



## Worms solve contaminated land problems

### Challenge

Petrol is a major soil pollutant and the cost of clearing a contaminated site to land fill can be thousands of pounds.

It is not sustainable to continue transferring polluted land to landfill so alternative 'bioremediation' methods have been developed which use natural methods to clean soil. Micro-organisms introduced into the soil effectively 'eat' the petrol, providing a solution that is environmentally acceptable, sustainable, cheap and low tech.

However the industry has identified a number of problems with micro-organism which has resulted in soil not being fully cleaned. For example petrol sticks to soil and is difficult to remove, micro-organisms are too big to reach the petrol 'hidden' in the soil particles and soil conditions can be unfavourable to the micro-organisms due to lack of nutrients, oxygen or water.

### Solution

Working with industry collaborators the University has identified a number of significant improvements within bioremediation methods that occur following the introduction of earthworms into contaminated soil.

Micro-organism numbers are increased by the presence of earthworms. They love the sticky mucus found on the earthworms' skin, in their intestines and in their burrows. Earthworm ingestion breaks soil up and releases petrol and nutrients which create a more favourable environment for micro-organisms. At the same time, worm burrows also help deliver oxygen and moisture from the surface to contaminated soil, further improving micro-organism ingestion.

This commercially-supported research project is an excellent example of industry benefiting from thorough sector-specific research. This has helped to deliver a solution that will not only save on the cost of clearing sites, but also ensure that legacy problems with sites have the minimum of impact on their long-term use.