

Nuclear Latency (NL) Dataset
Country Coding Sheets

BELGIUM

COW COUNTRY CODE: 211

List of Country's Enrichment and Reprocessing (ENR) Facilities

1. Purex Reprocessing Facility, Eurochemic

Detailed Facility-Specific Information and Sources

1. Purex Reprocessing Facility, Eurochemic¹

- a. ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).*

Reprocessing.

- b. Facility size (laboratory, pilot, commercial).*

Pilot.

- c. Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.*

Construction began in 1960 and the facility operated from 1966 to 1974.²

- d. Was the facility developed covertly? If so, identify years that facility was covert.*

No.

- e. Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.*

We consider this facility to have been under IAEA safeguards beginning in 1973, following Belgium's comprehensive safeguards agreement with the IAEA.

- f. Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.*

Yes, the facility was under Euratom safeguards.

- g. Did the facility have a military purpose?*

¹ In addition to this facility Belgium owned part of the facility in Drome, France as part of the consortium of France, Belgium, Italy, Spain, and Sweden in 1973. Sweden was replaced by Iran in 1974.

² The construction and operation date is from the Eurochem website. The IAEA gives 1975 as the end of operations.

No.

h. Was the facility multinational? If so, identify the other countries that were involved.

Yes, the facility was a joint venture with 13 member countries of the Organization for Economic Cooperation and Development Nuclear Energy Agency. The original international partners were Germany, France, Belgium, Italy, Sweden, the Netherlands, Switzerland, Denmark, Austria, Norway, Turkey, and Portugal. Spain joined the group in 1959. France and Germany both quit the program early in development, which made it impossible for Eurochemic to compete with the national programs. Italy was a prominent partner in the project from 1966 to 1974. The Belgium government assumed ownership of the plant in 1985 and permanently shut it down.

i. Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.

Yes. All 13 involved countries financed the project, provided specialists, and assisted in the construction of the facility. While it is unclear exactly what each member state contributed, it is known that the construction was contracted out to companies from different countries.

j. Sources.

Belgoprocess. "Belgoprocess: The Decommissioning of the Eurochemic Reprocessing Plant." <http://ec-cnd.net/eudecom/Belgoprocess-ReprocessingPlant.pdf>. Accessed 06/08/2015.

Eurochemic. "Brochure." <http://www.eurochemic.be/eng/documents/Eurochemic-brochure.pdf>. Accessed 06/08/2015.

Eurochemic. "Eurochemic: A Belgoprocess Project." <http://www.eurochemic.be/eng/index-eng.html>. Accessed 06/08/2015.

International Atomic Energy Agency. "Integrated Nuclear Fuel Cycle Information Systems." <https://infcis.iaea.org>. Accessed 06/08/2015.

International Atomic Energy Agency. 1973. "The Text of the Agreement between Belgium, Denmark, the Federal Republic of Germany, Ireland, Italy, Luxembourg, the Netherlands, the European Atomic Energy Community and the Agency in Connection with the Treaty on the Non-proliferation of Nuclear Weapons." <http://www.iaea.org/Publications/Documents/Infcircs/Others/inf193.shtml>. Accessed 06/08/2015.

World Nuclear Association. 2014. "Nuclear Power in Italy." <http://www.world-nuclear.org/info/inf101.html>. Accessed 06/08/2015.

Zentner, M.D., G.L. Coles, and R.J. Talbert. 2005. "Nuclear Proliferation Technology Trends Analysis." Pacific Northwest National Laboratory. Report 14480.

-Additional facility:

It is unclear whether any reprocessing occurred within this hot cell. It was used primarily for research. We therefore do not include it in the dataset, but nonetheless list relevant information here.

HERMES hot cell complex at Mol

- a. *ENR type (diffusion, centrifuge, EMIS, chemical and ion exchange, aerodynamic isotope separation, reprocessing).*

Reprocessing. This was a hot cell complex; HERMES stands for Head-End Research facility on Mock-up Engineering Scale. It was located at the Mol research center.

- b. *Facility size (laboratory, pilot, commercial).*

Sources refer to this facility as a pilot plant. The hot cell could reportedly process 10-kg batches of fuel.

- c. *Is the facility under construction or in operation? If under construction, list the construction years. If in operation, list the years of operation.*

There is relatively little information available on this facility, making it difficult to determine the precise dates of construction and operation. The first year of operation was likely 1982. It seems likely that the hot cell stopped operating in the late-1980s or early-1990s, when public opinion in Belgium turned against reprocessing. By 1993, the government had suspended reprocessing activities. We use 1988 as the operational end year; this is the latest year for which we have clear evidence that the plant was in "hot operation." It is possible, however, that the facility continued to operate beyond that date.

- d. *Was the facility developed covertly? If so, identify years that facility was covert.*

No.

- e. *Was the facility placed under IAEA safeguards? If so, identify the years that the facility was safeguarded.*

We consider this facility to have been under IAEA safeguards since it operated after Belgium concluded a comprehensive safeguards agreement with the IAEA.

- f. *Was the facility placed under regional safeguards? If so, identify the years that the facility was under regional safeguards.*

The facility would have been under Euratom safeguards.

- g. *Did the facility have a military purpose?*

No.

- h. *Was the facility multinational? If so, identify the other countries that were involved.*

No.

- i. *Was the facility built with foreign assistance? If so, list the supplier(s) and what they provided.*

We did not find any evidence of foreign assistance.

- j. *Sources.*

Harmon, K.M. and J.A. Kelman 1982. *Summary of Non-US National and International Fuel Cycle and Radioactive Waste Management Programs 1982*. Prepared for the US Department of Energy under Contract DE-AC06-76RLO 1830, Pacific Northwest National Laboratory.
<http://www.osti.gov/scitech/servlets/purl/6883037-qdinwm/>

Harmon, K.M., L.T. Lakey and I.W. Leigh. 1984. *Summary of Non-US National and International Fuel Cycle and Radioactive Waste Management Programs: 1984*. Prepared for the US Department of Energy under Contract DE-AC06-76RLO 1830, Pacific Northwest National Laboratory.
<http://www.osti.gov/scitech/servlets/purl/6649181/>

Leigh, I.W. 1988. *International Nuclear Fuel Cycle Fact Book*. Prepared for the US Department of Energy under Contract DE-AC06-76RLO 1830, Pacific Northwest National Laboratory. <http://www.osti.gov/scitech/servlets/purl/7243803>

Mol – Research Division Report: 1987-1, January 1 – June 30. BLG 601.
http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/20/038/20038141.pdf