

Advanced Bioremediation Technology for Elimination of Fumes and Fuel Oil Spills

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Biodispersion Technology

(US Pat: 6,267,888, Canadian Patent: 2338249)

- Biodispersion

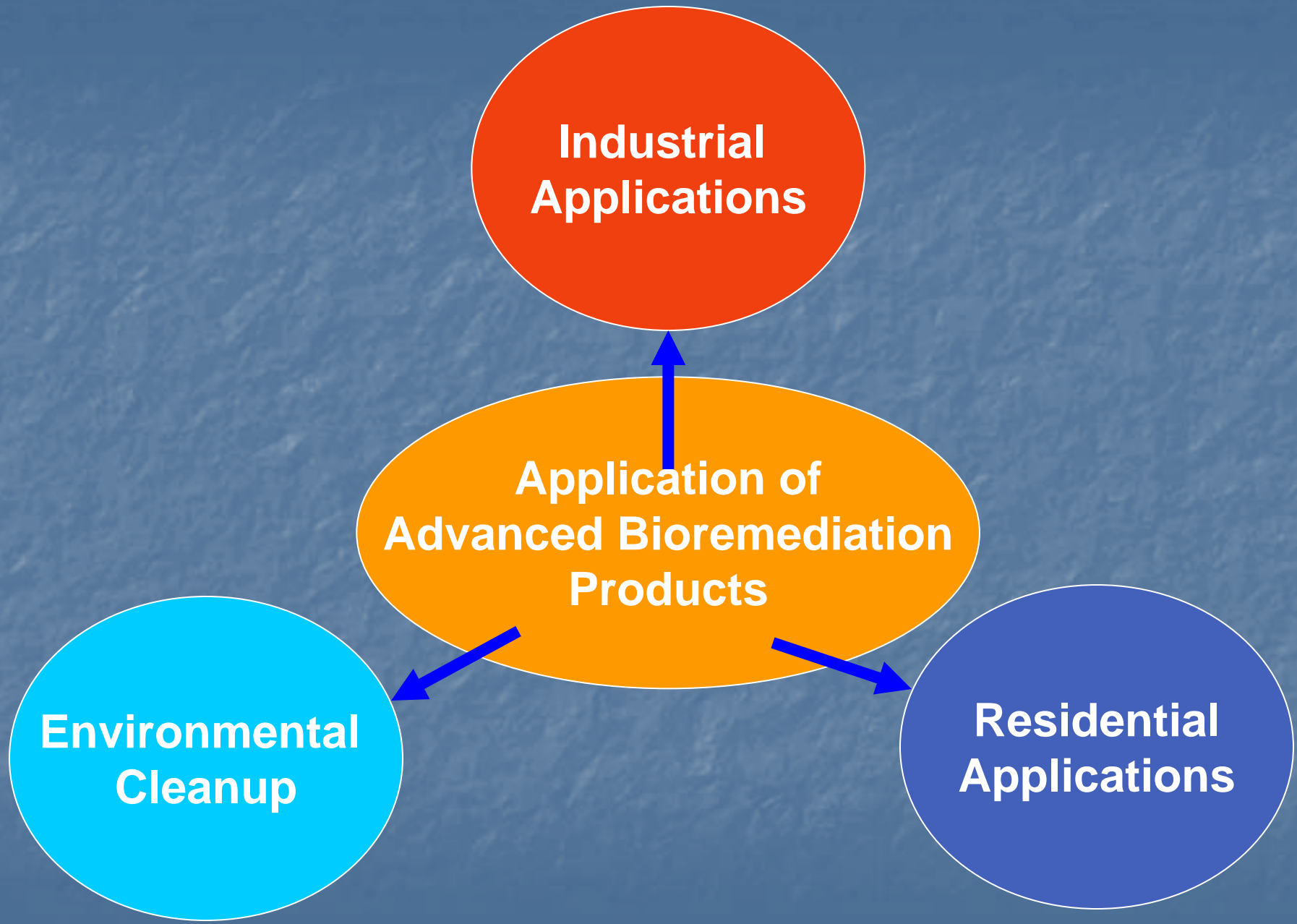
- Oil and water are not miscible (as we all know)
 - In this process, naturally occurring bacteria in the product disperse oil into smaller droplets for their consumption

