Biorem Industrial Solutions

Flyer

One Planet….One Experiment

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Introduction

Biorem Solutions is a diversified environment treatment & restoration company providing customised products and turn-key solutions in India, South East Asia and Middle East.

The company's Industrial Principal in United States owns exclusive rights to global implementation of a number of unique microbial and chemical technologies, and holds controlling interests in several chemical, biotechnology and waste water equipment manufacturing corporations. Its founders and associates have a combined operational experience in 38 countries of the world.

Biorem's Agricultural partner is also based in United States with a passion for sustainable agriculture using a wealth of knowledge in biology, organic acids, carbon and humus. The company promotes diversity and biodiversity instead of chemical toxins and environmental waste.

Environmental sustainability and responsibility are good practices – ones that help companies, farmers, and communities, better manage resources into the future. The company uses biological restoration in all of its areas of operation excepting Hydrocarbons where it uses a biodegradable, (green) chemical product for breaking down hydrocarbon waste along with microbial treatment.

The process of biological restoration is achieved by using naturally occurring microbes – tiny living creatures that regulate all wild ecosystems. The Company's approach is to provide contaminated sites with microbes that naturally "eat" unwanted materials. It removes not just initial contaminants including heavy metals, organic solvents, petroleum products and acids – but also handles byproducts that are produced during a clean up process, leaving no negative residual effects.

Biorem Solutions addresses Industrial needs such as

1. Hydrocarbon Clean-up and restoration

TPH, GRO, DRO, BTEX, MTBE, PAHs and weathered paraffin products all breakdown in a series of steps to methane, and eventually to carbon dioxide and water. Different microbes and enzymes are required for each step of the breakdown process. However this all natural method requires time which sometimes is not available in cases of quick turn-around and in emergency spill cleanup.

Toxic sludges and spills that occur sometimes, requires timely and yet environmentally safe treatment, which cannot be achieved by using microbial treatment. This requires a hydrocarbon degrader, that cleans, degreases and completely eliminates petroleum product contaminants from soil, water, industrial equipment, storage facilities, and means of transportation.

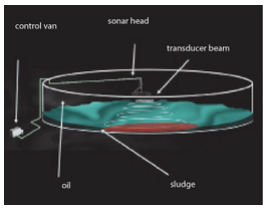
Biorem covers both ranges of products that complements each other without destroying the microbial cultures and has usage in the following industries:

1.1. Oil exploration sites (On-shore and Off-shore)

1.2. Power plant, Petrochemical, Refineries, Fertiliser plants- Turn Around, Spills, Process clean-up

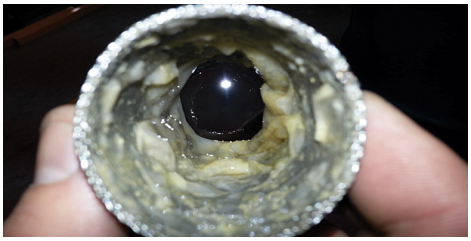
1.3. Oil storage tanks & terminals - spills & sludge clean-up

1.4. Used Oil disposal in Automotive & Industrial areas.



1.5. Naval dockyards, Airforce bases and other Military installations.

2. Process Piping clean-up - Power & Desalination, Dairy & Sugar Cane processing plants



Water in industrial operations (seawater or freshwater) is used as process water for condenser / heat exchanger or boilers. Most of the process piping in these applications are prone to scaling and hence blockages. Similarly, in Dairy and Sugar industries the piping caries Product and hence blockages and maintenance requirements are different. Biorem offers an array of custom made products.

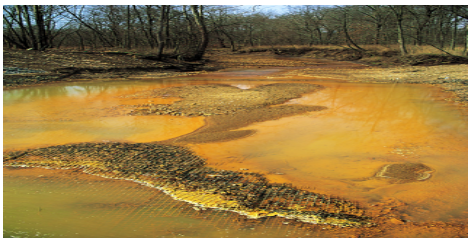
3. Degreasing and Industrial cleaning

Biorem range of products are environmentally safe, water soluble, degreasing and cleaning agents instead of solvent based environmentally damaging chemical reagents.

4. Water bodies clean up / Restoration of Lakes

Use of microbial formulations eliminates pollutants such as heavy metal, chemicals, pesticides and fertilisers, balances pH at various water depths and strengthens natural microbial populations that support and help rebuild the presence of phytoplankton (microscopic plants), zooplankton (microscopic animals), shore plants, submerged plants and floating plants providing healthy balanced environment. This removes Eutrophication hence excessive nuisance plant growth.

5. Coal mine water bodies restoration



Coal and Iron-ore mining operations impacts water streams to have a pH of 4 or lower - similar to battery acid. These mines, both active and inactive, produce piles of mine waste and turn the land into a barren terrain. The soil, the mine waste, and water run-off are often acidic and contain high levels of oxidised iron, sulphur, manganese, aluminium, and other heavy metals. Microbes in a consortium reverse damage and detoxify metals in streams where pollution has occurred.

6. Landfill clean-up - Solid Waste Management

Landfill sites receive hazardous waste which leach out toxic liquids and emanate noxious fumes. They also contain high levels of nickel, zinc, arsenic, lead, chromium and other metals. Leachate is the liquid formed when waste breaks down in the landfill and water filters through that waste. This is highly toxic and pollutes the land, ground water and water ways. At active landfills, microbial mixtures are sprayed on the accumulating landfill waste, jumpstarting degradation process.

7. Chromium contamination clean-up

Sodium chromate, chromium salts and chromium sulphate tanning powder are used in leather tanning operations. Land, soil and groundwater get contaminated over continued unregulated usage, leading to hexavalent chromium potentially affecting people. Bioremediation is the only process that can restore land and water to safely usable levels.

8. Industrial sites clean-up

Chlorinated and other complex compounds require an additional step to separate the chlorine, fluorine, etc. from the compounds. This is an anaerobic degradation step called "reductive de-chlorination". Industrial mixed waste usually includes most of chlorinated, semi-volatile and volatile compounds, as well as heavy metals including arsenic and

cyanide. There are sites where aqueous metal working fluids, bitumen (coal tar) and cyanide may also be present. Biorem can handle combinations of problems.