



Deactivation and Disposal of a Pipeline Potentially Contaminated with Uranium Hexafluoride

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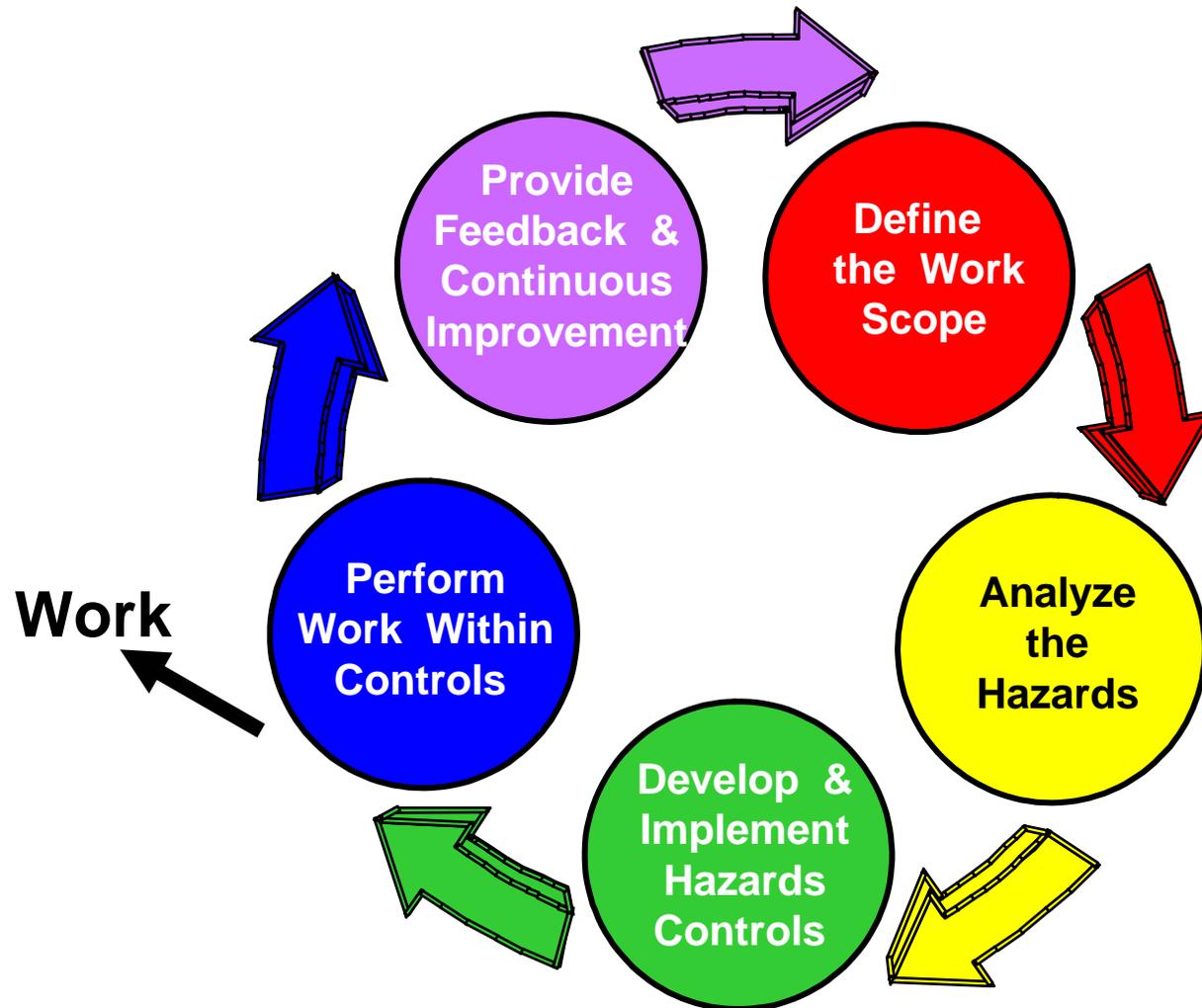
The Problem

- Non Destructive Assay records indicated ~100 grams of uranium in a sealed UF₆ process line
- Equivalent to ~150 grams of UF₆
- If allowed react with moisture, could generate about 34 grams of HF gas
- Could result in significant health hazard to unprotected D&D workers

