Chemical Decontamination Solutions

**Background**

Chemical decontamination, defined as the use of chemical reagents to remove radioactivity containing corrosion products from the internal surfaces of piping and equipment, was developed for commercial use in the late 1970s and early 1980s, and has been used by Westinghouse for over 20 years. In the 1990s, the Electric Power Research Institute (EPRI) licensed a decontamination for decommissioning (DFD) process to remove facilities, including operating nuclear power stations, from service. The EPRI DFDX process is a further development of the EPRI DFD process for chemical decontamination of nuclear systems and components (the X refers to electrochemical ion eXchange).

Westinghouse is a full-service chemical decontamination company with experience in the DFD process, and specializes in a variety of chemical decontamination applications ranging from individual component to full-system applications.

System capabilities include:

- Mini System Decon  
  - Up to 100 gallons
- Intermediate System Decon  
  - Up to 1,000 gallons
- Standard System Decon  
  - Up to 25,000 gallons
- Full System Decon  
  - Up to 105,000 gallons
Description

Westinghouse is a proven leader in chemical decontamination technologies that reduce source term to achieve lower exposure while in commercial operations and increase segmentation efficiency during decommissioning.

We are actively developing new applications that will reduce by-product wastes during the chemical decontamination process without hindering the effectiveness of the decontamination. Applications such as the NITROX decontamination process were developed to remove radionuclides from subsystem dose reduction and full-system decontamination (FSD) projects. The process is continually being modified to increase its effectiveness and to reduce the amount of resulting radioactive waste. Permanganic acid is now applied during the oxidation step, which reduces the amount of cation ion exchange resin needed to remove potassium ions. A future enhancement will change the way the oxalic acid is decomposed further reducing the waste. This process was recently applied to a primary system in Germany for an FSD with excellent results.

Experience

Westinghouse has been performing chemical decontaminations since 1984. Our resume includes over a hundred decontaminations in the United States, Taiwan, Korea, Mexico and Germany.