





# We want to know more about you!

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## but first here is a bit about us

Shift are specialists, delivering effective, affordable technologies for cleaning up contaminated soil. We harness a proven soil processing tool with advanced chemical and biological remediation technology, to reliably treat and neutralize the contamination itself, without destroying the usability of the soil. No need for you to pay twice: once to haul contaminated soils off your site, and then to haul clean soil back in.

As remediation takes place at a molecular level, the process is more reliable than traditional methods and proven to have a more positive environmental impact. This, along with the time and cost efficiency, make an attractive package for clients.

The Shift system is versatile and will treat virtually any type of contamination problem, in any type of soil condition. We offer soil remediation on over 150 types of contaminated soil. This covers almost all types of soil contamination and we will almost certainly have the solution to your problem. We work on your site and the set up only takes minutes. Processing is faster than any other proven decontamination system in widespread commercial use today.

The Shift system is affordable and more cost effective than any of the traditional methods for remediating a contaminated site. And with us, the results are guaranteed!



# Our duty, our service

## Our Duty:

It is no secret that today's society has and continues to put enormous strain on the environment. Topsoil, a vital natural resource for sustainability, takes 100 years to naturally deposit just one inch. Sadly, 25 billion tonnes of topsoil is lost each year. Shift Soil Remediation is committed to fighting this sad statistic. Our methods of ex-situ bioremediation attack the contaminant at a molecular level, speedily and efficiently returning brownfield sites to safe, usable land. The cultured microorganisms are drawn from nature, typically from locations where they have evolved to live off substances that we consider contamination. The process produces no by-product and poses no risk of contamination to the water table below. Soil contamination poses a considerable threat to our ecosystems, in addition to human health hazards. Shift provides a solution for over 150 contaminants, remediating land to environmentally safe levels and eliminating potential health risks to society.

## Our Services:

Our expert team are well equipped and eager to help with your contamination problem, offering you a time efficient and cost effective solution. Our process is thorough, remediating to environmentally safe levels in comparatively shorter timeframes than traditional methods. We specialise in hydrocarbons, while also offering a complete solution for more than 150 contaminants. Shift will manage your remediation project from phase I through III, offering a service tailored to suit any site or client.

- Phase I and II environmental site assessment
- Phase III environmental site assessment (remediation)
- Mobilisation and setup of our remediation equipment at your site.
- All on-site remediation processing and labour costs.
- All remediation treatment supplies
- Post-treatment samples and laboratory testing
- Remediation Work Plan and Completion Report
- All Remediation Project Management
- Guaranteed results

## How we are different:

Our treatment costs and therefore our charges to you are lower than offered by other soil remediation companies. Through years of experience, the designers of the Shift process realized that for a remediation method to be reliable, we needed a more thorough means of processing the soil and blending the decontamination reagents/microorganisms into the soil. Extensive research and testing resulted the right combination of elements to accomplish that goal. Our technology has been patented as both a process and machine.

# Technical Info

The Shift remediation process equipment is fully mobile and self-propelled. The process is ex-situ and on-site. Soil is crushed and shredded, while blending a treatment solution (chemical, biological, or both), along with air and moisture, into the soil using a method that is proprietary to Shift. The contaminant molecules in the soil are already being degraded or neutralized by the time the soil emerges from the processing mill.

There is, in nature a wide variability in soil conditions and soil content, even within small distances. This is the principal barrier to effective and efficient remediation of contaminated soil. The Shift process is designed to eliminate this variability in the soil while introducing one or more chemical or biological reagent(s) known to degrade and/or neutralize the specific contaminants in that soil. In other words, Shift is able to tailor the choice of chemical and/or biological reagent to the specific type and severity of contamination, and to the specific soil conditions at a site. Second, the Shift process reduces the soil to a fine particle state in order to maximize access to the contaminant molecules. Third, the Shift process ensures the even distribution of the reagent(s) throughout this soil matrix, and the degradation/neutralization is completed before the soil loses its homogenous and fine particulate composition. Finally, to improve speed and efficiency, the Shift process creates a relatively high level of air entrainment in the soil, along with a carefully calibrated level of moisture content.

