COMPANY PROFILE

LMCS Limited

Mailing Address: 27 Gulf View Villas, Gulf View, La Romain, Trinidad
Phone: 868 354-9577
Tel/Fax: 868 658-0466
Email: lmcsltd@gmail.com
admin@lmcsltd.com
LMCS Limited provides project management, engineering design, procurement and construction services (inclusive of diving-related underwater services and marine logistics support) to the Trinidad and Tobago State Oil Company, Petrotrin, and other oil and gas, petrochemical, government and private sector industries in Trinidad and Tobago as well as in the wider Caribbean region. LMCS Ltd owns a wide range of marine/heavy equipment inclusive of crane barges, offshore supply vessel, crew boats, excavators, tractors, piling hammers and crawler cranes.

LMCS Limited has expanded its range of services and is now the Authorised Distributor of Earth ReClaim™ and Sea ReClaim™ products for the immediate and effective reclamation of oil/petroleum product spills on hard surfaces or on water. Earth ReClaim™ and Sea ReClaim™ products are composed of natural and modified-natural soriaceous nanomaterial found in the earth. The products are green, environmentally friendly, non-polluting, non-toxic and GRAS (Generally Regarded As Safe), and are recoverable and recyclable.

LMCS Limited is supported by our strategic partners to handle integrated construction and/or technology projects.

Shacon Limited
- Upscale resort development projects
- Upscale executive housing projects
- Commercial/Public Sector Buildings

Phone: 1-868-620-4382
Phone/Fax: 1-868-665-8502
E-Mail: shacon@ttstt.net.tt
www.tobagoresortsonline.com

SOFTWARE AND SOLUTIONS LTD
- Employee Administration Products • Easipay 2000
- Payroll System • Easitrac 2000 HR Management System
- Jantek Automated Time Recorder Systems
- Biometric and/or Card Access Control Devices
- Software Development • Systems Integration Services
- Payroll Outsourcing Services • Software Sourcing and Acquisition

95, Edinburgh Village | Chaguana, Trinidad, WI
Phone: 1-868-671-7124
E-Mail: sharada@softwareandsolutions.net
www.softwareandsolutions.net
BACKGROUND

LMCS Ltd (formerly Land and Marine Contracting Services Limited) was registered under the Corporate Act of Trinidad and Tobago. Its main purpose is the undertaking of developmental works, mainly in the marine environment.

Such works include engineering design, project management, construction (inclusive of procurement), diving, under-water services and logistics support. Since inception, LMCS has provided this slate of services to the oil and gas, petrochemical, government and other private sector industries.

Regionally in the Caribbean and locally at home, LMCS has performed several key projects in the capacity of sole primary contractor and in joint venture with major contractors.

The company is known for its innovative procedures, creative solutions to challenges and delivering under difficult circumstances. We have stood the test of time with a proven track record of having satisfactorily completed every project we have undertaken within budget, on time and meeting all quality and HSE standards.

There is no compromise for the guiding principle of our company, which is providing the highest quality work in the shortest time and in the most cost effective and safe manner.

SCOPE OF SERVICES

PROJECT MANAGEMENT, DESIGN & CONSTRUCTION

1. Structural Engineering design
2. Facilities Engineering design
3. Project Management of construction phase
4. Materials Procurement
5. Facilities Construction-pipelines, processing equipment, piping, gathering terminals
6. Structural Construction (concrete and steel)- platforms, well decks, piles up to 60” diameter, berths, jetties, and bridges,
7. Earthworks - dredging (drains, rivers, lakes and sea), roads (construction, restoration and sealing), site preparation and foundations
8. Diving - underwater inspection, placement of sub-sea structures
9. Ocean bottom surveys
10. Marine logistics/rental

OIL SPILL CONTROL/RECLAMATION & CONTROL/ELIMINATION OF MOISTURE

1. Earth ReClaim™ Sorbent
2. Sea ReClaim™ Sorbent
3. Dri-Remediate™ Powder
**EQUIPMENT**

LMCS is completely equipped to undertake the execution of a complete scope of construction works both on land and in the marine environments. In the event that a job requires equipment apart from what we own, our industry network allows us the opportunity to identify a suitable source from which either the leasing or renting option can be exercised. Readily we are capable of integrating any combination of equipment from the following list:

**Marine Equipment**

- 225 ton Crane Barge
- 100 ton Crane (dragline)
- 80 ton crane (dragline)
- 60 ton crane (dragline)
- 35 ton crane
- 3000 ton barge
- 2000 ton barge
- 600 ton barge
- 45 ton barge
- Dump barges for dredging
- Material barges
- Water barge
- Fuel barge
- Piling barge
- Utility Boats (2)
- Tugs (600 BHP to 2000 BHP)
- Crew boat (up to 30 passengers)
- Offshore Supply Vessel (185’)
- Pirogues (2)

**Heavy Equipment (Land)**

- Excavators
- 12 Ton Nissan Hiab
- 3 Ton Hiab
- Dump trucks
- Caterpillar D4 tractors
- Caterpillar D6 tractors
- Caterpillar 4x4 Backhoe
- Front-end Loader
- Roller
- 65 ton crawler crane
- 70 ton crawler crane
- Welding sets Diesel
- Piling hammers – 200 Kn Hydraulic Impact, IHI J44 , Kobe 25, S60
## MAJOR PROJECTS SUMMARY