- Bioutilization

- Final consumption of oil to break it down into carbon dioxide and water
- No residue for disposal

Advantages of Advanced Bioremediation Technology

- Bioremediation offers a complete on-site solution
 - Does not require an extensive infrastructure setup
 - Low energy solution
 - On-site bioremediation
 - There is no residue for disposal
 - Bioremediation is also a 24/7 process
 - Bacteria work day and night with no rest!! (☺)



Products

HydroRemed

SpillRemed (Marine)

VaporRemed

**Biodispersion
Technology**

**SpillRemed
(Industrial)**

AgroRemed

BilgeRemed

VaporRemed[®]

(Fuel oil fumes gone in minutes)

VaporRemed[®]

- Effective on concrete, wood and other surfaces
- Freeze resistant VaporRemed has been designed to meet the needs of customers in Northeast, especially during winter
- A useful tool for service managers
- Functions as a fire preventative as hazardous fumes are removed
- Used as a first response tool after any fuel oil spill

Features and benefits of VaporRemed[®]

- Fumes produced by fuel oil spills are removed almost instantly
- Reduces VOC's (Volatile organic Compounds) in work area effectively
- Simple to use
- Quick action
- Green and clean
- Shelf life – 2 years

Mechanism of VaporRemed

- VaporRemed is an *oleophilic* suspension of bacteria and not *aqueous* suspension
- VaporRemed reaches the fuel oil trapped in the pores almost instantly
- Trapped oil is treated at source thus the fumes are gone almost instantly

Applications of VaporRemed[®]

Heating oil is spilled on the floor. Fumes were eliminated almost instantly. The stains were *wiped* clean.



- Fumes were removed almost instantly
- Stains (shown in the photograph) on the floor were *wiped* clean after spray
- Removes stains on the floor due to spills of oil

Applications (contd.)



- Removes fumes from wood, carpets, upholstery, fabrics.

Applications (Contd.)



A homeowner in Maryland

- Pets affected by harmful effects of fumes recover after using VaporRemed
- Removes fumes and stains from overalls and fabrics by pre-treating them with VaporRemed followed by machine wash. This was used by a customer in Connecticut.
- Cleans residual oil for repainting the surface or re-carpeting

Available Packaging



Quarts have been discontinued.



Our Customers in Maryland

- Southern Maryland Oil
- Griffith Energy Services
- Carroll Independent Fuel
- Besche Oil
- A. C. & T Oil Inc
- Hein Bros.
- Tevis Oil
- Parker Fuel Inc.



Seal of the state of Maryland

Case Studies

- An HVAC contractor in Ohio had a spill during replacement of burners
 - Fumes were persistent, used VaporRemed as no other product worked
- Fumes were removed instantly
- The basement was sealed after 3 months
- TPH of soil was 5 ppm at the time of disposal



Case Studies (Continued)

- Two days before Christmas in 2005, there was a spill from a heating oil tank in a Sunday school room in a Church
 - Southern Maryland Oil had VaporRemed in stock and they sprayed as soon as mopping of oil was completed
 - Fumes had gone before the end of the day
 - School functioned from next day!!!

Case Studies

- Besche Oil had a couple minor spills in the customers residence
 - Application of VaporRemed removed the fumes, but some lingering smell continued
 - We visited two of the residences that were affected
 - Examination showed that the bicycle tires dissolved due to heating oil the emanated rubber odor
 - Once these were removed, the homes were free from any lingering odors

Case Studies

- Home owner in Ohio called on 4th July,06
- Recently purchased home was reeking with fumes
- VaporRemed was effective only for short time
- He cut open basement and found heating oil from an earlier spill
- Jeff and his man Friday VaporRemed cleaned up the spill with no complaints
- An emergency response !!