Team Approach

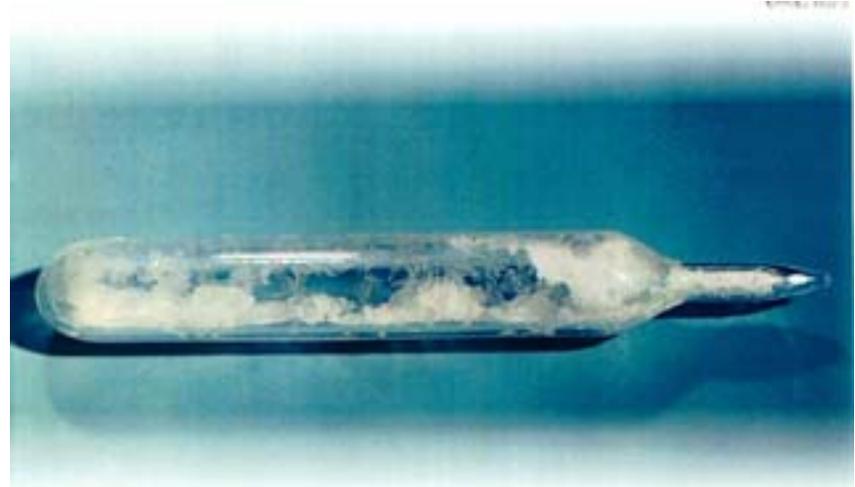
- Operations workers
- Engineering
- RCO
- Environmental
- Industrial Hygiene
- Others as needed

