

Mercury Recovery at Miramas

Purpose

The main project focused on the demolition of all facilities and the decontamination of building materials and soil clean-up, with the goal of remediating the site for future industrial purposes.

The former Lithium production facility located at Miramas in southeast France recently completed a 10-year program of process equipment removal, building demolition and soil remediation to recover mercury (Hg) that had been lost during operations of the site.

Technology

Orano performed on-site mechanical treatment for the coarse materials, which included sorting and washing, and on-site thermal desorption for the fine soils. The technologies Orano selected were based on the contaminants expected in the soil.

Problem

There was a large mercury contamination on the Miramas site as the result of lithium isotope activities that started in 1961. The lithium isotope production used large quantities (tens of tons) of liquid, elemental mercury and spillages were frequent. Lithium isotope separation continued until 2000 and was followed by a lithium recycling program from 2000 – 2002. All of these activities were responsible for the impact of mercury on the soil, the building structures and effluent pipes and drains.

Solution

The goal was to provide a treatment process that was most suitable for the contamination identified on the site. Consideration was given to technical and economic feasibility,

compliance with laws and ethical guidelines for proper environmental management, and a preference for on-site treatment to limit waste generation, especially from transportation.

- **Thermal desorption process:** treating excavated soil particles less than 0.30 inches in size by heating them in a large oven that captures the contamination as it evaporates. The Thermal Desorption Unit (TDU) was used to treat batches of between eight and 13 tons, at a rate of approximately 330 tons/week.

Lithium isotope workshop



- **Treatment by washing:** The washing system separated the dust and fines adhering to coarser materials of approximately 0.30 - 2.76 inches in size. These smaller particles that contained virtually all of the mercury contamination became suspended in a washing fluid and were removed and treated, while the washing water was clarified and recycled in a closed loop.

In conclusion, over two tons of mercury were recovered, of which more than 772 lbs were

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pure, elemental mercury from the TDU output, and 1.76 tons of mercury were present in the other waste forms. More than 97% of the mercury processed was recovered or disposed of appropriately—the majority of materials cleaned by the TDU and the washing system were reused as backfill material on the site; approximately 5,512 tons of pebbles were reused for drainage at an off-site facility.



Thermal desorption unit (TDU)

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