

In-situ Soil Treatment

ElectroChemical GeoOxidation (ECGO)



Application

[ElectroChemical GeoOxidation](#) (ECGO), is a patented and proven technology that remediates soil and water contaminated with almost all hitherto known organic compounds. The process preferably is applied *in-situ*, acts quickly (90-120 days), is suitable for urban and developed areas, and is cost effective.

The Process

ECGO applies a predefined electrical current to probes driven into the ground to rapidly address a wide range of both organic and inorganic compounds. When treating organics, the electric current creates oxidation-reduction (Redox) reactions leading to a complete mineralization of organic constituents, i.e. to carbon dioxide, and water. The soil conductivity, site geology and hydrogeology of the subsurface conditions determine the voltage and intensity of the direct current to precisely control and maximize contaminant degradation. Once installed and operating, ECGO is clean, noiseless, and unobtrusive, making ECGO especially suitable for use in urban and other developed areas. The ECGO process produces no waste streams.

Type of Pollution Treated

ECGO has successfully treated organic contaminants in soil and groundwater, liquids and sludge waste streams at numerous sites. ECGO is effective against a wide range of organic pollutants such as: benzene, toluene, ethylbenzene and xylene (BTEX), MTBE, Total Petroleum Hydrocarbons (TPH), polycyclic

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aromatic hydrocarbons (PAH), halogenated VOCs (solvents), chlorinated compounds such as Pentachlorophenol, Hexachlorobenzene, PCDD, PCDF, pesticides; plasticizers such as Phthalates, nitrogen based bonds such as Cyanides, Pyridine, Piperidine, explosives, etc.,

Technical Description

The electric direct current is applied to steel electrodes, having a nominal diameter of about 6" (150 mm), incorporated into the soil at distance of 24' (8 m) to 45' (15 m). The working depth is only limited by the technical capacity of the drilling rig. We have applied ECGO to a working depth of 180' (60 m). When treating organics, the current consumed is about 0.2 kWh to 1.5 kWh per ton of soil. The electric direct current is supplied by specialized a.c./d.c. converters.

Performance

In all projects, ECGO succeeded in reducing the pollutants treated below the clean-up levels imposed by the regulating agencies. LNAPLs and DNAPLs have been depleted in full. Project performance is governed by a Quality Assurance System (QAS) in compliance with ISO 9001 based on our in-house chemical analysis. The QA system warrants that at the end of the treatment no harmful metabolites still exist in the soil and/or in the groundwater.

Experience

The process is applied in commercial operation. In about 20 projects, ECGO has successfully in-situ decontaminated about 2 m. tons of soil.