



PDDP™ TECHNOLOGY DESCRIPTION

The proprietary technology employed by Phase Separation Solutions was originally developed for and proven successful in the commercial treatment of soils, sludges and debris impacted with chlorinated organics such as PCBs and dioxin. It has continued to prove itself over the last 12 years with the extraction of oil from refining and drilling waste from around the world, recovery of reusable hydrocarbons from paint waste and plastics and the thermal destruction of pharmaceuticals and consumer products. This unique technology consistently produces an inert treated solid safe for use as landfill cover or replacement in any on site excavation while the separated contaminants are readily disposed of at either permitted facility, dechlorinated on-site using innovative alternative technologies or where applicable, readily recycled. This innovative and patented technology has successfully treated hundreds of thousands of tonnes of contaminated material on site around the world and recovered for reuse millions of litres of valuable oil.



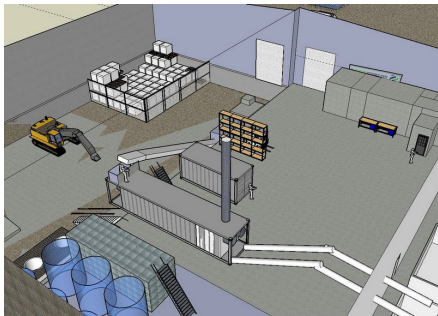
Phase Separation Solutions (PS2) has now installed, the Canadian developed, technology at a fixed facility located in Wolseley, Saskatchewan. Using this unique technology, PS2, has created a state-of-the-art facility which exists as the only one of its kind in North America.

The technology has been evaluated by representatives of Environment Canada's *Environmental Technology Verification (ETV) Program* and subsequently received one of the first verifications issued by the ETV Program Steering Committee at a ceremony in June, 1997.

The technology has been rigorously tested under Environment Canada's *Demonstration and Evaluation of Site Remediation Technologies (DESRT) Program*, a program similar to the US EPS S.I.T.E. program, and was successful in achieving all treatment and emission criteria imposed by Environment Canada. All aspects of the tests were audited by Environment Canada officials.

Since 1994 the technology has been successfully used in Canada and around the world in such locations as the U.S., Japan, U.A.E., Russia, Kazakhstan, Algeria, Bolivia, Ecuador, Argentina and most notably Australia where it was utilized for the remediation of 2000 Olympic Games site in preparation for the Games. Based on the success of that project Greenpeace publicly commented on the use of the TPS technology and its potential for the remediation of contaminated sites around the world.

In general, the technology is an indirectly heated low temperature thermal desorption process, which is capable of separating hydrocarbons, with boiling points up to 550 °C, from solid matrices.



The technology is not incineration or a direct fired process and as such has none of the hazards or potential environmental impacts associated with incineration.

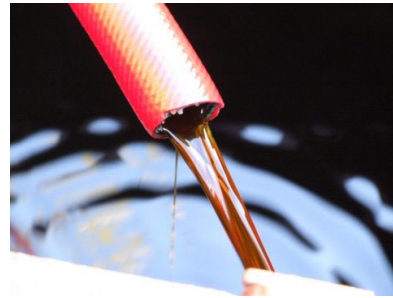
The system utilizes indirect heating as the principal process to separate hydrocarbons from a host matrix or depolymerize them from a polymer product. At no time does the fuel gas flame come into contact with the host material. As a result no combustion occurs producing no air emissions.



The process is two-staged employing, at various temperatures, pyrolyzation, desorption and depolymerization hence its designation as PDDP™ followed by condensation and hydrocarbon capture.

Feedstock, properly sized, is fed through a hopper into a rotary paddle airlock which in turn meters material into an indirectly heated extraction chamber which passes through a directly heated shell or firebox. The firebox is heated by the combustion of clean burning natural gas via burners and the heat is indirectly transferred via conduction through the soil extraction chamber shell to the host material. The corresponding increase in host material temperature results in volatilization of the organic hydrocarbons. This is the pyrolyzation, desorption, depolymerization process.

The second stage, condensation, involves cooling the desorbed gases (hydrocarbon vapour) and condensing them into liquid. The gases are first cooled in a direct quench process, using recovered and recycled process water. At these temperatures the hydrocarbons are completely re-condensed and captured in the liquid stream. The liquid stream is routed through a three-phase



oil/water/solids separator where the separated hydrocarbons are drawn off to an oil storage tank for sale where applicable. All recovered water is treated using activated carbon and organoclay and returned to the system for reuse where applicable. All pyrolyzed solids are rehydrated, again using recovered process water, collected, analyzed and released for landfilling or other use.

