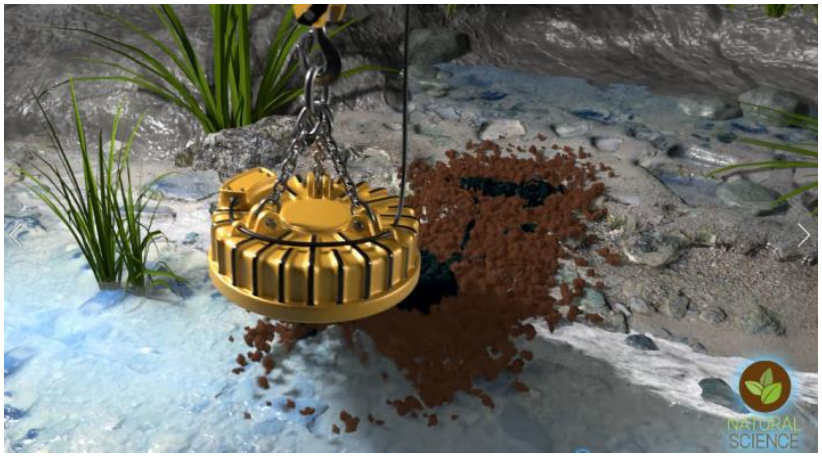
Introducing MAT for specialized oil spill remediation needs

Natural Science's MAT™ Magnetizable Absorbent Technology provides a magnetizable, hydrophobic fibrous organic product that can be manipulated magnetically to trap and remove environmental spills, including oils, fuels, chemicals and PCBs. Effective on land, water and other surfaces, this technology efficiently addresses environmental accidents, water treatment, and filtering needs across many industries.



Rendering of shoreline cleanup

Toxic spills often occur in areas and regions that do not lend themselves to easy access or to standard methods. In some locations like the Niger Delta, where one of the most devastating spills on the planet is located, access to clean water and the mangroves on which the entire ecology depends were horrifically impacted. New techniques are needed to remediate these damaging spills without further harm to the limited fresh water supply and to remove and lock away the chemicals while leaving water behind. Simple methods to retrieve and dispense of the material used in the clean-up process are also necessary. MAT fills this gap in remediation technology.

INSIDE MAT

MAT is an environmentally friendly product that absorbs spilled hydrocarbons and its by-products along with a wide range of chemicals. It is especially effective in difficult-to-treat oil spills and in a range of industrial applications.

Magnetizing the Absorbent

First the spill is seeded with a humus-type absorbent and micron-sized magnetite particles that temporarily act as small dipole magnets that attract each other. This in turn causes the fibers to which they are attached to be attracted to each other as well as to the poles of the external magnet. The saturated magnetized absorbent can then be lifted and placed over a containment vessel and released into the vessel when the magnetic field is powered off.

Nonleaching Properties

Once absorbed, the captured spilled materials degrade within the cellular structure of the MAT absorbent without leaching back into the environment even under increased external pressure.

Product Buoyancy and Retrieval

The buoyancy of the combined magnetized product is an important property that has many advantages for spills that occur on water and shorelines around the world. For example, in many shallow water spill situations, heavy hardware is either not usable or is not the best approach to the problem. Cleaning shallow waterways and marshland with the simple application of the magnetizable absorbent and a hoist- or crane-type magnet is a versatile and unique option, particularly in places where access is difficult.

Continuous Retrieval

Saturated absorbent can also be collected continuously with electromagnetic ramps. On larger water bodies and where large amounts of absorbents are used, electromagnetic ramps continuously capture and collect the spent material.

Continuous retrieval with a magnetic ramp

Product Disposal

Disposal of saturated magnetic absorbents is managed by burning in special incinerators for energy production, burying it, or placing it in landfills. The MAT absorbent is biodegradable, and the absorbed oil will not leach from within the cellulose structure of the absorbent but will instead degrade within it. In some instances, the saturated absorbent can be safely left in place.

THE MAT DIFFERENCE

Broad Application Across Challenging Situations

The ability to manipulate MAT absorbent with magnets provides for applications in confined spaces and difficult-to-reach areas and without human intervention. For example, MAT provides a huge advantage in toxic or oxygen-deficient locations that are otherwise not normally accessible or in deep wells that are used to access spills near beaches or close to water tables and aquafers. In addition, magnetized absorbents can be used to clean up and remove a wide variety of other contaminants on many other nonporous surfaces with applications across many industries.

Superior to Existing Absorbents

MAT is differentiated from available organic absorbents, which include dry coconut shell fibers, peat moss, hay, sawdust, ground corncobs, feathers and other readily available carbon-based products. While these naturally hydrophobic absorbents can be used to clean oil on the surface of the water, widespread use results in a saturated waste product being left behind. These waste products must typically be managed by hand or with other mechanical methods but cannot be easily retrieved from the water. MAT is also more effective than natural inorganic absorbents such as sand, clay and volcanic ash that can absorb several times their weight in oil. These types of absorbents, however, are less likely to be hydrophobic and will absorb water as well as oil. Finally, synthetic man-made products developed to absorb a high quantity of oil, such as polyethylene, nylon and other plastics, will generally float and are better suited for use in water environments. However, most synthetic absorbents cannot be cleaned after use and cause further environmental pollution if they are not completely removed and disposed of properly.

Efficient and Safe

Because of easy magnetic recovery, MAT is much more labor-efficient and results in much greater recovery rates. The mixture can then easily be moved by traditional magnets and deposited into a containment vessel. The ability to remotely handle MAT with magnets provides safe interaction with toxic spills.

LEARN MORE

Contact Natural Science, LLC today at 630 520 2345 to learn how MAT™ Magnetizable Absorbent Technology can be deployed in your environment to address an urgent need or become integrated into your long-term contingency planning.