Over the period from 1995 to present, the key developmental projects which LMCS has undertaken as the lead contractor is tabulated below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
<th>Client</th>
<th>Value U.S $</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Reconstruction of Fishing Complex, Morne Diablo</td>
<td>Ministry of Social Services</td>
<td>$295,000</td>
</tr>
<tr>
<td>2010</td>
<td>Installation of Interim Load-out Platform, Berth 2 LABIDCO, La Brea</td>
<td>National Energy Corporation</td>
<td>$4,920,600</td>
</tr>
<tr>
<td></td>
<td>Multiple Repair &amp; Upgrades Works, P-A-P</td>
<td>Petrotrin</td>
<td>$580,000</td>
</tr>
<tr>
<td>2009-2010</td>
<td>Installation of Submarine Pipeline Subcontract – Damus Ltd</td>
<td>Petrotrin</td>
<td>$397,000</td>
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<tr>
<td>2009</td>
<td>Change Out of Three (3) Mooring Dolphins at Berth No. 5, P-A-P</td>
<td>Petrotrin</td>
<td>$2,667,000</td>
</tr>
<tr>
<td></td>
<td>Refurbishment of Berth No. 3, Petrotrin, P-A-P (subcontract for Ethylchem)</td>
<td>Junior Sammy Contractors Ltd</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>2008-2009</td>
<td>Emergency Repairs at Berth No. 2, Labidco</td>
<td>National Energy Corporation</td>
<td>$1,100,000</td>
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<tr>
<td></td>
<td>Demolition &amp; Reconstruction of Berth 1, LABIDCO</td>
<td>National Energy Corporation</td>
<td>$8,415,000</td>
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<tr>
<td>2008</td>
<td>Installation of Retaining Dolphins for Drydock, CL Marine, Chaguaramas</td>
<td>CL Marine Limited</td>
<td>$1,300,000</td>
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<td></td>
<td>Caroni River Improvement Works – Phase II</td>
<td>Ministry of Works</td>
<td>$2,225,000</td>
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<td></td>
<td>Atlantic LNG Harbor Upgrade (subcontract)</td>
<td>Damus Limited</td>
<td>$200,000</td>
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<tr>
<td></td>
<td>No. 62 Sea Line : Renewal of Risers</td>
<td>Petrotrin, P-A-P</td>
<td>$396,000</td>
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<tr>
<td>2007-2008</td>
<td>Supply of Offshore Vessel to Canadian Superior Energy Inc.</td>
<td>Canadian Superior</td>
<td>$1,200,000</td>
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<tr>
<td></td>
<td>Desilting of Maraval River &amp; Tributaries B &amp; Madame Espagnole</td>
<td>MTS</td>
<td>$784,000</td>
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<tr>
<td></td>
<td>Matura River Improvement Works</td>
<td>Ministry of Works</td>
<td>$651,000</td>
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<tr>
<td></td>
<td>Construction of Fishing Complex Wharf at Roxborough, Tobago</td>
<td>THA</td>
<td>$2,480,550</td>
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<tr>
<td>2007</td>
<td>Restoration of Fendering System at Ro-Ro Berth, Claxton Bay</td>
<td>Trinidad Cement Limited</td>
<td>$290,000</td>
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<tr>
<td></td>
<td>Renewal of Pile Bents on Viaducts</td>
<td>Petrotrin, P-A-P</td>
<td>$900,000</td>
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<tr>
<td></td>
<td>Installation of 10” Dia. Industrial Water Pipeline Berths Nos. 5 &amp; 6</td>
<td>Petrotrin, P-A-P</td>
<td>$306,825</td>
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<td>Repairs to Saltwater Pump House - Phase 2</td>
<td>Petrotrin, P-A-P</td>
<td>$637,560</td>
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<tr>
<td></td>
<td>Install Loading Arm &amp; assist w/Piping Works at PCS Nitrogen Ltd</td>
<td>Damus Ltd</td>
<td>$183,000</td>
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<tr>
<td></td>
<td>Dredging and Desilting of various Rivers throughout Trinidad</td>
<td>Ministry of Works</td>
<td>$4,000,000</td>
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<tr>
<td>Year</td>
<td>Project Description</td>
<td>Client</td>
<td>Value U.S $</td>
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<tr>
<td>2006</td>
<td>Dredging and Desilting of Guayamare River and its tributaries</td>
<td>Ministry of Works</td>
<td>$2,200,000</td>
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<tr>
<td></td>
<td>No 35 Sea line Replacement of Sub-sea section 7 (current, subcontract to A&amp;A)</td>
<td>Petrotrin, P-A-P</td>
<td>$1,428,571</td>
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<tr>
<td></td>
<td>Emergency Job – Install new mooring dolphin at Berth 5</td>
<td>Petrotrin, P-A-P</td>
<td>$210,100</td>
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<tr>
<td></td>
<td>Replace, repair and install Beacons, TCL Harbour, Claxton bay</td>
<td>Trinidad Cement Limited</td>
<td>$125,000</td>
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<tr>
<td></td>
<td>Repair to Gantry, No. 5 Berth</td>
<td>Petrotrin, P-A-P</td>
<td>$48,000</td>
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<tr>
<td></td>
<td>Installation of Transmission Mains Legen Road, Rio Claro</td>
<td>WASA</td>
<td>$64,000</td>
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<tr>
<td>2005</td>
<td>Upgrade to Saltwater Pump House, Petrotrin, P-A-P</td>
<td>Petrotrin, P-A-P</td>
<td>$600,000</td>
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<tr>
<td></td>
<td>Upgrade Works to Berth 7, Lube Oil Jetty, Petrotrin, P-A-P</td>
<td>Petrotrin, P-A-P</td>
<td>$664,000</td>
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<tr>
<td></td>
<td>Repairs to Mooring System at Berth 5</td>
<td>Petrotrin, Pt Fortin</td>
<td>$66,500</td>
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<td></td>
<td>Methanol 5000 Project - Point Lisas Installation of two (2) loading arms including accessories &amp; pipe</td>
<td>PROMAN</td>
<td>$51,000</td>
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<td></td>
<td>Demolition of Grenada National Stadium, Grenada</td>
<td>Ministry of Works, Grenada</td>
<td>$443,000</td>
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<td></td>
<td>Refurbishment of Mooring Dock, POS (subcontract to A &amp; A Mechanical)</td>
<td>Port Authority, T &amp; T</td>
<td>$254,000</td>
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<td></td>
<td>Partial Demolition of building &amp; stands in Kensington Oval, Barbados</td>
<td>Barbados World Cup, Inc. Barbados</td>
<td>$334,000</td>
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<td></td>
<td>Replace, repair and install Beacons, TCL Harbour</td>
<td>Trinidad Cement Limited</td>
<td>$140,000</td>
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<td>Installation of Transmission Mains Kanhai Trace, South Barrackpore</td>
<td>WASA</td>
<td>$48,000</td>
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<td>Support Services for Boring Holes at South Oropouche (Sub to Geotech Associates)</td>
<td>NGC</td>
<td>$70,000</td>
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<td>2004</td>
<td>Repairs to Pipeline Viaduct, Oil Jetty</td>
<td>Petrotrin, P-A-P</td>
<td>$95,000</td>
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<td></td>
<td>Installation of channel marker piles &amp; lights</td>
<td>Trinidad Cement Limited</td>
<td>$100,000</td>
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<tr>
<td></td>
<td>Installation of flood control structures 5 no. rivers in central Trinidad</td>
<td>Ministry of Works</td>
<td>$238,000</td>
</tr>
<tr>
<td>Project Description</td>
<td>Client</td>
<td>Value US $</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------</td>
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<tr>
<td>Dredging of North Oropouche River</td>
<td>Ministry of Works</td>
<td>$ 675,000</td>
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<td><strong>2004</strong> Jetty at Savonetta Pier, Pt Lisas (Sub to Carillion as GFSL)</td>
<td>Carillion</td>
<td>$ 750,000</td>
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<tr>
<td>Refurbishment of Arima Wastewater Digester</td>
<td>WASA</td>
<td>$ 178,000</td>
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<tr>
<td>Installation of Domestic Mains, Techer Village</td>
<td>WASA</td>
<td>$ 77,700</td>
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<tr>
<td><strong>2003</strong> Armouring of Esplanade, Tobago</td>
<td>UDECOTT</td>
<td>$ 100,000</td>
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<tr>
<td>Reconstruction of Berth 8, Petrotrin</td>
<td>Petrotrin</td>
<td>$ 300,000</td>
<td></td>
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<tr>
<td>Repairs to Beacon #4, TCL Channel</td>
<td>Trinidad Cement Limited</td>
<td>$ 90,000</td>
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<tr>
<td>Installation of Domestic Mains, Saul Med</td>
<td>WASA</td>
<td>$ 50,000</td>
<td></td>
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<tr>
<td><strong>2002</strong> Installation of Process Piping &amp; Equipment, Marine Plat #5, Brighton</td>
<td>Venture Production Trinidad Limited</td>
<td>$ 50,000</td>
<td></td>
</tr>
<tr>
<td>Removal, design and installation of 17 pipeline risers (3” to 8”)</td>
<td>Venture Production Trinidad Limited</td>
<td>$ 600,000</td>
<td></td>
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<tr>
<td>Installation of 12 no. 30” well conductors with well decks</td>
<td>Venture Production Trinidad Limited</td>
<td>$ 1,500,000</td>
<td></td>
</tr>
<tr>
<td>Abandonment of free standing marine well</td>
<td>Venture Production Trinidad Limited</td>
<td>$ 100,000</td>
<td></td>
</tr>
<tr>
<td>Marine support services for drilling program</td>
<td>Venture Production Trinidad Limited</td>
<td>$1,000,000</td>
<td></td>
</tr>
<tr>
<td>Installation of 4” fallout line</td>
<td>Ministry of National Security/UESL</td>
<td>$ 90,000</td>
<td></td>
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<tr>
<td>Engineering design of oil and gas production platform (marine)</td>
<td>Venture Production Trinidad Limited</td>
<td>$ 100,000</td>
<td></td>
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<tr>
<td><strong>2001-2002</strong> Construction of floating production facilities – LMCS 1</td>
<td>Venture Production Trinidad Limited</td>
<td>$1,000,000</td>
<td></td>
</tr>
<tr>
<td><strong>2000</strong> Installation of offshore breakwater and shoreline armouring to create beach</td>
<td>Rendevouz Hotel, Castries, St Lucia</td>
<td>$ 400,000</td>
<td></td>
</tr>
<tr>
<td>San Fernando Jetty Reclamation (Subcontract to Trinsalvage)</td>
<td>Ministry of Works</td>
<td>$ 635,000</td>
<td></td>
</tr>
<tr>
<td>Construction of Petrotrin Berth 2 South Point a Pierre</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$ 650,000</td>
<td></td>
</tr>
<tr>
<td>Permanent repairs to Main Oil Jetty, Pt Fortin</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$1,000,000</td>
<td></td>
</tr>
<tr>
<td><strong>1999</strong> Repairs to damaged sections of Petrotrin Main oil jetty Point Fortin.</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$ 250,000</td>
<td></td>
</tr>
<tr>
<td>Dredging of Caroni River</td>
<td>Caridoc</td>
<td>$1,158,000</td>
<td></td>
</tr>
<tr>
<td><strong>1998</strong> Replacement 22 sealine Point a Pierre</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$ 200,000</td>
<td></td>
</tr>
<tr>
<td><strong>1997</strong> Refurbishment of # 5 Berth Point Fortin Trinidad</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$ 300,000</td>
<td></td>
</tr>
<tr>
<td>Construction of 4 no. tanker mooring dolphins</td>
<td>Petroleum Company of Trinidad and Tobago</td>
<td>$ 950,000</td>
<td></td>
</tr>
</tbody>
</table>
KEY HUMAN RESOURCES

