

BioRem-2000TM

CLEANING THE EARTH

Creating Solutions
Innovative Solutions.
CI
For Today's Businesses

ONE SPILL AT A TIME

FEATURES & BENEFITS

- ◆ Ground-breaking Microbe Technology remediates hydrocarbons into water and carbon dioxide.
- ◆ Eliminates 100% of disposal costs.
- ◆ Replaces granular absorbents, socks, pads and caustic degreasers.
- ◆ Easily applied with mops, auto floor scrubbers and degreasing equipment.
- ◆ Excellent rinseability, dries quickly and removes all oily, slick film leaving a non-slip surface.
- ◆ NSF-approved A-1, A-4 class; biodegradable with a pH of 7.
- ◆ Safe to use on any water-safe surface, including metal, concrete, plastic and rubber.
- ◆ Disposable in waste sewer drains whether or not facilities are private or public municipal pre-treatment plants.
- ◆ Listed on the EPA's National Contingency Plan ("NCP") as a bioremediation agent.
- ◆ Non-toxic, non-pathogenic and is completely harmless to human, plant, animal and marine life.
- ◆ Compatible with oil/water separators, skimming units, evaporators, polymers and more.



Reg. #123558

BIOREMEDIATION TECHNOLOGY

Bioremediation is the application of biological microbes for the clean-up of hazardous oil spills resulting in a safe, efficient and cost-effective solution. Bioremediation (Fig. 1) uses microbes, enzymes, oxygen and other nutrients to chemically transform oil into carbon dioxide and water. BioRem-2000 Surface Cleaner™ (Fig. 2) increases the surface area of the oil while the enzymes break down the contaminants into smaller molecules. The enzymes then attract the microbes (Fig. 3) and consume the oil leaving only water and carbon dioxide as by-products. Once the reaction is complete, the enzymes break free to attach to another hydrocarbon source in order to repeat the same reaction.

Fig. 1

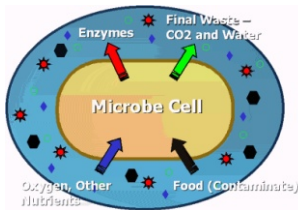


Fig. 2

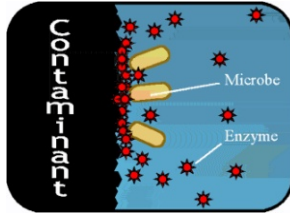
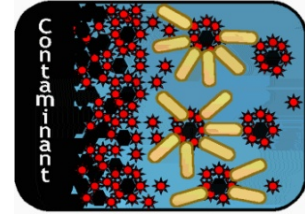


Fig. 3



SAFETY SOLUTIONS



BioRem-2000 Surface Cleaner™ has a pH of 7 and does not have any odor or contain any corrosives or butyls. It prevents slip-and-fall accidents, which are 30% of all workplace accidents, by removing the oily film and leaving surfaces dry and oil-free. BioRem-2000 Surface Cleaner™ significantly reduces the ability of flammable hydrocarbons to ignite, eliminating the VOC's and LEL's which are inert on contact.



USES & APPLICATIONS

Mopping: Fill the container with properly-diluted product. Unlike degreasers, it digests oil and grease. As a result, there will not be an oily film in the water of the mop bucket. Degreasers only emulsify the oil and grease and "re-grease" the floors leaving a slick, oily film on the surface. For best results, with oily floors or visible oil, allow the solution to remain on the surface for about 30 seconds before mopping. Liberally apply to floor with a wet mop, dip mop again into bucket and agitate solution into surface. If the grease and oil is thick, use a deck brush to scrub the solution into the surface before mopping. BioRem-2000 Surface Cleaner™ will remove the oily film and leave the surface dry and clean preventing slip-and-fall accidents.

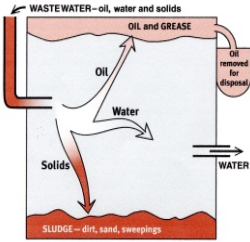


Auto Floor Scrubber: Fill scrubber with properly-diluted product. Start with a 1:25 dilution rate and adjust after testing. For best results, employ the double-scrub method. For the first auto floor scrubber pass, do not lower the squeegee. Spray solution while scrubbing. For the second pass, spray solution, scrub and lower squeegee for soiled water removal. BioRem-2000 Surface Cleaner™ will clean the auto floor scrubber by removing the oil and grease build-up in the tanks, brushes and hoses caused by emulsifying degreasers. It leaves surfaces dry and oil-free without any residue and prevents slip-and-fall accidents.