Integrated Safety Management Functions

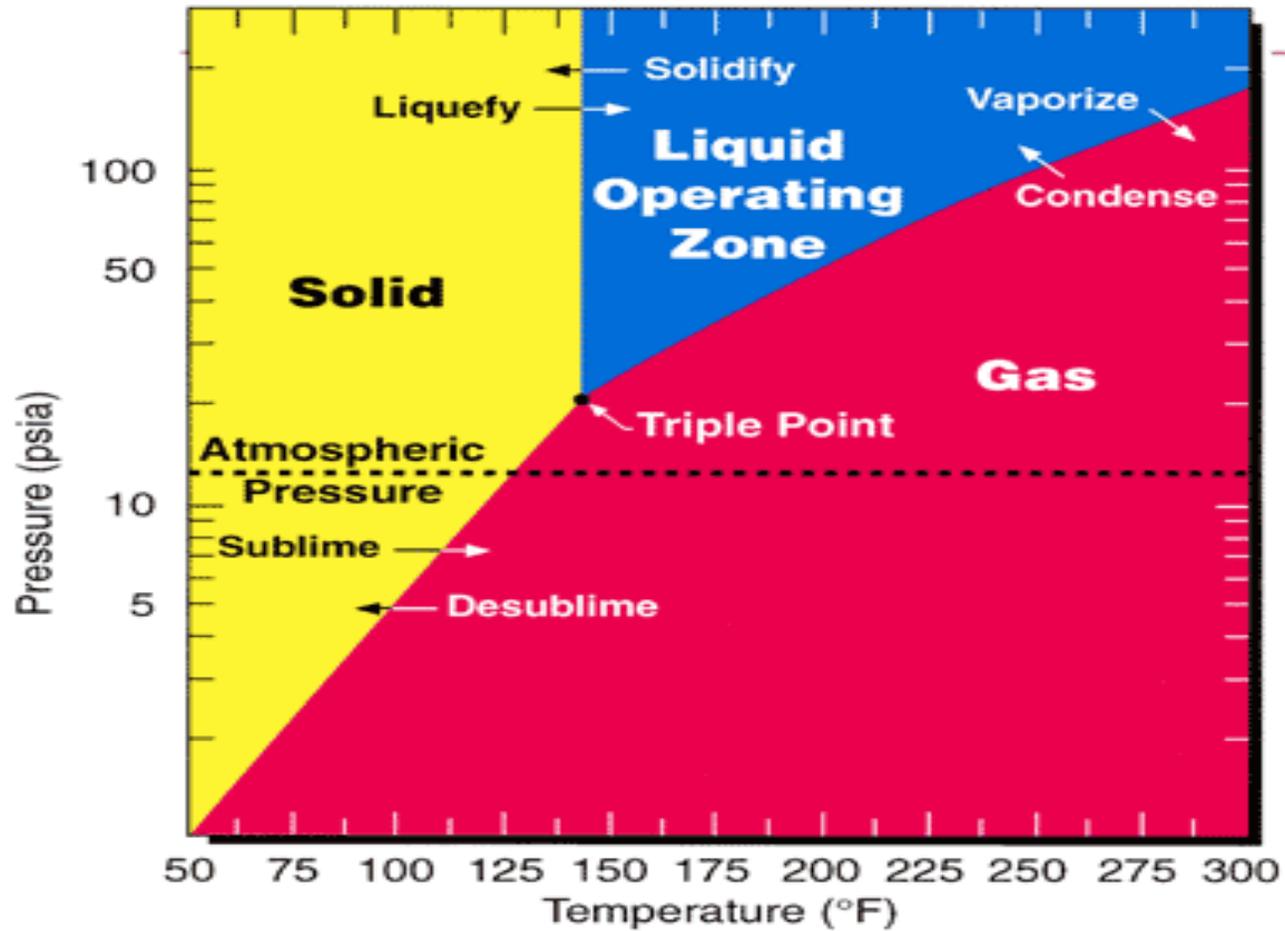


Properties of UF₆

- White, dense, crystalline material that resembles rock salt
- Sublimes - transitions directly into gas without first going through the liquid state when heated
- Reacts with moisture per the reaction:



