#### ULTRAFILTRATION FOR ARSENIC REMOVAL IN INDUSTRIAL APPLICATIONS TEMPORARY ULTRAFILTRATION SYSTEMS OFFER SOLUTION TO COAL ASH POND TREATMENT



# **Overview**

The presence of elevated concentrations of arsenic in water sources from contamination associated with common industrial processes is a health and regulatory concern that has been identified by the EPA. As a naturally occurring element, arsenic is listed as the primary contaminant of concern at an estimated 47 percent of superfund sites. Addressing arsenic contamination in remediation efforts requires establishing effective treatment technologies to consistently meet low level discharge standards, typically 10 ppb or less. In these case studies, ultrafiltration (UF) systems are demonstrated as a versatile, flexible solution for heavy metals removal in difficult industrial wastewaters. These packaged units are designed for rapid installation and effective temporary solutions.

In power generation, coal combustion processes generate a powdery waste byproduct, coal ash. Arsenic is a major constituent of coal ash, along with other heavy metals like mercury, lead, selenium, cadmium, and chromium. A common disposal method for the ash is to combine the material with water and store it in retaining ponds or surface impoundments. Arsenic can contaminate groundwaters and drinking supplies through failures in retaining structures or leaching from unlined ponds.

Arsenic speciation is dependent on the oxidation-reduction potential and pH of the water. Pentavalent arsenate, As(V), dominates in oxygenrich environments, such as most surface water sources. Trivalent arsenite, As(III), is more prevalent in reducing environments like wastewaters and natural groundwaters. High removal efficiency can be achieved with appropriate pretreatment chemistry and coprecipitation to produce a filterable particulate. This is done by grouping and forming floc or adsorption to another substance. Following oxidation

#### **Project Summary**

### Ultrafiltration

**Location:** Southeastern, USA

# Application:

Arsenic removal

#### Process:

Metals precipitation 
Ultrafiltration

## Highlights

- Complete packaged UF systems
- Temporary installation
- Site-specific safety requirements
- 92.7% reduction

