

Slovnaft Refinery

A Responsible Neighbour

Water management and protection

The Slovnaft refinery is located on the outskirts of Bratislava in the district of Ružinov, a distance of about six kilometres from the city centre and extends into the protected area of natural water collection at Žitný Island. The site area is 5.2 square kilometres.

How much water does Slovnaft consume?

Crude oil processing is energy intensive and consumes a lot of water, heat and electricity. At Slovnaft, the main source of water is the Danube. For technology and heat exchangers cooling, approximately 30 million cubic metres of Danube water are consumed annually. Another source of water used to cool heat exchangers is ground water from Groundwater Hydraulic Protection (GWHP). Of the total amount of withdrawn groundwater, only 8 million cubic metres are used for cooling, accounting for about 30 percent of the total quantity of water coming from the GWHP system.

What happens to the water used?

During the processing of crude oil, cooling and chemical waste water is produced at Slovnaft and then purified at three wastewater treatment plants operated by Slovnaft. The State Water Administration issued permits for the discharge of wastewater into the Danube and Little Danube watercourses, setting stringent concentrations limits of pollutants in the discharged waters. After purification, the cooled wastewater is discharged from two treatment plants into the Little Danube. The chemical wastewater is discharged through a chemical sewage system to a special three-stage mechanical-chemical-biological wastewater treatment plant. This is

one of the largest ecological units in Europe and uses Japanese technology. The total efficiency of oil removal from the water is 99.7%. The purified water is then discharged into the Danube.

How is wastewater pollution monitored?

The monitoring of wastewater at Slovnaft is performed:

1. visually
2. with the aid of continuous analyzers at the inlets and outlets of the wastewater treatment plants
3. through analytical determination of pollutants in an accredited laboratory

Compliance with limit values for all three wastewater treatment plants is controlled by the Slovak Environmental Inspection, Water Protection Inspectorate, as well as the water stream administrator - the Slovak Water Management Company.

What does Slovnaft do to protect water?

Surface water protection

To reduce oil pollution in the Little Danube, Slovnaft has carried out several measures:

1. switch from once-through cooling to closed circuit cooling at several production units
2. installation of air coolers in production units
3. installation of new continuous analyzers at two wastewater treatment plants
4. decommissioning of old production units
5. installation of cameras at the inlets and outlets of the wastewater treatment plants

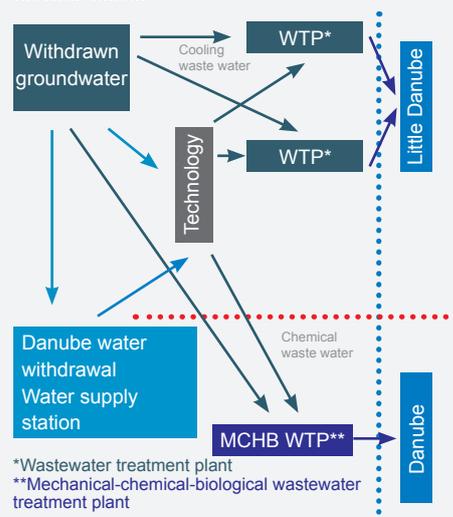
Groundwater protection

To enhance the protection of groundwater, Slovnaft embarked on two important projects:

1. Storage tanks reconstruction, started in 1992. Slovnaft has reconstructed 79 tanks so far
2. Chemical sewage reconstruction. The first two stages are already complete, the final stage is set to be executed in 2014-2015

For comprehensive groundwater protection, Slovnaft operates the Groundwater Hydraulic Protection system. The main objectives of this system are to protect groundwater reservoir in the upper part of Žitný Island from pollution caused by free and water-dissolved oil substances and continuous remediation of old soil and groundwater pollution.

The basic principle of the GWHP system is the continuous withdrawal of groundwater to create a large area of enclosed hydraulic depression which prevents the leakage of pollutants outside the Slovnaft fence.



A key aim of the Slovnaft refinery is to minimise its impact on the life quality of the residents in its surroundings and to provide them with accurate information about its activities.

For any questions regarding water treatment and its protection, please contact us by phone: **+421 (2) 4055 7800** or electronically at **info@slovnaft.sk**



Slovnaft

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