Managing Director: Kazim Ali
Other Director: Catherine Ali
Company Secretary: Faheeda Ali

Other Key Personnel:

Kazim Ali          Project Manager/Marine Engineer
Roodal Samaroo    Site Superintendent/QA/QC
Faheeda Ali        Project Manager/Contract Manager
Azard Curban      Dredge Master
Fyzal Kurban      Dive Master
Tariq Ali          Procurement/Logistics Coordinator
Dexter Guerra      Site/Barge Supervisor
Kazim Ali (Jnr)    Site Supervisor
Haseeb Ali         Project Manager
Narendra Moonan   HSE Manager
Carlos Hendy       Project Engineer, Mechanical

REFERENCES

Shane Baccus, B. Sc. Civil Engineer, Project Engineer, BPTT.
Haydn Jones, Operations Manager, LABIDCO, NEC.
Dave Birju, New Business Executive, WISE, Chaguanas, Trinidad
Geoff Croomes, Managing Director, Janin Caribbean Construction Limited, Grenada

Bankers: RBTT Bank Limited, Pt Fortin, Trinidad and Tobago
Scotiabank Limited, Couva, Trinidad and Tobago
PROJECT ILLUSTRATIONS

1. REFURBISHMENT OF BERTH 3, P-A-P FOR ETHYLCHEM LTD

2. ROXBOROUGH FISHING JETTY, TOBAGO

3. FARMLAND MISSCHEM POINT LISAS TRINIDAD
   ✓ Installation of 2 no. Sea Water Intake Platforms

4. MINISTRY OF WORKS - INSTALLATION OF FLOOD CONTROL STRUCTURES
   - Cipriani College River Structure (finished product illustration)
   - Blackman River Structure (work in progress illustration)

5. PETROLEUM COMPANY OF TRINIDAD AND TOBAGO POINTE A PIERRE
   ✓ Rehabilitation of Berth No. 6

6. VENTURE PRODUCTION (TRINIDAD) LIMITED
   ✓ Installation of 13 no. 30” well conductors complete with deck

7. LMCS YARD FACILITY

8. PETROLEUM COMPANY OF TRINIDAD AND TOBAGO POINTE-A-PIERRE
   ✓ Construction of 4 no. tanker mooring dolphins at Berth No. 2 North

9. PETROLEUM COMPANY OF TRINIDAD AND TOBAGO POINTE A PIERRE
   ✓ Repair works to Salt Water Pump House
PROJECT: REFURBISHMENT OF BERTH 3, PETROTRIN, PAP
CLIENT: ETHYLCHEM LTD VIA JSCL
LOCATION: POINTE-A-PIERRE

PROJECT SCOPE: Berth 3 is to be utilized for loading and unloading ethanol. This berth has been un-used for a number of years and to facilitate EthylChem’s ships, the berth requires re-conditioning. Scope includes design services, materials and labor required to re-condition the berth and appurtenances to accommodate the loading and unloading processes.