Degreasing: Fill container with properly-diluted product. The dilution rate may be determined if the operator will be using rags to clean (stronger), scrub brush (medium) or rinsing with a power washer (weaker). When cleaning heavy oil/grease deposits, allow product to soak for 1-2 minutes before removing. Heavy deposits of synthetic grease may require additional dwell time. BioRem-2000 Surface Cleaner™ will remove the oily film leaving the surface dry and clean, unlike degreasers which only re-deposit or "re-grease" the surface with oil. It is safe for any water-safe surface including metals, rubber, plastic and painted surfaces.

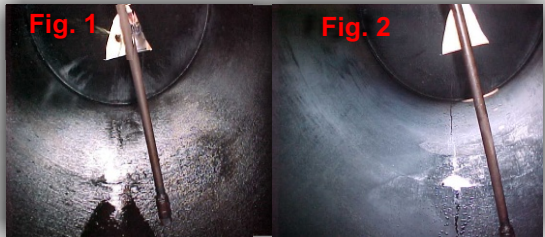


USES & APPLICATIONS



Oil/Water Separators ("OWS"): BioRem-2000 Surface Cleaner™ improves OWS operations and reduces costs and compliance issues. Conventional degreasers emulsify oil in waste water and make OWS's ineffective allowing oil to bypass the collection system straight to the sewer. Additionally, it digests sludge and petroleum content suspended or dissolved in the OWS waste water. Facilities using BioRem-2000 Surface Cleaner™ have eliminated waste water violations and have reported reducing their sludge petroleum content by more than 80 percent.

Soil Remediation: BioRem-2000 Surface Cleaner™ can be applied to small, topical spills of hydrocarbons on soil and gravel areas. It can be applied by spraying directly onto the surface of the soil or gravel. Tilling the soil and re-spraying provides an even distribution of microbes throughout the soil, as well as providing aeration (oxygen) for the microbes. Repeated tilling accelerates the biological degradation of the soil contaminants.



Fuel Remediation: In Figure 1, there is shown a 1,000 gallon underground fuel storage tank containing jet fuel residue and flammable vapors. Before this tank could be dismantled with cutting torches, the remaining fuel needed to be neutralized. Two gallons of product were applied and circulated throughout the tank. In Figure 2, the remaining jet fuel was remediated, rendering the fuel non-flammable and neutralizing any flammable vapors.

DILUTION SOLUTIONS

BioRem-2000 Surface Cleaner™ is highly concentrated and works best when properly-diluted. We offer a variety of proportioner systems for drums and totes. The drum proportioner automatically mixes water with BioRem-2000 Surface Cleaner™ precisely to the prescribed ratio and is capable of being wall-mounted. The tote-dispensing system is designed for quick dispensing in high-volume environments. The diluted solution can be dispensed into any container (auto scrubber, mop bucket, buddy jugs, etc.). Manual mixing of concentrates with water is time-consuming and imprecise. Automatic dilution with the dispenser takes the variability out of the cleaning system, so the concentrated cleaning product consistently delivers maximum performance.



Drum/Tote System

Two-Tote System

Hydrocarbon Degrade Chart

Crude Oil	Gasoline	Diesel Fuel
Kerosene	Fuel Oils	Jet Fuel
Animal Oils	Motor Oil	Anti-Freeze
Skydrol	Lubricating Oil	Grease/Tars
Vegetable Oils	Hydraulic	Cutting Fluids
Glycols	Carbon Black	ATF

Dilution Chart

Applications & Ratios	Heavy Duty	Medium Duty	Light Duty
Floor Scrubber	1:20	1:30	1:40
Mopping	1:5	1:10	1:15
Degreasing	1:2	1:4	1:8

Item Number	Unit Size	Unit Weight
8008-005	5 gal.	45 lbs.
8008-015	15 gal.	145 lbs.
8008-055	55 gal.	540 lbs.
8008-275	275 gal.	2501 lbs.

