

Three-stage decontamination plan

The issue of the environment has only become the subject of serious focus in recent decades. This has also meant that Nynas has gradually switched to modern process technology with better environmental performance.

In the past the totally dominant acid/bleaching clay treatment was used to reduce the content of sulphur, oxygen and nitrogen pollutants in the oil. This treatment gave rise to two different residual products: bleaching clay contaminated with oil and acid sludge. But at an early stage Nynas replaced both acid treatment and bleaching clay treatment (methods still in use at some locations) with modern hydrogenation technology.

The residual products from acid/bleaching clay treatment were placed in specially designated landfill sites and have been monitored in accordance with a programme controlled by the authorities. Bleaching clay contaminated with oil was deposited in an area now known as the Land Farm, while the acid sludge was placed in another special landfill site (see below for information about each landfill site).

One positive feature in this context is that the residual products are located exclusively in two delimited areas within the refinery site. This means that the landfill sites are well monitored – also by the authorities – and are also enclosed, which facilitates ongoing decontamination work.

The Land Farm

One place where decontamination is already well under way is the area of meadow in the northern part of the refinery, generally referred to as the Land Farm. Residual waste was placed in landfill sites here during the period 1946-1975.

The earth containing oil was in the past ploughed up to stimulate bacteria to break down the oil. Nitrogen and phosphorus were also added to speed up the process of degradation. This method, however, is not sufficiently effective and additional action is therefore required using other methods.

Work is currently under way to remove the most severely polluted earth and to create a modern landfill site for other materials in the refinery area. New production facilities will be built on the decontaminated areas.

Landfill disposal of acid sludge

The landfill site for acid sludge consists of a demarcated cleft in the rock, which until the mid-1950s was filled with acid sludge, bleaching clay and other waste materials containing oil. The whole area, around 47,000 cubic metres in all, is now covered by stone.

Because the materials have a high degree of acidity, for environmental reasons it is impossible to dig them up and transport them to a destruction plant. Attempts have therefore been made using various techniques to increase the pH value and thus neutralise the materials, which is one prerequisite for successful post-treatment.

These attempts will be reported to the Swedish Court for the Environment at the end of 2008. The results will form the basis of a final decision on how work should proceed in future. This is without doubt the most complicated, cost-intensive sub-project involving the decontamination of former landfill sites at the Nynäshamn refinery.

The Lagoon

Water is used in the manufacturing process in the refinery's facilities. The water is treated mechanically, chemically and biologically, before being sent to the area known as the Lagoon. Here the final treatment process takes place before the water is fed out into the sea via a small pipe. The Lagoon is separated from the Baltic by a concrete embankment.

Further back in time the process water contained some oil residue, which sank down and settled in the base sediment. There is now virtually no sedimentation, as the water is so clean by the time it is fed into the Lagoon.

The Swedish Court for the Environment has decided that the existing sediment must be treated. Exactly how and when this can be done has not yet been resolved. However, Nynas is currently working together with the relevant authorities to draw up an action plan, which will be presented before the end of 2008.