



Safe and Effective Hydrocarbon Cleaning Solution



Microbial Remediation

A major problem facing our nation today, in fact the world is one of misplaced hydrocarbons. These are oils, fats, fuels and other related substances which have escaped their intended use and are now contaminating the home, workplace and the environment. The mildest form would be oil spots on your driveway, while a problem of epic proportion would be an oceanic oil spill.

The heart of the microbial remediation process offered by Ryno Tools Supply Co. products is a microbe that eats oil. The Microbes are cultivated, not genetically engineered, to eat oil and other organic substances such as paraffin, grease, creosote and aromatic hydrocarbons. They convert oil, gasoline and diesel fuel to harmless, natural occurring products, environmentally safe for humans, pets, plant and aquatic life.

THE MICROBIAL CLEANING PROCESS

- NATURAL PROCESS**
- EXCEPTIONAL CLEANER**
- PROBLEM SPECIFIC**
- BREAKS DOWN OIL**
- MICROBES THAT EAT OIL AND GREASE**
- BIOCATALYST WAKES UP MICROBE**
- NUTRIENTS ACCELERATE REPRODUCTION**
- LIVING ORGANISM**
- Ph RANGE 4 TO 11**
- WORK FROM 40 TO 120 F.**
- WATER PROVIDES OXYGEN**



The Microbial cleaning process is specifically aimed at the cleaning and remediating of unwanted hydrocarbons. These may be either in the form of petroleum based hydrocarbons, or fats and greases. We have developed specific products to work in the various areas. However, the process behind all the products is similar.

The microbial cleanser is a two part system, a liquid delivery agent, and powdered microbes. The liquid is comprised of three major components. The first is an emulsifier which breaks the hydrocarbon down to molecular size. This is done in order to achieve the maximum surface area of the hydrocarbon to allow the microbes the greatest area of activity. In breaking down the fats, oils and greases, the cleaning process begins. The second component of the liquid is a biocatalyst which literally wakes up the microbes and stimulates their feeding and reproductive cycle. The microbes are stored in a dormant phase until ready for use, which gives an indefinite shelf life to the product. Once the microbes come into contact with the liquid they awaken from the dormant state and begin to feed. The third component is a blend of nutrients to insure that the bugs begin their

The microbes, the second part of the system are the simplest life form. They are single celled bacteria. Even though they are simple, they have devised a system to locate food and to distinguish one item from another. Different bacteria have different foods of choice. The strains we have selected for our products have been chosen for their affinity to the various forms of hydrocarbons we want to clean and remediate. These are cultured microbes which are gathered from around the world. They are not genetically engineered. They are put into a dormant state and impregnated on a carrier. This allows them to stay alive, but require no food for extended periods of time. The microbes have been observed to live for several years in this state. These microbes are living creatures and as with any living creature, there are precautions which must be addressed. They will not survive an excessive amount of bleach or bactericide. They can survive in a pH range of 4 to 11.



They must not be subjected to a temperature higher than 120 degrees F. The lower the temperature the slower they work, until you reach about 40 degrees F. Below this point they essentially go dormant again. Freezing will not kill the microbes. A common rule of thumb is that if you could work in the environment, so can they.

Just like humans, they must have water to work. The water provides oxygen as well as media for movement. They can not work in pure oil as they will die for lack of oxygen. This is the reason the liquid part of our product is so important. It provides all the necessary ingredients for the proper environment for the microbes to feed and multiply.

Once the food supply is depleted, the microbes will attack and ingest each other as long as water is present. If no water is available, the microbes will return to a dormant state and await a supply of water and food.

NFPA/HMIS RATINGS

Health - 0, Flammability - 0, Reactivity - 0

PATENTED FORMULA



FOR SOIL

General Instructions

- 1. Determine the type and amount of contamination by laboratory analysis. The primary information needed is the TPH (Total Parts Hydrocarbon.) A profile of the contaminated area should be made to ascertain the actual depth of the contamination. The procedure which follows is for contamination which is less than three feet in depth and with contamination levels less than 10,000 ppm. This is considered surface contamination. For treatment of soil which is contaminated to a depth greater than three feet or with concentrations greater than 10,000 ppm, please consult Ryno Tools Supply Co.**
- 2. Check the pH of the soil to make sure it falls within the acceptable range of 4 to 11 for the survival of the Microbes. If the pH falls outside this range you will have to pre-treat the soil to bring the pH into the desired range.**
- 3. Mix the biocatalyst solution with the Microbes and allow to sit for 24 hours. In an emergency situation, you may use the solution after only two hours.**
- 4. If the soil is to be treated in place, then plow or till the soil to a depth of approximately 6 inches. This will break any crust which has formed and allow the solution to quickly penetrate the contaminated area. If the soil is to be moved to another area for treatment, then spread the soil over a layer of plastic, to a depth of no more than 18 inches.**
- 5. Spray the KT SOIL mixture on the soil at an approximate rate of 1/3 gallon per square yard.**
- 6. Apply water to the treated area until the soil has reached a water saturation of 30% to 60%. Do not allow soil to dry for an entire 28 days.**
- 7. Repeat steps 5 and 6 on the third day and on the tenth day.**
- 8. A TPH test should be made after 14 days to determine the level of activity. If within 28 days the contamination has not reached the desired level, another application may be required.**



HYDROCARBONS IN WATER

1. Determine the type and amount of contamination by lab tests.
2. Determine the presence of other contaminants harmful to the Microbes by lab tests.
3. Mix the biocatalyst solution with the microbes and allow to sit 24 hours if possible.
4. Use approximately 1 gallon of microbial cleaner for every 4 gallons of hydrocarbons.
5. Mix the microbial cleaner solution with the hydrocarbons and water, and stir the mixture.
6. Use a pump which pulls for the bottom of the pit or pond and sprays the discharge back to the surface.
7. Use the pump to spray down the walls of the pit or the banks of the pond and allow the discharge back to the surface.
8. At the end of 28 days, use EPA test 8015 to test for hydrocarbons.
If acceptable levels have not been reached, repeat steps 4 through 8 until desired results are obtained.



Product Pricing:

One Gallon Unit: \$65.00

5 Gallon Unit: \$300.00

55 Gallon Unit: \$ 3,000.00

Ordering Instructions: Contact Ryan Donaldson 866-870-7966

Cards Accepted: Visa, Master Card, Amex.