Crane Barges, Leviathan and Adventurer 1 conducting piling operations at Berth 3, PETROTRIN, P-A-P.
PROJECT: CONSTRUCTION OF FISHING COMPLEX, ROXBOROUGH, TOBAGO
CLIENT: TOBAGO HOUSE OF ASSEMBLY
LOCATION: ROXBOROUGH


AERIAL VIEW OF FISHING COMPLEX JETTY, ROXBOROUGH

GAP BETWEEN WHARF AND SEAWALL TO BE FILLED WITH INSITU CONCRETE
PROJECT: INSTALLATION OF 2 NO. SEA WATER INTAKE PLATFORMS
CLIENT: KELLOGS / FARMLAND MISSCHEM
LOCATION: PT. LISAS

PROJECT SCOPE:

Install 2 no. 75", long x 60" dia 1.25 w. t. Pipe conductors, cut out window at sea bed, install strainer assembly at sea bed level and install deck on top.

CRANE BARGE ADVENTURER II ABOUT TO PITCH 60" DIA. PILE AT FARMLAND MISSCHEM AMMONIA PLANT
PROJECT: INSTALLATION OF 2 NO. SEA WATER INTAKE PLATFORMS
CLIENT: KELLOGS / FARMLAND MISSCHEM

INSTALLATION OF FIRST CONDUCTOR AT FARMLAND MISSCHEM
Pile dia. exceeds D 62 hammer skirt size Used of adaptor cap to drive pile

PITCHING SECOND CONDUCTOR AT FARMLAND MISSCHEM
PROJECT: INSTALLATION OF 2 NO. SEA WATER INTAKE PLATFORMS
CLIENT: KELLOGS / FARMLAND MISSCHEM

POSITIONING HAMMER ON ADAPTOR ON PILE

HAMMER POSITIONED ON ADAPTOR ON PILE
PROJECT: INSTALLATION OF 2 NO. SEA WATER INTAKE PLATFORMS.

CLIENT: KELLOGS / FARMLAND MISSCHEM

FINAL POSITIONING OF PLATFORM ON MANIFOLD CONDUCTOR

PLATFORM BEING LOWERED ONTO DRIVEN CONDUCTOR
PROJECT: INSTALLATION OF FLOOD CONTROL STRUCTURES AT (5) RIVERS IN CENTRAL TRINIDAD

CLIENT: MINISTRY OF WORKS & TRANSPORT

Blackman River Structure (work in progress)

Cipriani College River Structure (finished product)
PROJECT: REHABILITATION OF BERTH NO. 6

CLIENT: PETROLEUM COMPANY OF TRINIDAD AND TOBAGO

PROJECT SCOPE: STRUCTURAL & PIPING REHABILITATION OF BERTH NO. 6

NO. 6 BERTH – TOPSIDES AND PIPING REPAIRS, GENERAL FABRIC MAINTENANCE AND PROTECTIVE COATINGS
PROJECT: INSTALLATION OF 13 NO. 30” WELL CONDUCTORS COMPLETE WITH DECK

CLIENT: VENTURE PRODUCTION (TRINIDAD) LIMITED
LOCATION: OFFSHORE BRIGHTON AND PT. LIGOUERE

PROJECT SCOPE:

Fabricate and install conductor piles to approx. 200ft. below mud line up to 80 ft water depth

DOUBLE WELL 30” CONDUCTORS WITH PRODUCTION DECK
PT. LIGOUERE
FABRICATION YARD AVAILABLE TO LMCS

HEAVY CONSTRUCTION AND COATING

Facilities on an area of approximately 10 acres that include:

- a large covered fabrication area that can accommodate extended reach cranes
- a separate enclosed building for sandblasting and coating.
- large office premises with a document control procedure for testing and QA/QC records.

Sixteen (16) welding machines installed and located at selected points around the fabrication area. These are connected to power supply panels, fed from the national grid.

A core fabrication crew is retained and welders are tested to pre-defined standards set by Petrotrin. Test results are verified and monitored by Petrotrin Inspectors. Trinmar Inspectors perform independent verification of welding and Non-Destructive Testing. Trinidad inspection Services are used for verification of fabrication and weld quality.

Diving crews are available for underwater construction, maintenance and inspection.
PROJECT: CONSTRUCTION OF 4 NO. TANKER MOORING DOLPHINS AT BERTH NO. 2 NORTH

CLIENT: PETROLEUM COMPANY OF TRINIDAD AND TOBAGO

LOCATION: POINTE A PIERRE, TRINIDAD

PROJECT SCOPE:
Complete removal of existing steel tanker moorings
Install 16 no. Concrete Piles 110 ft. long 24” dia. per dolphin in 30 ft of water
Construct 4 no. new tanker moorings using reinforced concrete

STEEL REINFORCEMENT AND FORM WORK SUPPORTED ON 16 NO. CONCRETE PILES 24” DIA.
PROJECT: CONSTRUCTION OF 4 NO. TANKER MOORING DOLPHINS

CLIENT: PETROLEUM COMPANY OF TRINIDAD AND TOBAGO

POURING OF 350 TONS OF PREMIXED CONCRETE FROM WORK BOAT ALONGSIDE STRUCTURE

TOP AND SIDE VIEW OF MOORING AFTER REMOVAL OF FORM WORK
PROJECT: CONSTRUCTION OF 4 NO. TANKER MOORING DOLPHINS

CLIENT: PETROLEUM COMPANY OF TRINIDAD AND TOBAGO

SIDE VIEW OF COMPLETED MOORING

CONCRETE PILES 110 FT. LONG 24”DIA. 16 NO. PER DOLPHIN IN 30FT OF WATER
PROJECT: REPAIRS TO SALTWATER PUMP HOUSE

CLIENT: PETROLEUM COMPANY OF TRINIDAD AND TOBAGO, POINTE A PIERRE

REPAIRS TO BEAM # 15, PUMP PIT NO. 2
REFERENCE

LETTERS
NATIONAL ENERGY CORPORATION
OF TRINIDAD AND TOBAGO LIMITED
Cor. Rivulet and Factory Roads, Brechin Castle, Couva,
Republic of Trinidad and Tobago, W.I.
P.O. Box 1127, Port of Spain, Trinidad West Indies
Tel: (868) 636-8471/1138/1156 Fax: (868) 636-2905
Website: www.nec.co.tt

Ref: LB278-10/HJ/mbb

November 16, 2010

TO WHOM IT MAY CONCERN

Re: Recommendation In Favour of Land & Marine Contractors Services (LMCS)

LMCS has worked for National Energy Corporation of Trinidad & Tobago (NEC) indirectly through sub-contractors for over ten (10) years and directly with NEC and LABIDCO for the past five (5) years.

