# Groundwater and Soil Remediation on the Premises of a Chemical Enterprise in the Ardennes, France

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| **Client:** | International Chemical Enterprise, France |
| **Engineering Design and Supervision:** | ERM GmbH, Neu-Isenburg |
| **Scope of Works:** | Construction and Initial Operation of a Groundwater Remediation Plant |
| **Contract Period:** | Starting from November 2004 |

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**Project**

Water contaminated with chlorinated VOC's is pumped from four groundwater wells and treated in the installed treatment plant. The volatile pollutants are transferred from the aqueous phase into the gas phase by an atmospheric stripper and afterwards are adsorbed by aqueous phase activated carbon. The maximum flow capacity of the plant is 10 $m^3$/h.

*The treatment plant is installed in two 30 ft containers and the vacuum system is placed separately in a 10ft container.*

**Remediation Site**

A Groundwater and soil contamination of chlorinated VOC's was determined in the area of a chemical factory in the Ardennes, France. The unsaturated soil zone was treated by using soil vapour extraction, beginning at the end of 2003. In order to minimise the distribution of the contamination in the water saturated soil zone an hydraulic barrier was built. FWS Filter- und Wassertechnik was assigned for the installation of the water treatment plant.

**Result**

Groundwater and soil vapour is recovered by a vacuum system based on a water ring vacuum pump with a vacuum separator connected in series. Then the water is pumped to the treatment plant. The installation of any technical equipment in the groundwater wells was not possible due to space and safety reasons (explosion risk). The main treatment plant is installed in two 30 ft containers, while the vacuum system is installed in a 10 ft container separately. The two strippers, height 9 m (filling 6 m), one blower, one sand filter and a storage tank are placed in one of the 30 ft containers. The other container holds the backwashing system. The treatment plant is designed for a flow rate of 10 $m^3$/h. The vacuum system supplies a part of 0,5 – 1 $m^3$/h.

All five connected wells are installed frost-proofed with flow meters and sampling points. The treated water is pumped into a drainage ditch afterwards.

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