

Environmental Solution, Inc.



Cutting clean-up costs of contaminated soil with bioremediation

More and more occurrences of soil contamination at onshore maritime facilities such as marinas and shipyards have arisen due to the high degree of industrialization and intensities of chemical uses. But traditional best practices for soil clean-up can prove challenging with rising fuel and transportation costs. Bioremediation products can solve both problems while creating an ecologically-safe atmosphere for both the worker and the environment.

Owners and workers alike in various onshore maritime facilities like marinas and shipyards know that the usual activities of building, repairing and performing maintenance on ships requires a lot of toxic oils, solvents, paints, and other lubricants, many of which, can contaminate soil in surrounding areas.

And while best practices call for damaged soil to be treated in keeping with environmental regulations, labor, transportation and rising fuel costs are a growing concern. The traditional clean-up of contaminated soil can also include the use of heavy machinery and sometimes containment of highly-toxic materials and sites. Not only that, but soil contamination poses health risks through both contact and leaching.

The key is to have minimal disruption to surrounding environments while maintaining economic feasibility.

The easiest way to do this is by using bioremediation products, which are active, work-ready preparations with natural absorbents that include specially-blended hydrocarbon-digesting microbes.

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Bioremediation is the process of using naturally occurring, safe and beneficial microorganisms to degrade environmentally harmful contaminants and turn them into non-toxic compounds. The microorganisms break down most petroleum hydrocarbons and transform them into carbon dioxide (CO₂) and water. The process of bioremediation has been studied since the 1940s, and many of its uses are endorsed by the Environmental Protection Agency.

However, not all bioremediation products are alike.

Best indicators are:

- ◆ Length of time the manufacturer has been in business
 - We have a 20-year track record
 - Others have come and gone; we are still here
- ◆ Product test results
- ◆ Testimonials
- ◆ Product characteristics
 - pH-neutral products
 - readily renewable
- ◆ EPA Citizens Guide recommends bioremediation. For additional information or to obtain a copy please see <http://totalbiosolution.com/index.php/epa-bioremediation-guide>.

Advantages of using bioremediation products include:

- ◆ Bioremediation can be accomplished in place (*in situ*), thereby eliminating the hazard of “off-site” contamination caused by digging, hauling and transporting of contaminants to other areas.
- ◆ There is virtually no investment in capital equipment.
- ◆ Air quality and air pollution concerns from volatile chemical evaporation are eliminated.



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- ◆ After bioremediation is completed, the environment is virtually restored to its pristine condition.
- ◆ The process generally costs 60-70% less than other technologies.
- ◆ The process poses no health or safety risks to employees, thereby reducing insurance costs.

Most of our liquid soil products can be applied in a variety of combinations, based on the product being treated, etc. General instructions for liquid products are that one diluted gallon treats one cubic yard. Liquid products can be augmented or used in conjunction with dry product, and it is more productive to rake or till them into the soil prior to applying liquid product.

More complete information is available on product sheets at:

<http://www.totalbiosolution.com>.

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