LMCS recently successfully completed the following:

- Demolition and re-construction of Berth #1 at LABIDCO
- Strengthening of the load out platforms at the LABIDCO Port to facilitate platform load-out.
- Remedial and replacement of sea water intake pumps at the NEC Savonetta Pier at Point Lisas.

LMCS performance has been nothing short of professional and is led by a Director who is knowledgeable and can be relied upon to provide ideas and solutions to any problems at the most economical cost and in the best interest of NEC/LABIDCO.

At NEC/LABIDCO we will therefore have no hesitation in recommending LMCS led by Mr. Kazim Ali for any future projects in marine and related industries.

Yours sincerely,
for: NATIONAL ENERGY CORPORATION
OF TRINIDAD AND TOBAGO LIMITED

Haydn Jones
Operations Manager

DIRECTORS: Larry Hoywal-Chairman, Ms. Haseena Ali, Carlton Gibson, Cathol Hewly-Singh, Robindra Jagannauth, Andrew Jupiter, S. Andrew McIntosh, Clyde Ramkalawan
Mr. Kazim Ali  
Managing Director  
LMCS Limited  
27 Gulf View Villas  
La Romain  

Dear Mr. Ali  

On behalf of Trinidad Cement Limited, I would like to take the opportunity to express my sincere appreciation to you and your staff for all the help and support offered to us in the execution of our recently concluded project involving the Restoration of the Fendering System and Jetty at Ro-RO Berth, Claxton Bay. 

LMCS Limited has been working with us for over eight years and has performed many marine construction, repair and maintenance projects at Trinidad Cement Limited, Claxton Bay facilities. 

The following are some of the recent successfully completed projects:

1. Restoration of Fendering System at Ro-Ro Berth, Claxton Bay  
2. Dredging at Boulder Jetty, Claxton Bay  
3. Replacement of Beacon 7, Claxton Bay  
4. Replace, repair and install Beacons, TCL Harbour  
5. Installation of channel marker piles & lights. 

LMCS Limited has always performed with our best interest in mind. They can always be depended on to come to the table with reliable and practical ideas and solutions to any problems regardless of the circumstances. In my opinion, they have the necessary experience, resources and financial capability to safely execute and successfully complete any project in which they are a key contributor. 

Please feel free to use my name as a reference or to produce this letter as demonstration of your Company’s performance and reputation. It is a pleasure to recommend you and your staff for any future business in the marine and related industry.

Yours respectfully  

[Signature]  
Gloria Jacobs  
Planning and Development Manager  
TRINIDAD CEMENT LIMITED
SHANE J. BACCUS
BSc. CIVIL ENG. (Hons.), MSc. ENVIRONMENTAL ENG. (Dist.), M.A.I.E., R.ENG.

10 Rue Point, Charlestown,
Trinidad, West Indies

Telephone. (658) 662-1121

11th April, 2005.

TO WHOM IT MAY CONCERN

This is to certify that the company Land and Marine Contracting Services (LMCS) have worked for me since 1998. This contractor has performed many marine construction and maintenance projects in Petrotrin's port facilities.

The following is a list of the projects LMCS have successfully completed under my supervision:

- Submower Berth Extension
- Berth #1 Fender Replacement
- Reconstruction of Berth 2 South

From my experience with this contracting firm, they have always performed with the client's best interest in mind. LMCS was able to complete the Berth 2 South project 2 months ahead of schedule, within budget and whilst delivering a high standard of work. Their Contract Manager with whom I interfaced with on all my projects has always demonstrated a unique sense of ingenuity, which has saved Petrotrin time and money in the past. In addition their supervisory personnel are flexible, knowledgeable and courteous in their dealings with clients.

In my opinion this contractor has the necessary experience, flexibility, resources and financial capability to successfully and safely execute any project that they choose to attend.

I therefore heartily recommend Land and Marine Contracting Services for any marine and other related construction work.

Yours respectfully,

[Signature]
Shane J. Baccus
Senior Project Engineer
Project Engineering Section
PETROTRIN.
Land and Marine Contracting Services
Alta Garcia Trace
San Francique

Attn: Kazim Ali

Dear Kazim

Subject: Venture 2002 Drilling Campaign

I am writing to say well done to everyone from Land and Marine involved in the 2002 drilling campaign which we recently completed.

The performance of the rig and service companies was outstanding and in particular we achieved a record of zero lost time accidents.

The contribution made by the Land and Marine people involved was very important to the technical success of the drilling. Rig moves were particularly smooth and the efforts you and your team made to help us out at all hours of the day and night are appreciated.

The LMCS-1 production barge proved to be a very useful, fit for purpose tool to test the wells in Point Ligue. It is a pity we didn’t have more use for it.

Please pass on my personal thanks to everyone involved. We are looking forward to working with you again in 2003.

Yours sincerely

Mike Travis
Operations Manager
2002 October 31

Mr. Kazim Ali
Land & Marine Contracting Services Limited
San Fernando Trinidad

Dear Ken

RE: SUPPORT OFFERED DURING OUR 2002 DRILLING CAMPAIGN

On behalf of Venture Production (Trinidad) Limited I will like to take this opportunity to express my sincere thanks and appreciation to you and your professionally trained staff for all the help and support offered to us in the execution of our recently completed drilling campaign.

As a company it is very reassuring to know that we have such strong and reliable pillar of support included our group of contractors and support services. In this regard therefore, it is certainly a pleasure to thank you and your staff for the high level of dedication and unrelenting support extended to us.

Had it not been for your wealth of marine experience, your endurance and your commitment to duty we would not have succeeded in overcoming some our problems in particular the seabed breakout on ALM 20, the satellite testing and production of all of our free standing wells and the marine operations and anchoring in extremely shallow waters. Some of these unpredicted or unpleasant occurrences caught us all by surprise searching for a quick and reliable solution to an unconventional problem but as always you were the first to come to the table with practical, and effective ideas and solutions regardless of the circumstances.

Please feel free to use my name as a reference or to produce this letter as demonstration of your company’s performance and reputation. It has been a worthwhile experience and is certainly a pleasure to recommending you and your staff for any future business especially within Venture Production (Trinidad) Limited.

