The Outotec Arsenic Removal Process is a solution for managing toxic arsenic in process and effluent streams. The process consists of a ferric arsenate precipitation stage followed by neutralization using lime milk. The process is based on easy, robust and understandable precipitation. The treatment of toxic arsenic requires a high level process reliability. This can be guaranteed using the cost-effective Outotec Arsenic Removal Process.

After the arsenic removal process the treated water has a low arsenic concentration, typically containing 1-3 mg/L arsenic. If an even lower arsenic concentration is required, a polishing step with enhanced arsenic removal can be included. The process comprises the neutralization of acidic streams and the advanced removal of metal impurities, including Ni, Cd, Cu, Sb and Zn. The final product of the arsenic removal process is treated water that can be safely discharged to the environment or recycled back for process use. The selection of the arsenic treatment process is governed by residual stability. The residue of the Outotec arsenic removal process is a stable solid precipitate, which will pass the EU CEN and US EPA TCLP leaching tests for hazardous, arsenic containing solid waste.
Our offering

- Tailored and optimized arsenic water treatment solution to improve environmental quality and produce stable residue
- Based on globally available, economical iron and calcium chemicals and low-cost oxidants, including air
- One-stop-shop concept from testing up to EPC
- Reliable process operation for the treatment of toxic arsenic
- Safe working conditions and controlled arsenic exposure via efficient dust control
- High automation rate, minimizing operation costs
- High-quality treated water
- Process guarantees and tailoring via client water testing
- Environmental benefits:
  - Optimized chemical consumption
  - Water recycling
  - Control of arsenic discharge to environment

Process solution examples

- Control of arsenic in acid plant condensate: ferric arsenate treatment plant to manage arsenic concentration in acid plant effluent waters. Heavy metals are removed in the lime milk neutralization stage along with sulfate, which precipitates as gypsum.
- Efficient water recycling: water from the arsenic removal process can be recycled back to the process for reuse and the fresh water intake can be decreased. Total arsenic discharge and effluent volumes can be optimized by efficient overall plant water management.

Most typical industrial areas for the application:

- Non-ferrous smelters and roasters
- Sulfuric acid plants
- Gold plants

Key offering

- Tailored arsenic treatment solutions with safe and stable ferric arsenate precipitate
  - Optimization of the entire plant’s water recycling in order to minimize production of arsenic-containing discharge water
- Engineering and implementation
  - Research and development (e.g. conceptual and feasibility studies)
  - Plant engineering
  - Project implementation (up to EPC)
- Life cycle services

Reference plants

- Boliden Harjavalta Finland, Condensate Treatment process
- Plant design for Nicico Sarcheshmeh and Khatoon Abad acid plant effluent treatment