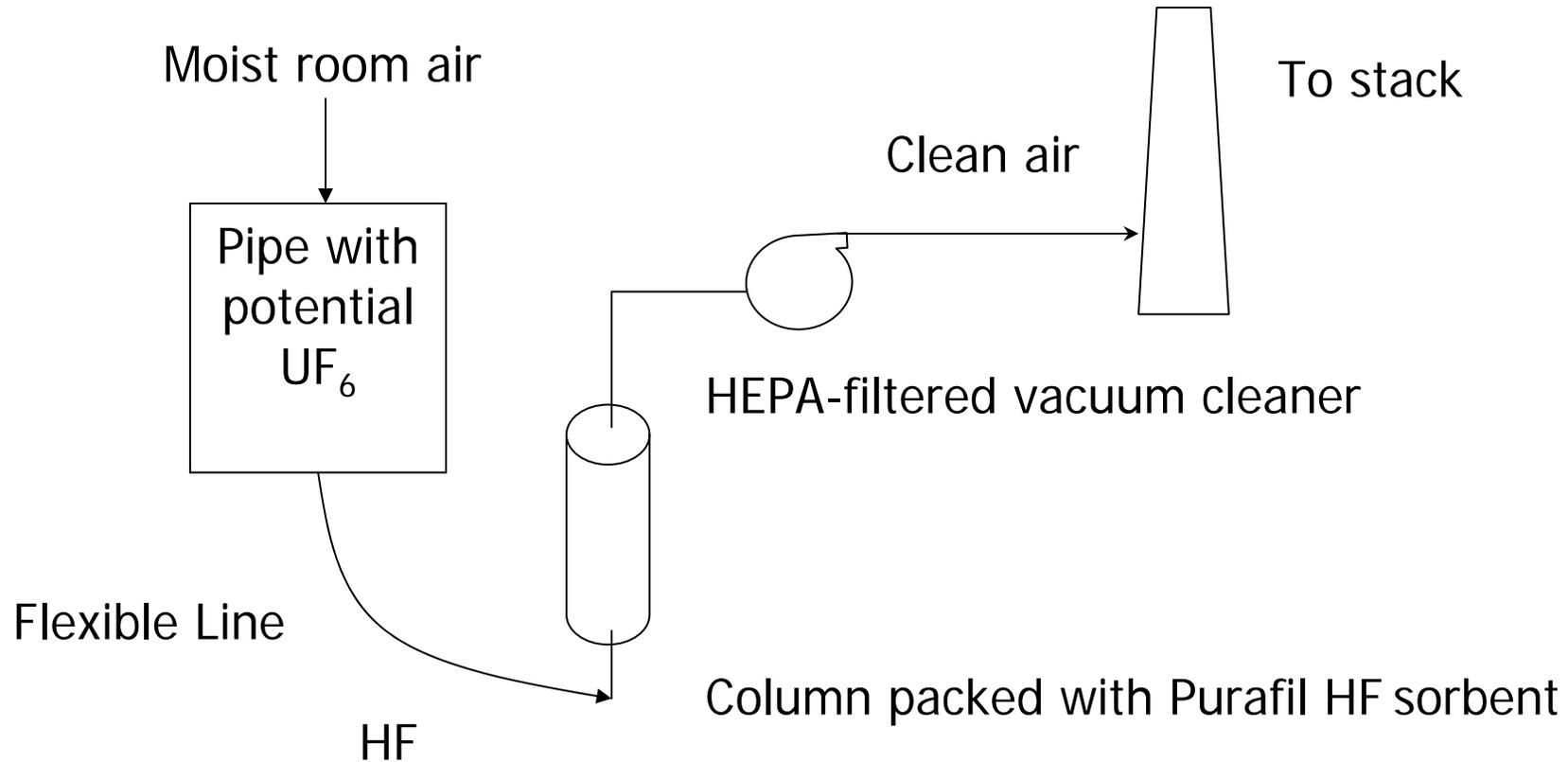
UF₆ Phase Diagram



The Solution

- Designed UF₆ handling system
 - Identified and obtained HF sorbent
 - SRS ALARA center developed glove bag containments to meet our unique needs
- Employed continuous Industrial Hygiene and Radcon support to monitor for escaping HF and uranium constituents

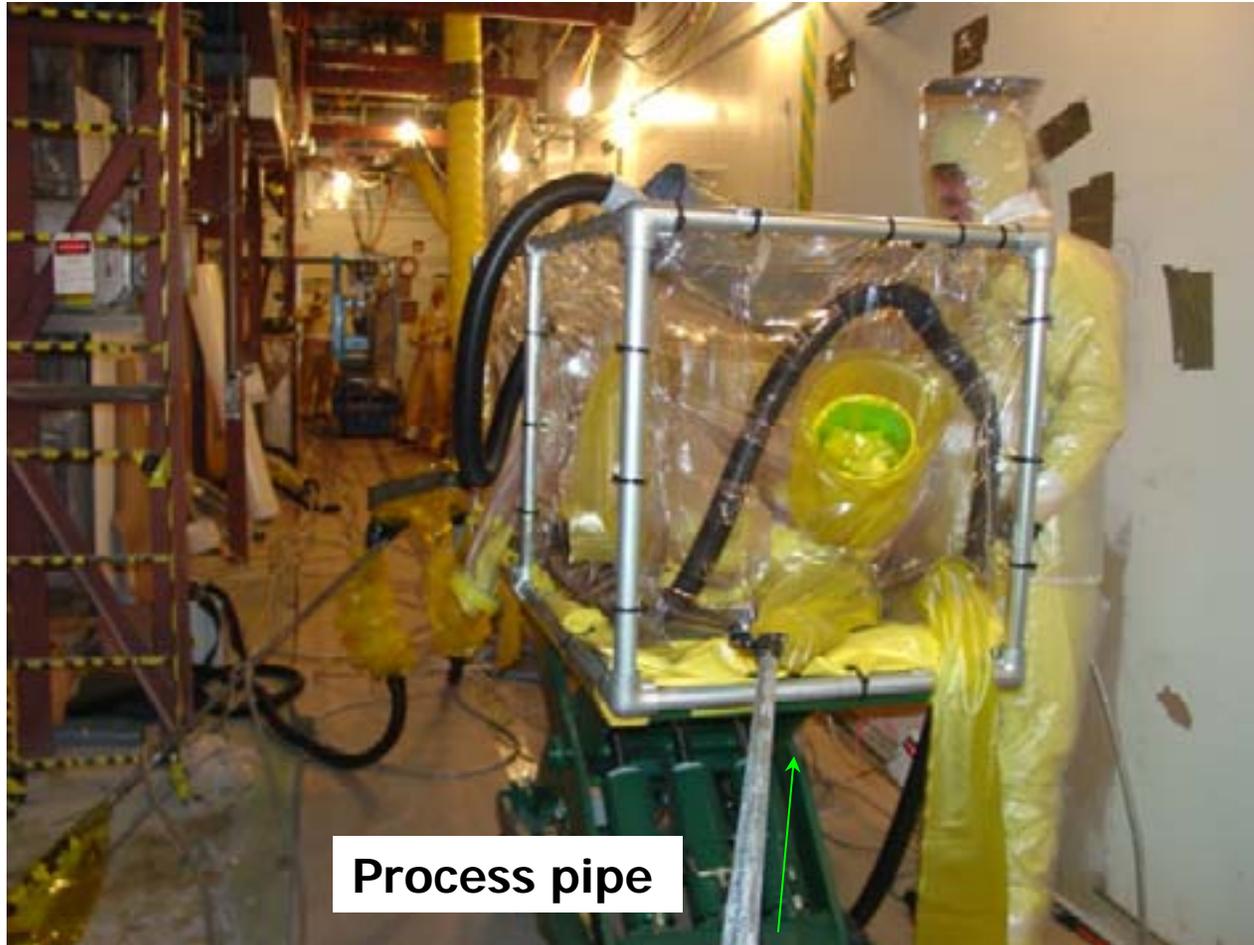
UF₆ Handling System



Specific Actions

- Installed containments on both ends of pipe
- Broke line at both ends
- Established purge flow to flush pipe
- Cut pipe into small pieces for disposal
- Disposed of entire system as low level waste