Sincerely

[Signature]

Nazir Ali
Drilling & Production Manager

Registered in Trinidad No: V-429 (95)
Trading Address: Obaotea Industrial Park, Sinth Oppouche. P.O. Box 3919, La Romain P.O., Trinidad, W.I.
Telephone: (868) 677-4875-6, 677-5765-6, 677-24-67, 677-269, Facsimile (868) 677-5010
Registered Office: 20 New Street, Port of Spain, Trinidad, W.I.
BROCHURES

EARTH RECLAIM™
Earth ReClaim™ Sorbent

Earth’s Natural Oil-Binding Materials for Immediate and Effective Reclamation of Oil Spills

TECHNICAL BULLETIN #2

APPLICATION
Earth ReClaim™ Product

We call our product “Earth ReClaim™” to speak to its function, composition and mode of action. Earth ReClaim™ is an oil binding material for immediate and effective reclamation of oil spills. It works with all types of oil. Earth ReClaim™ uses nature’s nanotechnology to reclaim the oil and reclaim the earth. The power of natural nanotechnology comes not from the chemistry but from the high surface areas and the natural physical properties of the mined materials themselves. Earth ReClaim™ is composed of natural and modified natural scoriaceous material found naturally in the earth which is currently obtained by mining and metallurgy.

Earth ReClaim™ is a sorbent material and consists solely of the materials listed in § 300.915(g) (1) of the NCP. Earth ReClaim™ however exhibits some of the properties of solidifiers with one distinct difference: it does not transform the oil chemically into a new substance but uses natural physical properties instead to agglomerate the oil into a semi solid mass that can be readily harvested. There is another unique difference. The physical process used for agglomeration and solidification can be reversed by high heat, and the oil can be reclaimed and the raw materials recycled or disposed. Hence Earth ReClaim™ has the benefits of sorbents with some of the properties of solidifiers without the toxic and disposal issues. Earth ReClaim™ is enviro-friendly.

Earth ReClaim™ is also formulated to achieve three things as the means to providing a total solution to oil spills: (a) reclaim the oil; (b) naturally eliminate malodors found in or the result of the use of oil; and (c) permanently and irreversibly bind toxic heavy metals found in oil and transferred by oil into the Earth.

The reaction time for the agglomeration of oil to a semi rigid cake for light crude oil is approximately 5 minutes. Earth ReClaim™ adheres immediately to any petroleum based product and builds a solid mass without the detrimental attributes associated with oil. Its incorporation into the contaminant stream results in a recoverable, recyclable sub product of its original polluting form. All ingredients incorporated into our premier formula are derived from earth’s inorganic resources and are Generally Regarded As Safe (GRAS) materials 100% safe to humans, the environment and fauna and flora.
Application

Concrete, Asphalt, and Other Hard Surface Spills

For small spills on non-porous surfaces, Earth ReClaim™ can be broadcast directly onto the spill, spreading a thin layer from the outer edge into the middle of the spill. Oil and Earth ReClaim™ have a natural affinity for each other and Earth ReClaim™ will seek out the oil. Let remain on oil for at least 5 minutes or until noticeably absorbed. Brush or broom material into waste collection container.

Sand or Other Porous Surfaces

Add Earth ReClaim™ to cover the entire spill. Let stand for at least 5 minutes or until noticeably absorbed. If the layer soil affected by the oil is at least 5 cm (2 inches), harrow or mix the Earth ReClaim™ into the soil. Rake or collect the resultant material into waste collection container.

Larger Spills

For larger spills, Earth ReClaim™ would be applied in the same manner above. The amount of material to be added is proportional to the amount and depth of the oil spill. To recover solidified oil or hazardous materials from the spills on land, the spent material may be collected and swept up using an industrial vacuum cleaner, broom, or shovel. The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.

Concentration/Application Rate

In general, a 10% to 30% by weight application is required to solidify light, medium, and heavy oils. Solidification may occur faster if additional Earth ReClaim™ is applied. Since Earth ReClaim™ coalesces and aggregates with itself and with the oil, any additional material can be harvested along with the used material. The unused material may be reused or recycled with the harvested contaminated material. If unused material is still on the surface it may be redeployed, or directed by guided movement, to the new area for use.
Disposal

The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.

Conditions for Use

Earth ReClaim™ is effective with all oils, and under any weather conditions; however, colder temperatures may slow the solidification process. The product is most effective on temperatures between 32°F and 120°F. Depending on the age and/or viscosity of the oil containing material, varying amounts of Earth ReClaim™ may be required to obtain complete solidification. Depending upon the viscosity of the oil the process of application and mixing may need to be varied depending upon field conditions. The recovered solidified oil or resultant non-hazardous materials may be landfilled, incinerated, used as a secondary fuel, or otherwise disposed of according to federal, state and local regulations or preferably returned to the manufacturer for reprocessing and reclamation.

Potential Benefits of Use of Earth ReClaim™ for Spills

- A method for the treatment of oil from open aqueous spills, leaking underground storage systems, and in contaminated soil.

- Reclamation of oil from oil spills through extraction of oil from matter composites.

- Prevention of the spread of oil on surfaces resulting in readily identifiable clumps that remain on the surface until harvested. Clumps do not leach out oil over time.

- Maintains the ability to identify, recognize, and control the movement of spilled oil after agglomeration.
Unique Features of the Earth ReClaim™ Product

The following is a list of unique features for the Earth ReClaim™ Product relative to other oil treatment methods.

- Oil can be re-released after absorption unlike other sorbents or solidifiers.
- Can be used on the oil’s surface, unlike some other sorbents.
- Uses absorption, adsorption, and two solidification processes.
- Both oleophilic (oil attracting) and hydrophobic (water repellent) unlike some other sorbents.
- Actually prefers oil and seeks it out.
- Solidification involves both hydrocarbon physical attraction enhanced by van-der-Waal’s forces, and hydrogen bonding through mixed clathrate formation.
- Works with all types of oil.
- Works with oil with or without prior use of oil dispersant material.
Earth ReClaim™ Sorbent

Earth’s Natural Oil-Binding Materials for Immediate and Effective Reclamation of Oil Spills

TECHNICAL BULLETIN #1

TECHNOLOGY
Earth ReClaim™ Product

We call our product “Earth ReClaim™” to speak to its function, composition and mode of action. Earth ReClaim™ is an oil binding material for immediate and effective reclamation of oil spills. It works with all types of oil. Earth ReClaim™ uses nature’s nanotechnology to reclaim the oil and reclaim the earth. The power of natural nanotechnology comes not from the chemistry but from the high surface areas and the natural physical properties of the mined materials themselves. Earth ReClaim™ is composed of natural and modified natural scoriaceous material found naturally in the earth which is currently obtained by mining and metallurgy.

Earth ReClaim™ is a sorbent material and consists solely of the materials listed in § 300.915(g) (1) of the NCP. Earth ReClaim™ however exhibits some of the properties of solidifiers with one distinct difference: it does not transform the oil chemically into a new substance but uses natural physical properties instead to agglomerate the oil into a semi solid mass that can be readily harvested. There is another unique difference. The physical process used for agglomeration and solidification can be reversed by high heat, and the oil can be reclaimed and the raw materials recycled or disposed. Hence Earth ReClaim™ has the benefits of sorbents with some of the properties of solidifiers without the toxic and disposal issues. Earth ReClaim™ is enviro-friendly.

