

Test project PAH contamination at former gasworks

Rotterdam



The soil under the former gasworks in the Feyenoord area in Rotterdam is seriously polluted with tar products. The soil and the groundwater contain very high concentrations of PAH, BTEXN, phenol and mineral oil. In-Situ Technieken carried out a test to determine the possibilities of using In situ Chemical Oxidation (ISCO) to break down the contamination.

Various remediation variants were compared and tested. In-Situ Technieken carried out a feasibility study beforehand that showed that the soil composition is complex.

Stimulating biological life

In-Situ Technieken carried out the pilot remediation after the feasibility study. While positioning the 13 injection filters we observed that the soil contained large quantities of pure product and that the contamination had spread irregularly through the soil. During the pilot phase In-Situ Technieken injected 27 tons of hydrogen peroxide (50%), a quantity that is not sufficient for the amount of contamination present. Nevertheless, we noticed a marked reduction in the soil, but a rebound was noticed in the groundwater. It is striking that the injection of the oxidant successfully stimulated the microbiological population life. The oxygen

concentration in the soil increased because hydrogen peroxide decomposes into oxygen and water. The number of bacteria that are capable of decomposing the contamination also increased. The amount of biological activity was so enormous that all the oxygen present was used up within three weeks.

Result

As well as a reduction in the amount of contamination the pilot remediation gave for the first time an insight in the effects of ISCO on the mobility of the contamination and the biological activity. The results showed that the ISCO measures even stimulated the aerobic biology at this site. In this way the test project yielded new insights into the remediation possibilities for contaminated gasworks sites. It is not just the direct oxidation of the contamination by the Fenton's reagent that is of importance but definitely the side effects also. In-Situ Technieken proposes that this concept is used for the implementation in a full-scale remediation. It is expected that as a result of the amount of contamination present the costs of such a remediation will be considerable. The gasworks at Feyenoord has still not been remediated.

In-Situ Technieken has state-of-the-art knowledge of innovative remediation techniques at its disposal for treating contaminated soils and groundwater. Many of these techniques have been developed within the company itself and have been patented. We use an own laboratory and a large library and work closely with the scientific world in order to continually improve our innovative techniques. We can almost always offer you a suitable solution for any contamination. In-Situ Technieken - a trade name of ARCADIS - is fully certified for carrying out soil remediation projects and is active worldwide.

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