Case Studies

- Recently at a gas station in Cecil County, MD produced strong fumes from the tank pit area
 - Soil was impacted but the ground water was not
- Two stage approach has been recommended
 - Eliminate fumes from the site with VaporRemed
 - Use AgroRemed for cleanup of contaminated soil after characterizing the level of contamination
 - TPH values in soil
 - Depth of impacted soil
 - Determine the volume of AgroRemed needed
 - Mode of application
- Project is in progress

Testimonials

- Gnanu:

Greetings - and thank you for your immediate response in sending the VaporRemed. We recently converted our oil boiler to gas and the heating crew could not remove the half-full, 250-gallon oil tank until one week later. Hence, we had an open fuel oil tank (the pipes were removed) and strong oil fumes inside our home. As a result, our dog and cat became ill within a few hours. Upon receiving and spraying the VaporRemed, the fumes quickly disappeared and the animals recovered. After the fuel oil tank was removed, we sprayed a few final applications of VaporRemed and now, everyone in the household is breathing happily and without any adverse effects ... thanks for creating such an amazing product!

Denise, Maryland

- Satya,

I used your product on the affected area(fuel oil spill in the basement) and I am happy to say there is now no trace of odour, This is an excellent product. I had nearly given up on this problem and was very fortunate in contacting your company. Many many thanks. Yours Sincerely, Jim Mulgrew

AgroRemed

Cleanup of Petroleum Contaminated Soils

Features and benefits of AgroRemed for Contaminated Soils

- Reduces TPH of contaminated soils by more than 90% within three weeks
- Easy to use
- Quick action
- Generally a One Time Application (GOTA)
- 1 gallon treats about 20 sft of contaminated soil
- Non invasive (environmentalists in Brazil loved that!!!)
- Shelf life – 2 years

Applications of AgroRemed

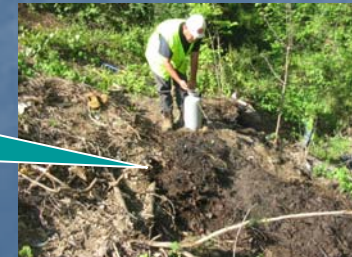
Reduces Petroleum contaminated soils to less than 200 ppm in 3 weeks



Restoration of grass after an oil spill



Restoration without excavation (non-invasive)



Applications of AgroRemed (contd.)

- TPH in heavily contaminated soils, 70, 000 ppm reduced to less than 200 ppm in 3 weeks.
- Works on weathered oils including
 - Fuel oil
 - Transformer
 - #6 heavy fuel oil
 - Hydraulic oil

Available Packaging

1 Gal, 5 Gal and 55 Gallons



Our Customers

- A 2 Z Environmental Co., MD
- Nutshell Environmental Inc., MD
- GEC Environmental Contracting, VA
- McCallum Testing Laboratory, VA
- IMS Environmental Inc., VA
- TEEM Environmental, PA
- PMK Group, NJ

Other Bioremediation Products

- **HydroRemed:** For treatment of free product in groundwater
- **SpillRemed (Industrial):** Industrial applications for on-site remediation of oily wastes and over flow spills
- **SpillRemed (Marine)[®]:** For open water spills and shore line cleanup
- **BilgeRemed:** For shipboard treatment of oily bilge water



Port Maintenance



Airports



Shipping

Industrial Applications of Bioremediation products



Marinas



Oil Terminals



Offshore Platform



Metal Recycling

Port Maintenance and Airports

- **SpillRemed (Industrial)**
 - Oil water separators
 - Fuel over flows
 - Oil retention ponds
- **AgroRemed**
 - Spills on soil



- **Port Maintenance**
- **Airports**
- **Metal recycling plants**

Marine applications

- **SpillRemed (Marine)**

- For marinas
- Open water spills
- Offshore oil rigs

- **BilgeRemed**

- For treatment of oily bilge in ships and boats

- **VaporRemed**

- For cabin room fumes



- Ships and boats
- Marinas
- Offshore oil rigs

Environmental cleanups

■ AgroRemed

- Contaminated soils
- Restoration of environment
- On site remediation

■ SpillRemed (Industrial)

- Spills in berms
- Contained water spills

■ HydroRemed

- *In situ* treatment of free product in ground water



- Shipyards
- DOT
- Fuel oil terminals
- Tank farms
- Mines

Our strengths

- “Greener”
 - No enzymes, no solvents, no wastes for disposal, just environment friendly
- Faster
 - Contamination reduced by 90% within 3 weeks time.
- Robust
 - Works on a variety of oils including transformer oil, fuel oils and hydraulic oil.
- Simply better !!

Contact Information

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