

OIL GATOR™

From Mississippi, USA

MICROBIAL BIOREMEDIATION PRODUCT



Brought to you by

For more information about **OIL GATOR** please
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GATOR INTERNATIONAL

It is with great pride and pleasure, that we present the GATOR products distributed by our company.

The development of **OIL GATOR** began in 1988 in Jackson, Mississippi. The intent was to develop a hydrocarbon absorbent which was both incinerable and biodegradable. Ted Dickerson, President of Product Services Company sourced raw materials from the Mississippi cotton industry. While testing this cotton based agricultural waste material, it was determined that adding ammonia would result in a small amount of ammonium sulphate being created which would act as a fire retardant and make this absorbent material safe to handle.

Absorption characteristics of this new material proved to be exceptional, up to 10 times more effective than calcined clay. The product also exhibited a tremendous wicking action which allows it to hold on to hydrocarbons and essentially eliminate leaching. Testing revealed that even if the material was saturated with water it would actually release the water in order to absorb hydrocarbons.

Testing of **OIL GATOR's** unique properties carried on during which time it was determined that an indigenous micro-organism existed within OIL GATOR's cellulose fibers. The ammonium sulphate in the product acted as a nutrient to enhance the growth of the organisms with the hydrocarbons supplying a food source. A program was launched to improve the preservation of the indigenous organisms throughout the treatment process and to improve the remediating abilities of the product.

The result of this program is a Patented product, **OIL GATOR**, which is 100% biodegradable, has unequalled absorption and encapsulation properties, and provides rapid degradation of hydrocarbons in liquid form or in soils.



OIL GATOR

"MICROBIAL BIOREMEDIATION PRODUCT"

Improve the environment with the all natural cellulosic fiber hydrocarbon bioremediation absorbent.

Not OSHA or WHMIS Regulated

Reduces Costs (in situ)

100% Cellulose

100% Biodegradable

100% Natural Bacteria

Passed Leachate Test (EPA)

Lightweight

Non Toxic

Incinerable (7,000 BTU, 3% ash)

Non-Abrasive

Encapsulates

User Friendly

Vapour suppressant

PCB & PCP tested

Creosote tested

Remember to dispose of all materials in accordance with Local environmental regulations.



OIL GATOR

***HYDROCARBONS** which may be Bioremediated with OIL GATOR.

- *Acetone
- *Acetonitrile
- *Amylacetate
- *Benzene
- *Butanol
- *2-Butanone
- Bromodichloromethane
- Bromoform
- *Bunker C
- *Canola Oil
- *Carbon Disulfide
- Carbon Tetrachloride
- Chloroform
- Chloromethane
- Chlorobenzene
- *Corn Oil
- *Cutting Oils
- Cyclohexane
- Dichloromethane
- Dichlorobenzene
- 1,2-Dichloroethane
- *Diesel Fuels
- *Ethanol
- Ethylbenzene
- *Ethyl Ether
- Ethylene Glycol
- *Gasoline
- *Varsol
- *Heptane
- *Hexane
- Hexachlorobenzene
- *Hexene
- *Isobutanol
- *Isoprene
- *Jet Fuels
- *Kerosene
- *Methanol
- MethyleneChloride
- MethylethylKetone
- Methylphenol
- *Motor Oil
- *Naphthalene
- *2-Nitroaniline
- Nitrobenzene
- *Oil Base Paints
- *Oil Base Fluids
- *Oil base Ink
- *Paraffin Oil
- *Pentane
- *Pentachlorophenol
- Phenol
- *Propanol
- *Scintillation Liquid
- *Silicon Oils
- Styrene
- Tetrachloroethane
- Tetrachloroethylene
- *Tetrahydrofuran
- *Toluene
- Trichloroethylene
- Trichlorophenol
- *Vinyl Acetate
- Vinyl Chloride
- Xylenes

AT PLASTICS

VINYL ACETATE BIOREMEDIATION PROJECT

PROJECT DESCRIPTION: August 11, 1994, KISEKI NORTHWEST was approached by Bob Gates of **AT PLASTICS** to sample an area of soil that was contaminated with vinyl acetate. The contamination was the result of a spill that had occurred previous to this date. Our role in this project was to determine the vinyl acetate contamination level in the soil before and after the application of the bioremediation product known as **OIL GATOR**.

SCOPE: Kiseki Northwest was expected to obtain a representative sample of the contaminated area so that the appropriate analysis could be done to determine the level of vinyl acetate contamination before the application of **OIL GATOR**. Kiseki was to then be responsible for obtaining another sample of the same area after the bioremediation product completed its task. The analytical work was performed by C & G Laboratory in Edmonton, Alberta.