Earth ReClaim™ is also formulated to achieve three things as the means to providing a total solution to oil spills: (a) reclaim the oil; (b) naturally eliminate malodors found in oil or associated with the use of oils; and (c) permanently and irreversibly bind toxic heavy metals found in oil and transferred by oil into the Earth.

The reaction time for the agglomeration of oil to a semi rigid cake is approximately 5 minutes. Earth ReClaim™ adheres immediately to any petroleum based product and builds a solid mass without the detrimental attributes associated with oil. Its incorporation into the contaminant stream results in a recoverable, recyclable sub product of its original polluting form. All ingredients incorporated into our premier formula are derived from earth’s inorganic resources and are Generally Regarded As
Eco Renascence™ Environmental Products
Earth ReClaim™
“Reclaiming the oil reclaiming the Sea”

Safe (GRAS) materials 100% safe to humans, the environment and fauna and flora.

Our Technology

“Use of Nature’s Nanotechnology”

Earth ReClaim™ is composed of an admixture of natural and modified-natural scoriaceous material derived from the earth. Earth ReClaim™ is derived from earth’s natural scoriaceous material which is highly porosive. Although not used in Earth ReClaim™, the most universally known scoriaceous material is lava which is a form of scoria from a geological perspective. Scoria is produced by heat and/or pressure over time. Another well known example of scoria from metallurgy is dross.

Scoriae are natural materials derived from earth’s rock, sand, dirt and dust. Scoriaceous material can be macroporous to mesoporous in porosiveness (porosity). Macroporous materials are large granular porosive material that can vary in particle diameter and/or mesh size. Earth ReClaim™ uses macroporous scoria of 0.5--2 mm diameter. Microporous material generally has pore sizes > 50 nm. Mesoporous materials have pore sizes from 2 to 50 nm. Both microporous and mesoporous structures are considered nature’s natural nanotechnology. Earth ReClaim™ uses both microporous and mesoporous natural nanomaterials derived from the earth. Some natural scoriaceous material is modified by Earth ReClaim™ scientists for specific properties necessary for immediate and effective oil spill reclamation. The natural nanomaterials in Earth ReClaim™, since they are derived from the earth, are environmentally friendly when returned to the earth.

One would ask, Why use nature’s nanotechnology? The reason is simple. Found naturally in the earth itself, these nanomaterials afford the means to deal with the oil spill with some very distinct advantages. Natural nanomaterial benefits derive from their small physical size (nano = 0.000000001 meters= 1 nm), which translates directly into an extremely large surface area. As will be explained later, 5 gm of natural
nanomaterial as used in Earth ReClaim™ has the surface area of 10 football fields. This allows a small amount of material to have a significant action on oil, an advantage never seen with conventional sorbents or solidifiers. By way of comparison, activated carbon, another scoriaceous material with pores (not useful with oil spills) has a surface area of only 1 football field per 5 gm.

Another unique advantage to some of nature’s nanomaterials is their unique ability to spontaneously aggregate together upon contact with oil. Nature’s nanomaterials as used in Earth ReClaim™ come unassembled like a jigsaw puzzle. After contact with oil, the nanomaterials spontaneously self assemble into a solid 3-D network, inter alia, a solid mass. This very unique property allows the sorbent Earth ReClaim™ to have physical properties only formerly attributable to chemical solidifiers. Chemical solidifiers are not natural and chemically convert the oil into a new material. Solidifiers are toxic to the environment. Why use a toxic man-made chemical when one can use a natural physical process; the very process that allows scoriaceous material to be formed naturally in the earth in the first place? Natural is always eco-friendly.

**Three Unique Functions**

**Oil Reclamation • Malodor Elimination • Toxic Heavy Metal Removal**

Earth ReClaim™ uses materials that are either naturally highly porous, or modified nanoparticulate material that has been rendered hydrophobic. All materials are derived from scoria except for one man-made ceramic material.

There are six oil binding components in Earth ReClaim™.

One of the main components is naturally mined scoria that has high porosiveness. This material is highly oleophilic (oil-binding) and hydrophobic (water-repellant) at the same time. It ranges from macroporous to mesoporous in natural nanostructure.

The next three (3) components in Earth ReClaim™ are also modified natural scoria mined from rock that is made to be hydrophobic. These
three natural materials contain unassembled non-porous nanoparticulate subassemblies with a hydrocarbon-like surface that are naturally physically attracted to oil as “like seeks like”. This material increases oil viscosity upon contact and aids in immediate aggregation of the oil into an aggregated solidified mass. Hence, Earth ReClaim™ has the benefits of a sorbent with the properties of a solidifier. There is no chemical transformation of the oil into a new (non-oil) substance with Earth ReClaim™ as seen with solidifiers. It’s purely a physical attraction as one loves to bind to the other and tighten up.

The fifth component in Earth ReClaim™ is another modified natural scoria which has an extremely strong affinity for the hydrogen atom found on hydrocarbons in that it cross links them. This aids directly in stabilizing the solid mass again through a natural physical process reversible by heat for reclamation of the oil.

The last component in Earth ReClaim™ is a man-made microporous hollow sphere which is comprised of a nano-cage structure that is selective for binding toxic heavy metals that are found in oil and which get absorbed into the Earth. Toxic heavy metal binding within the nano-cage structure is heavy metal selective through ion exchange, is permanent and irreversible hence permanently removing the toxic heavy metals from the environment.

“The Benefits of Sorbents, the Properties of Solidifiers”

Although Earth ReClaim™ is comprised of sorbents, its functionality is a lot like that of solidifiers. Solidifiers are EPA approved chemicals comprising hydrocarbon-like polymers and surfactants which chemically transform oil into a new non-oil substance which must in itself be disposed of or have another use found for it.

Earth ReClaim™ sorbents behave like solidifiers in that they form a solid-mass. They do so physically by natural means, not chemically. The resultant Oil Kake is different from solidifiers in that the oil is agglomerated and solidified but it is not transformed into a new substance.
actually recoverable from the Earth ReClaim™ sorbent after harvesting through heating.

Earth ReClaim™ achieves solidification through the integration of 4 natural mechanisms of action: (1) absorption and (2) adsorption (usually limited to sorbents); (3) solidification by physical attraction between non-polar, hydrocarbon-like nanoconstructs and the hydrocarbons in oil enhanced by van-der-Waals forces (usually seen in solidifiers); (4) as well as by natural hydrogen bonding of hydrocarbons by the high density of specific functional groups on amorphous unassembled nanoparticulate nanostructure subassemblies; these unassembled nanoparticulate structures undergo a natural process of spontaneous self assembly upon contact directly with oil. This interaction results in a stabilized three dimensional cross-linked lattice e.g., the solid mass or Oil Kake.

