



New System base on high ozone concentration in water flow for hydrocarbon remediation

Abstract

Italian research centre has developed an extremely effective low-cost system using ozone to treat hydrocarbon polluted water and soil. Ozone is produced through an air-propulsion reactor, it is easy to build (in special PVC) and does not require air drying nor any particular cooling system. Energy consumption is very low as well as production costs. The research centre is looking for partners interested in acquiring this system and in developing technical adaptations.

Description

Major problem to hydrocarbon pollutant removal is due to its concentration, toxicity and to the fact that it is hydro-repellent. Oxidation and consequent breaking of molecules has proved to be the most efficient system to enhance pollutants hydro-philia and therefore their biodegradability and removal. The possibility to obtain an unlimited constant flow (both of clean or recycled water) with high oxidation capacity could change dramatically remediation techniques allowing generalised, standardised interventions, as this method would be very cheap and have very low environmental impact. Italian research centre has developed an extremely effective low-cost system to treat hydrocarbon polluted water and soil (1200 litres per hour). The ozone production reactor it's air-propulsion, it's easy to build (in special PVC), doesn't require air drying and any particular cooling system. Energy consumption is very low as production costs. The ozone is diluted in water thanks to a special high efficiency diffuser. The ozonised water is immediately injected underground while ozone concentration in the water flow is constantly refreshed. In very short time (three weeks to six months maximum) ozonised water flowing through polluted soil generates an initial oxidation/ cracking action that is often enough to treat low-pollution layers. Longer chains tend to fractionate into shorter chains of

carbon atoms that are easily metabolized by local bacteria, stimulated by micro-nutrients and growth factors such as phosphorus and nitrogen. The system is composed by a water collection pump, an ozoniser, a contact column and a tank. It is ideal when drinkable water is needed in short time, it doesn't require particular maintenance. It can be connected to solar panels and inverters. The research centre is looking for partners interested in acquiring this system, that, however, requires technical adaptation to specific needs. Ideal partners are organisations, hospitals, public authorities, emergency centres.

Innovations and advantages of the offer

- No polluting chemicals involved (such as chlorine)
- High efficiency and constant water flow
- Very low energy consumption

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