FIELD WORK: On August 11, 1994, Kiseki field personnel visited the **AT PLASTICS** site to obtain a representative sample of the contaminated vinyl acetate area. A total of 6 sampling points were used. An effort was made to take both subsurface and surface samples so that the most representative sample was obtained. This sample was then taken immediately to C & G Laboratories for the vinyl acetate analysis. This same procedure was used on October 21, 1994 to obtain the second set of analytical results for the vinyl acetate concentration.

TEST RESULTS: The following analytical results were obtained:

<u>Date:</u>	<u>Vinyl Acetate Concentration</u>
August 13, 1994	3152.35 ppm
October 22, 1994	Non Detectable

CONCLUSION AND RECOMMENDATIONS: Based on the above results, the bioremediation product "OIL GATOR" seemed to complete what it was intended to do. It is difficult to say if the bioremediation product was responsible for all the remediation but the end result was a decontaminated area.

CUSTOMER LABORATORY REPORTS AVAILABLE UPON REQUEST.

I.C.B.C. - INSURANCE CORP OF BC

DIESEL FUEL - BIOREMEDIATION PROJECT

BACKGROUND INFORMATION: June 3, 1998 a semi truck accident resulted in 300 gallons of diesel fuel being spilt into the ditch along the east side of Highway 97 just north of Williams Lake, BC. Central Cariboo Environmental blended 50 bags of OIL GATOR into the site according to the manufactures protocol. The area was tilled to ensure complete encapsulation of the spilt diesel fuel.

Rodger Hamilton, Environmental Protection Officer, with the Ministry of Environment, Lands and Parks, Williams Lake, BC. established a collection system below the site. The collection point was monitored and no hydrocarbons leached from the treated area.

CONTAMINANTS OF CONCERN AND REGULATORY FRAMEWORK: With diesel fuel the primary contaminants of concern are Light and Heavy Extractable Petroleum Hydrocarbons (LEPH and HEPH), mineral, oil & grease (MOG), and polycyclic aromatic hydrocarbons (PAHs). Accordingly, the BC Ministry of Environment, Lands and Parks (BCELP) Contaminated Sites Regulation (CSR BC Reg. 375/96) and the BCELP Special Waste Regulation BC Reg. 63/88 including amendments up to BC Reg 52/95 establish the acceptable level of substances such as heavy metals, light and heavy extractable petroleum hydrocarbons (LEPH & HEPH) and polycyclic aromatic hydrocarbons (PAHs) with specific "generic" numerical criteria based on land use.

COLLECTION OF SOIL AND WATER SAMPLES: On October 7, 1998, 120 days after the application of OIL GATOR, Levelton Engineering Ltd. was hired by ICBC to collect both soil and water samples from the site. A total of 10 samples were collected into pre-sterilized 125 ml glass jars with teflon lids. A water sample was also collected in a 1 litre glass bottle. The soil samples were screened in the field for total organic vapour (TOV) concentrations with a gas detector (RK 1 Eagle). The soil and water samples were then submitted to Levelton's analytical laboratory for analyses of LEPH and HEPH.

ANALYTICAL RESULTS: *Levelton's laboratory analyzed the soil and water samples collected by Levelton field staff, for concentrations of LEPH and HEPH. These contaminants were NOT DETECTED in any of the soil or water samples. This site now complies with all applicable BCELP standards. (Lab results available upon request)*

CONCLUSIONS: As OIL GATOR was applied immediately, the spilt hydrocarbon (diesel fuel) was immediately encapsulated and there was no risk of any leaching or secondary contamination. OIL GATOR, Microbial Bioremediation Product then, as stated in the USA Patent, bioremediated the absorbed hydrocarbon (diesel fuel) into harmless carbon dioxide (CO₂) and water (H₂O).

Cleanup of this site was accomplished both quickly and cost efficiently without any risk of secondary contamination from leaching of the split diesel fuel.

CUSTOMER LABORATORY REPORTS AVAILABLE UPON REQUEST

MOHAWK REFINERY

HEAVY SLUDGE - BIOREMEDIATION PROJECT

DATE **ACTION TAKEN**

MAY 1996

West Coast Environmental was contacted by **MOHAWK OIL** to see if Oil Gator could help with a very old sludge which had accumulated in an area around their storage tanks. The old sludge was like gum. **MOHAWK** was very pleased with initial tests which showed that OIL GATOR could absorb the sludge. **MOHAWK ASKED "WILL OIL GATOR BIOREMEDIATE THIS SLUDGE?"** No guarantees were made as the manufacture informed us that no one had ever tried to bioremediate a sludge this heavy and old before. Even knowing this, **MOHAWK OIL** agreed to purchase a pallet of product from West Coast and conduct a "test bio-pile"

MAY 1996

West Coast mixed 1 pallet (55 bags) of OIL GATOR into the area which was the most severely contaminated. It was clearly evident by the color of the mixture, (see pictures) that less than the manufactures protocol amount of OIL GATOR had been used. A sample of the untreated sludge was taken for later TPH testing.

