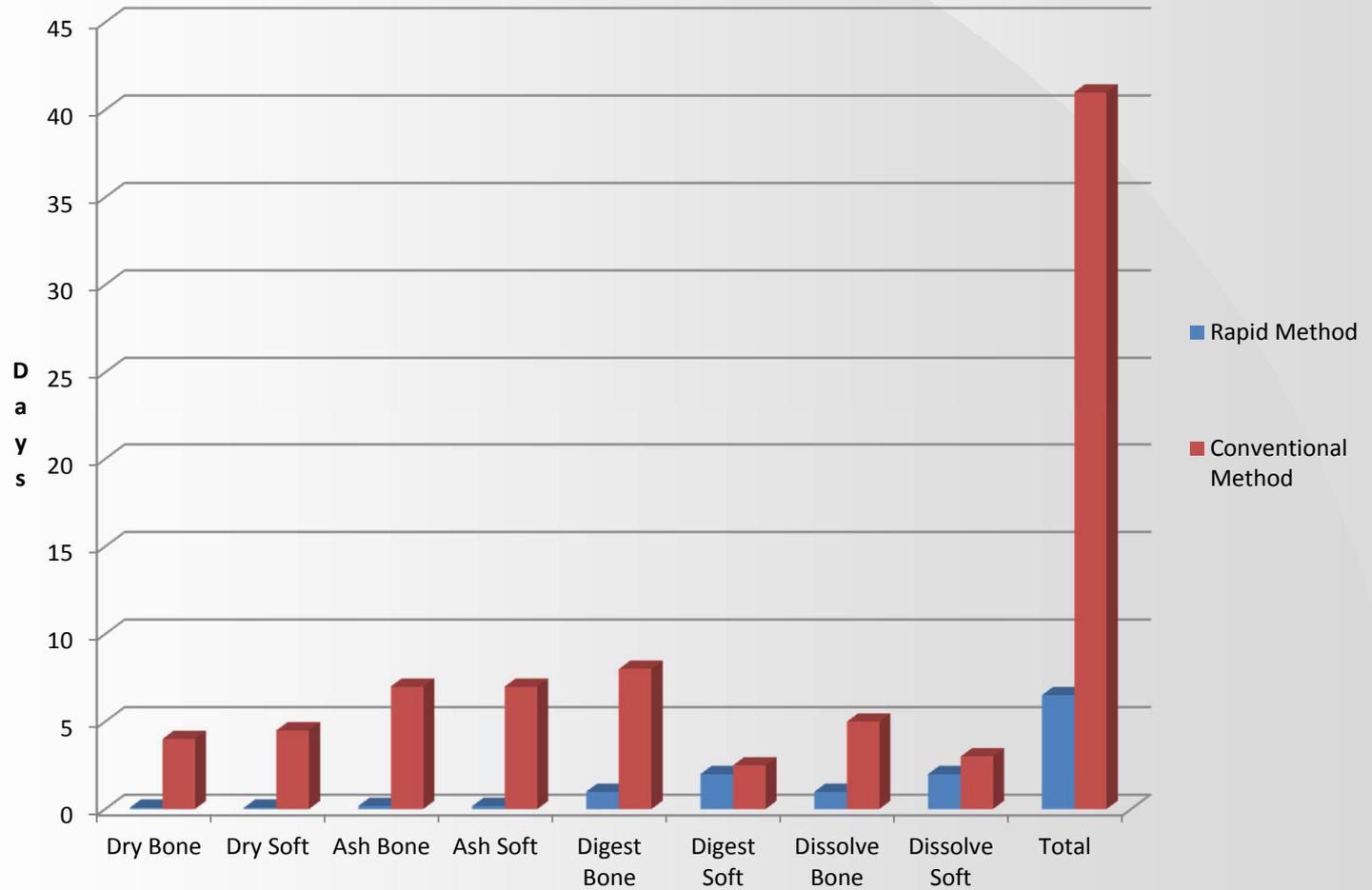
Phoenix EP-12



Process Times



Process Times



Logistics

- Equipment
 - Sample Drying
 - Ashing
 - Digestion
 - Dissolution
 - Extraction Chromatography
 - Electrodeposition
- Time
 - Procedures
 - Practice



The Bottom Line

- Investments
 - Equipment: \$50,000 to \$100,000
 - Consumables: \$5,000 to \$10,000
 - Development time: \$25,000

- Yields
 - Reduced sample cost
 - Reduced technician time
 - Rapid turn-around
 - Enhanced capability