Parts Washing Solutions

BioRem-2000 PARTS CLEANER LIQUID™

- ◆ A fast-acting, microbe-powered formula (liquid) designed for all manual dip tanks and pump-circulating fluid parts' washers.
- ◆ Attacks and digests grease, cutting fluids, oils, soils and baked-on carbons.
- ◆ Contains inhibitors for superior rust and corrosion prevention.
- ◆ Dilute 10:1 with water.
- ◆ Non-toxic, non-caustic, non-flammable and non-hazardous.
- ◆ Safe on most washable surfaces as well as painted surfaces, plastic and rubber parts.
- ◆ Nano Technology cleans by penetrating the soil and oil into small particles where they are easily digested (oil) or rinsed away (soil) from the surface.
- ◆ Available in 3 formulas: general use, copper/brass and aluminum.



Item Number	Product	Unit Size
8003-005	General Use	5 gal.
8003-055	General Use	55 gal.
8004-005	Aluminum	5 gal.
8004-055	Aluminum	55 gal.
8006-005	Copper/Brass	5 gal.
8006-055	Copper/Brass	55 gal.

Parts Washing Solutions

BioRem-2000 PARTS CLEANER POWDER™

- ◆ A fast-acting, microbe-powered formula (powder) ideal for all jet-wash automatic, cabinet-type parts' washers.
- ◆ Attacks and digests grease, cutting fluids, oils, soils and baked-on carbons.
- ◆ Contains inhibitors for superior rust and corrosion prevention.
- ◆ Safe on most washable surfaces as well as painted surfaces, plastic and rubber parts.
- ◆ Non-toxic, non-caustic, non-flammable and non-hazardous.
- ◆ Nano Technology cleans by penetrating the soil and oil into small particles where they are easily digested (oil) or rinsed away (soil) from the surface.
- ◆ 16 ounces per 5 gallons of water.



Item Number	Unit Size
8002-005	5 gal.
8002-055	55 gal.

Water Treatment Solutions

Most of our products are designed to solve a specific problem or task. In designing a product, specific microbes are selected based upon their natural abilities to degrade and digest a particular organic waste. Although we offer a full array of standardized solutions, we also offer customized products for more complex waste water treatment problems. Even if we do not have a standard formulation for your problem, we can develop the best tailor-made solution for your specific needs. We specialize in the following waste water solutions:

- ◆ **BioRem-2000 Sludge™** - Significantly reduces sludge, BOD's and odors in WWTP's. (55 gal. 8601-055)
- ◆ **BioRem-2000 FOG™** - Digests fats, oils and greases ("FOG") and also reduces BOD levels. (55 gal. 8602-055)
- ◆ **BioRem-2000 Odor Neutralizer™** - Neutralizes (does not mask) odors in various settings. (55 gal. 8607-055)
- ◆ **BioRem-2000 H2S™** - Neutralizes H2S by reducing the population of H2S-forming bacteria. (55 gal. 8603-055)
- ◆ **BioRem-2000 Phosphorous™** - Reduces levels without increasing the amount of sludge. (55 gal. 8604-055)
- ◆ **BioRem-2000 NH3™** - Dramatically reduces levels without increasing the amount of sludge. (55 gal. 8605-055)
- ◆ **BioRem-2000 Pond Conditioner™** - Eliminates algae in ponds and lagoons - naturally. (55 gal. 8701-004)

BioRem-2000 Oil Digester™

BioRem-2000 Oil Digester™ is a complete bioremediation system that provides a safe and effective low cost alternative to off-site disposal of hydrocarbon-contaminated soils and water.

It is a mixture of naturally-occurring bacteria and enzymes coupled with adapted microbial nutrients used to bioremediate hydrocarbons in soil and ground-water. The biodegradation of petroleum-based compounds can be accomplished both in oxygen-rich (aerobic) and in oxygen-poor (anaerobic) environments.

The microbes bond to petroleum molecules and begin secreting a rich mixture of extracellular enzymes capable of initiating and catalyzing the breakdown of a wide variety of petroleum compounds into more water-soluble, digestible materials. These materials are subsequently absorbed through the microbes' cell wall and digested further into carbon dioxide and water.

BioRem-2000 Oil Digester™ contains organic Nano Technology to break down the adsorption of petroleum onto soil particles. This allows the microbes to move more freely through the soil pores where a less mobile microbial community lives. The Nano Technology breaks down macroscopic clumps of petroleum into smaller units which increases the surface area and also helps the microbes to migrate through the soil matrix more easily.

BioRem-2000 Oil Digester™ is capable of remediating BTEX, Naphthalene, MTBE, coal tar, and other hydrocarbon-based contamination.