The machine is designed to work with any chemical reagent or biological product that is or can be delivered in an aqueous solution. The choice of what to use in a given project is determined from analysis of the contaminant or combination of contaminants in the soil, and from analysis of the soil composition, moisture content, pH, etc. For example, commercially available products that are commonly used to degrade hydrocarbons as part of various cleaning and degreasing applications can be adapted successfully by Shift. Other products that can be adapted for Shift are based on a chemical principle known as Fenton's Reagent Chemistry. FRC provides for direct oxidation -- release of nascent oxygen -- via an exothermic reaction between a peroxygen and a catalyst.

Metals (for example, soluble lead) are neutralized by chemical bonding at the molecular level, resulting in by-products that are stable and benign. Shift is also able to apply a variety of products that release cultured microbes proven to degrade and/or neutralize various types of contaminants. In all known cases, these are naturally occurring biological organisms that have been found to thrive in environments where these contaminants have been introduced by man-made events or by natural causes.



# We clean



The term "contaminated land" is defined in the Environmental Protection Act 1990. It refers to the presence of polluting substances on a site (usually in the soil) in certain concentrations above background levels, which may cause harm (directly or indirectly) to humans, animals, vegetation or structures. Numerous land uses have the potential to contaminate sites, some of the more significant are:

## Mining

Chemical works (agrochemicals, pharmaceuticals etc)

Metal treatment and finishing

Oil refining and storage

Timber treatment

Railways

Scrap yards

Paint and dyestuff industries

Fly-tipping, cable-burning and bonfires

Waste disposal (hazardous and non-hazardous, industrial and household wastes)

Dockyards

Electrical goods manufacturing, e.g. use of solvents and metals

There are a variety of ways in which pollutants may enter the natural environment

Leaks and spillages from tanks and pipes

Accidents or spillages during storage and transport of raw materials, intermediate products and waste materials

Disposal of waste materials on or adjacent to the site

Demolition of buildings that have contained contaminating material (e.g. asbestos lagging, impregnated brickwork)

Movement of contaminated groundwater onto the site

Migration of toxic or explosive gases from adjacent land or underlying strata

Leaks from drains from process areas

In addition to these causes and sources of contamination, further dispersion of contaminants may occur as a result of soil disturbance and movement, wind dispersal, or leaching and drainage into surface and groundwater. The main emphasis of current policy is on restoring contaminated land so that it can be reused for some beneficial purpose such as housing, public open space, new industry or agriculture. Reclamation of this land is justified by the need to conserve unused land, to protect the countryside and to encourage the regeneration of declining industrial areas and inner cities. The regeneration of inner cities is currently receiving much attention but the problem is not solely confined to urban areas, e.g. former land-based disposal sites are now being redeveloped, many of which are in rural or semi-rural locations.

# Health and safety

There are no significant, negative health, safety, or environmental impacts associated with operation of our system. There are no significant risks, direct or indirect, to the general public as long as the equipment and work site are reasonably secure from unauthorized entrance.

The process may produce incidental **dust** as a natural result of the lifting and dumping of soil into the hopper, if the soil is particularly dry. During the process, moisture is added to the soil and as a result there is no dust.

The **chemical and biological** products used are biodegradable and environmentally benign and all equipment operators are trained to handle these materials. There is no risk to the general public as long as the products are secure from access or tampering.

There is no contact with **groundwater** during the process (the contaminated soil is already excavated), nor is there any release of chemicals or biological products, diluted or undiluted, into public sewers or storm drains.

The soils processing machinery, when operating, produces a **noise** level comparable to a medium-sized residential gasoline generator. The engine meets all current **emission** control requirements for such equipment.

