

Solvent extraction of uranium: Towards good practice in design, operation and management

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Uranium solvent extraction, USX has been applied commercially for recovery and concentration for over 60 years. Uranium in acidic liquor, which is prepared following ore leaching, solid/liquid separation and clarification, can be treated through a sequence of operations; extraction-scrubbing-stripping, to obtain purified liquor, and hence precipitation of marketable products.

USX has dominated the primary uranium industry as the preferred technological route for recovery of uranium into converter grade yellowcake or Uranium Ore Concentrate.

The practices of design and operation of USX facilities has found renewed interest as new mines are developed following decades of industry dormancy. Development of the Olympic Dam and Honeymoon operations in Australia has led to innovative design and operation of pulsed columns technology in applications of solvent extraction.

This article seeks to outline principles of design and operation from the practitioner's perspective. The discussion also reviews historical developments of USX applications and highlights recent innovations. This review is hoped to provide guidance for technical personnel who wish to learn more about good practices that leads to reliable USX performance.