

Green

Cleaning the environment
the friendly way.

green
words by David Edwards

grass

A few years ago the North Sea managed a twelve month period without any major shipping disasters.

Good news for the environment you'd have thought. However, in the same period up to one hundred thousand tonnes of oil were estimated to have been released into the sea. Some of this can be put down to natural occurrence, but by far the major part is dispersed from aircraft and shipping fleets through general spillages and cleaning whilst traversing this busy area.

During the course of our busy lives, it's not unusual to see oil films at service stations, rainbow effects on tarmac - particularly in car parks, fuel spills from ruptured or leaky tanks. The routine response to these is to scrub them down with loads of water and detergent which helps the fuel seep into the ground or down our drains. So we are not actually treating the problem and solving it; all we are doing is dispersing it - pushing it further down the line and out of our immediate vicinity.

If it's a really serious spill, the fuel - hydro-carbon is the technical term - leaches into the ground polluting it and the surrounding areas. After a severe downpour the area of land contamination will have spread to a much wider area and maybe into the water table or flowing out into a river raising further environmental issues.

The most common method of coping with contaminated land appears to have someone else own the problem. Pay a contractor, with a special licence, and get them to dig out the soil and transport it to another site, a landfill site. Here it can be buried, covered over, forgotten.

But there is an alternative. Recently, I was invited to take a look at a project which is handling land contamination by taking ownership of the issue; sorting it out rather than shifting it and handing it to somebody else to resolve.

The site I visited was a prospective property development area for homes of outstanding quality and design. My understanding was that it used to be a food processing plant and in the back yard, earmarked to be the landscaped gardens of the proposed homes, was an area of contaminated land that had been inspected and condemned by the Environmental Agency. With a large cubic capacity

of contaminant the options were to either "dig and dump" or treat in situ.

"Dig and dump" requires the spoil to be removed from site in lorries and transported to one of just seven suitable sites in the UK where such waste is dumped in land fill areas. Notwithstanding the monetary cost involved, there is clearly a large environmental cost to this exercise.

Following the advice of specialist contractor SPC Group, the developer decided to treat in situ. A pallet load of bacteria produced by SpillAway Inc, a US company, was duly delivered to site. Groundworkers followed a detailed method statement to administer a concoction of products to the spoil, follow a strict routine of containment and soil agitation and watch whilst the greasy, pungent spoil became an inert, environmentally safe mound of little more than soil - with probably excellent properties for fertilising the gardens. The whole procedure took somewhere between forty and sixty days but the monetary cost was less than 10% of the first option, no further ground contamination occurred and no heavy lorries carrying waste had to thunder round the infamous M25.

The process I witnessed is called "bioremediation". Bioremediation utilises actual living organisms or Bacteria to bioremediate hydrocarbon contaminants. Furthermore, these are naturally occurring bacteria that are to be found in large numbers in soil and water. Companies like SpillAway are merely speeding-up or "augmenting" this natural process whereby the bacteria use the hydrocarbon as a food source, initially creating enzymes to break down the hydrocarbons to more manageable components in much the same way as we use enzymes in our stomachs to break down food to more digestible portions. Once broken down, the bacteria then feed on and digest needed components of the hydrocarbon, discharging only harmless water, gas and some inert minerals. Once their food source is lost (all contaminant is bioremediated), the bacteria then turn to themselves for sustenance and cannibalise each other.

As such, the process is completely non-hazardous and safe for the environment.

How do Bacteria / Enzymes / Chemicals Work?

To understand the benefits and effectiveness of the Bioremediation, it's helpful to know the differences between bacteria, enzymatic and chemical based products.

Bacteria are living cells which consume waste materials and in the process convert them into safe by products - carbon dioxide and water.

Enzymes are complex chemicals naturally produced by bacteria and used as catalysts to chemical reactions. When the waste materials are very complex (such as pond sludge), bacteria actually produce enzymes which break it down into more simple compounds - in much the same way that we use enzymes in our stomach to break down food before it enters the intestines. When broken down to simpler forms the bacteria is able to complete the consumption.

Chemicals can oxidise waste such as sludge & ammonia, but only very harsh and dangerous chemicals can accomplish this job. Less hazardous chemicals are generally not effective for tough jobs such as sludge digestion. Also, chemicals have toxicity issues, and are likely to be harmful to staff, wildlife & the environment.

Jon Swain of SPC Group explained that as a specialist distributor they carry several products within their portfolio to address most bioremediation projects. The range offers the complete clean and degrease of any hard surface with none of the implications on Health & Safety & Environment that comes with the use of chemicals. In addition, they are able to bioremediate almost all organic waste and natural hydrocarbons leaving behind by-products which are naturally occurring and not harmful.

So, instead of merely moving and dispersing contaminants from one place to another, they are broken down, the way nature intended, to products which naturally occur in the environment. Leaving us to contemplate the approach of Spring, which evokes freshness, brightness and hopefulness after the brooding dullness of Winter, with a lighter, more optimistic heart. ■

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