Main Glove Bag Containment



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Packed Column for UF₆ Removal

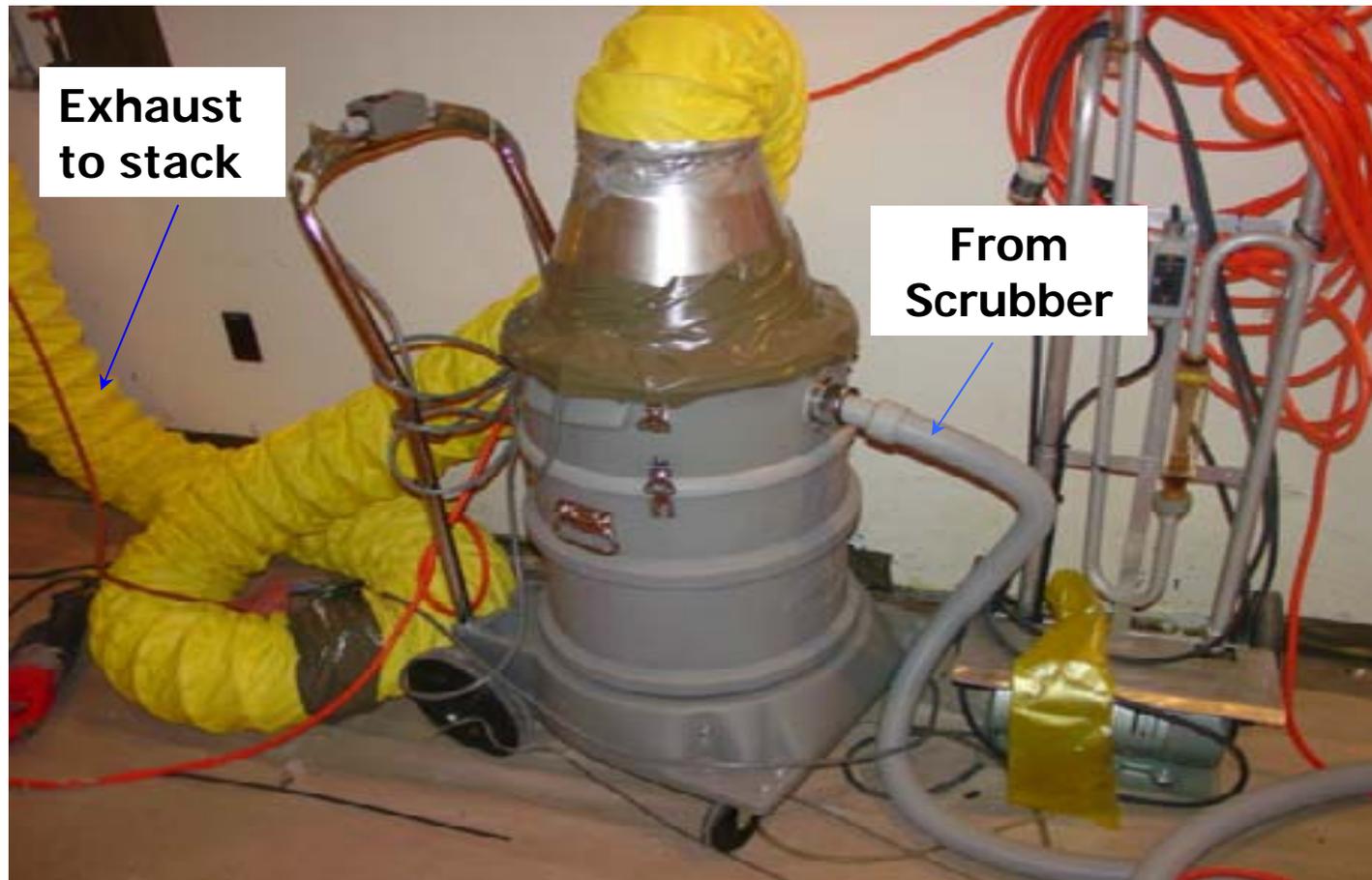


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HEPA-Filtered Vacuum



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Summary and Conclusions

- Used ISMS approach
- ALARA center support was critical to successful completion of job
- Suspect UF₆ safely removed from process and properly disposed