JULY 18, 1996

Samples of the treated sludge were taken and sent to Analytical Service Laboratories Ltd. together with the original sample taken in May/96.

ASL's test results proved that the sludge which had been treated with OIL GATOR HAD A 77% REDUCTION IN HYDROCARBON CONTENT AFTER JUST 8 WEEKS.

CUSTOMER LAB REPORTS AVAILABLE UPON REQUEST.

POPE & TALBOT LTD

GRANO CREEK REFUELING DEPOT BIOREMEDIATION REPORT

DATE

ACTION TAKEN

JUNE 17, 1997 Mr. Frans Frake of Canada Safety Equipment attended Grano Creek with Mr. Hak Nielsen, Woods Superintendent for Pope & Talbot. The Grano Creek location was chosen as it had been a remote refueling site which had been decommissioned, however it still had some residual hydrocarbon contamination. A previous cleanup of this location had been unsuccessful. The site was viewed and photographed.

Four (4) soil samples were taken and sent to Enviro-Test Laboratories for independent analysis. Testing indicated hydrocarbon contamination levels of 10,800 ppm, 10,900 ppm, 14,600 ppm and 24,800 ppm.

JULY 16, 1997 Mr. Shawn Mamchur of Pope & Talbot and Mr. Frans Frake, with the assistance of a backhoe, moved the contaminated soil from these 4 sites and created a bio-pile. It was found that the largest volume of soil (60-70%) was from the # 2 sample which had been tested at 24,800 ppm hydrocarbon. According to the manufacturers protocol, nine (9) bags of OIL GATOR were blended with the 8-9 cubic yards of contaminated soil. Moisture was also applied as per protocol.

JULY 29, 1997 Canada Safety revisited the site and added moisture.

SEPT 15, 1997 Canada Safety revisited the site and added moisture.

OCT 7, 1997 Canada Safety returned to the site and took final soil samples. As only one lab test was to be done the following recognized method was used. Two cups of soil were taken from each of 15 different locations within the bio-pile. These were thoroughly mixed together and a sample of this soil was then sent to Enviro-Test Laboratories for analysis.

OCT 11, 1997 Enviro-Test Laboratories reported that the hydrocarbon content of this site had been reduced to 269 ppm.

CUSTOMER LABORATORY REPORTS AVAILABLE UPON REQUEST

WEST KOOTENAY POWER

PCB CONTAMINATED TRANSFORMER OIL BIOREMEDIATION REPORT

INTRODUCTION: The purpose of this project was to prove to West Kootenay Power that OIL GATOR would bioremediate transformer oil contaminated with PCB's. PCB's are poly-chlorinated biphenyl's and research has proven that exposure to them is both *hazardous* to humans and the environment. Environment Canada and other regulatory bodies have passed legislation governing the handling, transportation and disposal of PCB's which has led to increased costs.

PROCEDURE: In mid-April 1995, one gallon (4 liters) of West Kootenay Power waste transformer oil containing 920 PPM PCB's was encapsulated in 7 lbs. (3 kgs) of OIL GATOR. Moisture was applied to the mixture from a "pure water" dispenser supplied by West Kootenay Power. The mixture was then left unattended, with no further oxygenation. On June 30, 1995, 60 days after starting this experiment a sample was sent to ASL Analytical Service Laboratories Ltd. for analysis. A further sample was taken 60 days later on August 29, 1995. At approximately 180 days from inception of this experiment the residue was tested by ASL Laboratory one final time. This entire experiment was completed at the West Kootenay Power PCB storage facility in Trail, BC. Canada.

TESTS: The initial test was completed by West Kootenay Power. All subsequent tests were completed by ASL Analytical Service Laboratories Ltd., Vancouver, BC. Canada.

4/95	Initial test	
	PCB content	920 PPM
	Transformer OIL content	1,000,000 TPH
6/95	60 Day ASL Lab Test # F1725	
	PCB content	623 PPM
8/95	120 Day ASL Lab Test # F3259	
	PCB content	159 PPM
	Transformer OIL content	286,000 TPH

CUSTOMER LAB REPORTS AVAILABLE UPON REQUEST.