



Cleanup

Mercury recovery at the Miramas site in France

Mercury recovery was a key focus of the final cleanup and shutdown of the century-old chemical plant in Miramas, France. Building demolition, debris decontamination, and soil cleanup were required to remediate the site for future industrial use.

Purpose

In 2015, final shutdown and cleanup was completed at the former lithium production facility in southeast France. The 10-year closedown program included process equipment removal, building demolition, and soil remediation to recover mercury that had been lost during operations at the site.

Technology

Orano performed onsite mechanical treatment for the coarse materials, which included sorting and washing, and onsite thermal desorption for the fine soils—technologies Orano selected based on the expected contaminants 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 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 impacted the level of mercury on the soil, building structures, and effluent pipes and drains.



Polluted areas at the Miramas site

Photo: ©1991 Orano, Lesage Philippe

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 onsite treatment to limit waste generation, especially from transportation.

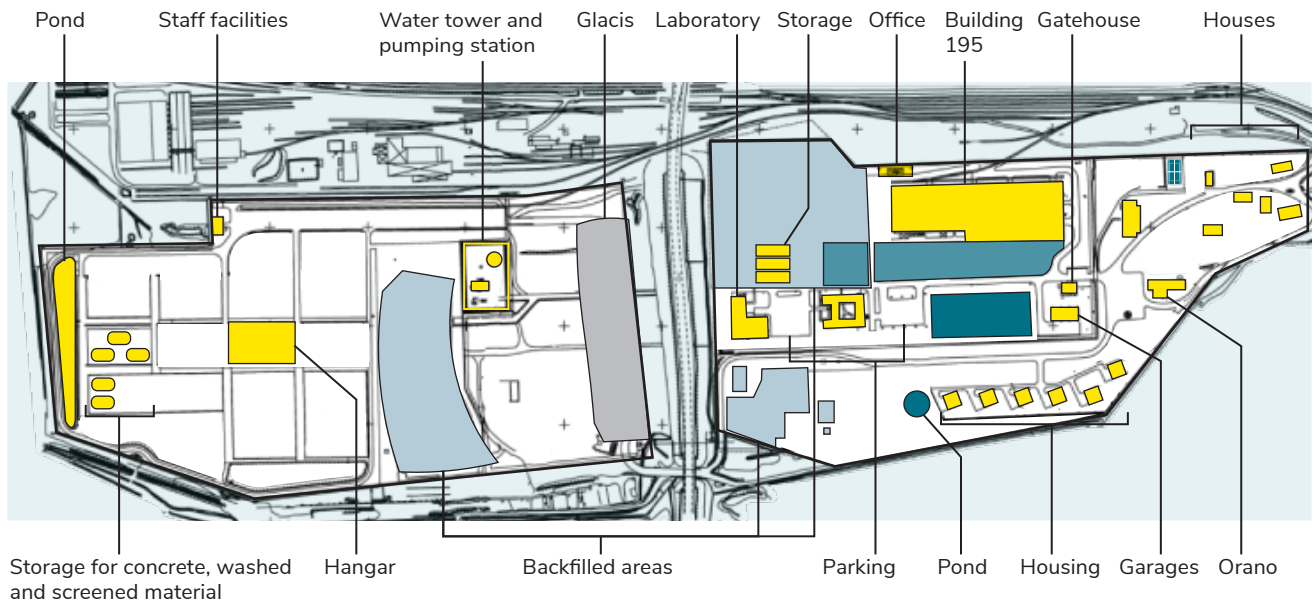
- **Thermal desorption process:** treating excavated soil particles less than 0.4 inch in size by heating them in a large oven that captures the contamination as it evaporates. At Miramas, a thermal desorption unit (TDU) was used to treat batches of between 8 and 13 tons, at a rate of approximately 330 tons per week.
- **Treatment by washing:** The washing system separated the dust and fines adhering to coarser materials measuring approximately 0.4–2.8 inches. The 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 pounds were pure, elemental mercury from the TDU output; and



The TDU treats soil particles measuring less than one-third of an inch

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 offsite facility.



Final state of the Miramas site

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