This naturally occurring process of spontaneous self assembly at the molecular level is known as "mixed clathrate formation". It is seen in nature most notably with methane snow found on the ocean floor. The hydrogen bonds involved in this natural reaction that hold the hydrocarbons together are similar to the bonds that hold DNA strands together. Hydrogen bonds differ from covalent bonding in that hydrogen bonding is strong yet reversible with either heat or enzymes. Hence, oil can be reclaimed from Earth ReClaim™ which gives the product the benefits of a sorbent, but with the properties of a solidifier with an added advantage of oil reclamation.

Earth ReClaim™ has two additional features differentiating it from all other sorbents and solidifiers on the market. One of the modified natural nano materials in Earth ReClaim™ derived from scoria is extremely effective at malodor elimination. Malodor may be present either in the form of evaporating alkanes, or the presence of decomposing plankton and debris mixed in the oil. Earth ReClaim uses the patent pending proprietary technology of Red Lion Scientifics, LLC.

The final unique feature of Earth ReClaim™ is the permanent removal of toxic heavy metals found naturally in oil. These include lead, mercury, arsenic and chromium among others. These toxic heavy metals, which are also the basis of fossil fuel smokestack emissions, are found in oil. Toxic heavy metals in oil readily contaminate the earth and they out-
survive the oil spill for millennia to come because they are elemental in composition in that they cannot be broken down any further.

Toxic heavy metals readily contaminate plant, fish, and wildlife in the environment and are poisonous for humans as well. The half life for mercury in human tissue as example is 37.5 years, so the only way to not be poisoned by the toxin is to avoid exposure in the first place. Mercury is currently found in all species of fish as a toxic contaminant. Earth ReClaim™ uses a man-made ceramic nanoconstruct in the form of a nano-cage with high internal loading capacity to selectively bind toxic heavy metals and will do so both in oil and in water with extremely high efficiency. Red Lion Scientifics LLC utilizes the proprietary technology.
1. PRODUCT AND COMPANY NAME

PRODUCT NAME: Earth ReClaim™ Sorbent
PRODUCT CODE: 
PRODUCT FORMULATION NAME: Mixture
GENERIC NAME: None

MANUFACTURER:
Red Lion Scientifics, LLC
11011 Via Frontera
Suite D
San Diego, CA 92127
Phone: (858) 705-6678
Fax: (858) 705-6694

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
PHYSICAL APPEARANCE: White Powdery Solid, No Odor
IMMEDIATE CONCERNS: Dust may be irritating to the respiratory tract.
Irritating, but will not cause permanent injury to the eye tissue. Repeated exposure may cause skin dryness or cracking. All metal parts of mixing and processing equipment must be earthed/grounded.

POTENTIAL HEALTH EFFECTS
EYES: May cause mechanical irritation. Irritating, but not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.
SKIN: Repeated exposure may cause skin dryness or cracking.

INGESTION: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

INHALATION: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

CARCINOGENICITY EFFECTS: Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union). See also Section 11.

MEDICAL CONDITIONS AGGRAVATED: Asthma, Respiratory disorder

TARGET ORGAN: Eyes, Lungs

COMMENTS: For detailed toxicological information see Section 11.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients in the product are not known or classified as hazardous. They are Generally Recognized As Safe by the USFDA.

This Proprietary Formulation is comprised of natural scoriaceous materials.

4. FIRST AID MEASURES

EYES: Flush eyes with large quantities of water. If irritation persists consult a physician.

SKIN: Wash with soap and water. Seek medical attention if redness, swelling, itching or burning occurs.

INGESTION: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. Drink water to clear throat and blow nose to evacuate dust.
COMMENT: As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to chemical substances and ensure prompt removal from skin, eyes and clothing.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Nonflammable

FLAMMABLE LIMITS: NA

AUTOIGNITION TEMPERATURE: NA

FLAMMABLE CLASS: NA

FLAME PROPAGATION OR BURNING RATE OF SOLIDS: NA

GENERAL HAZARDS: NONE

EXTINGUISHING MEDIA: NA

HAZARDOUS COMBUSTION PRODUCTS: NONE

FIRE FIGHTING PROCEDURE: NONE

FIRE FIGHTING EQUIPMENT: NONE

SENSITIVITY TO STATIC DISCHARGE: NA

SENSITIVITY TO IMPACT: NA

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Vacuum clean material with equipment fitted with HEPA filter. Use a dust suppressant such as water if sweeping is necessary.

LARGE SPILL: Clean up promptly with mechanical means as required and place in suitable contained for use or recycling as necessary. Use proper vacuum to remove remaining product. Use a dust suppressant such as water if sweeping is necessary.
ENVIRONMENTAL PRECAUTIONS: No special environmental precautions are required. Local authorities should be advised if significant spillages cannot be contained.

GENERAL PROCEDURES: Wear goggles if release creates conditions where eye contact is probable. Ventilate area if necessary.

COMMENTS: See Section 13 for disposal information and Section 15 for Regulatory requirements.

7. HANDLING AND STORAGE

HANDLING: Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with eyes. Seal broken containers immediately. Continue to follow all MSDS/Label warnings when handling empty containers. All metal parts of mixing and processing equipment must be earthed/grounded.

STORAGE: Keep containers tightly closed in a dry well-ventilated place. Keep at ambient temperature.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

INHALATION STANDARDS: Inhalation standards for this material have not been established.

Goggles: Goggles or Safety Glasses with side shields are recommended.
Gloves: Wear suitable gloves.
Respirator: Approved respirator may be necessary if local dust exhaust ventilation is not adequate.
Skin and Body Protection: Wear suitable protective clothing. No special protective equipment is necessary.

Engineering Controls: Ensure adequate ventilation to maintain minimal dust in area. Provide adequate exhaust ventilation at machinery and at places where dust can be generated.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Powdery Colloidal Solid
**Name of Material**

| Earth ReClaim™ Sorbent |

**ODOR:** NONE

**COLOR:** White

**pH:** 6.0-7.5 When Suspended in Water

**VAPOR PRESSURE:** NA

**VAPOR DENSITY:** NA

**BOILING POINT:** NA

**FREEZING POINT:** NA

**MELTING POINT:** >2000 Degrees F

**FLASHPOINT AND METHOD:** NA

**SOLUBILITY IN WATER:** Insoluble, hydrophobic and buoyant

**EVAPORATION RATE:** NA

**DENSITY:** NA

**SPECIFIC GRAVITY:** 0.12g/cm³

**VISCOSITY:** NA

**MOLECULAR WEIGHT:** NA

**COEFF. OIL/WATER:** NA

### 10. STABILITY AND REACTIVITY

**STABILITY:** The material is stable.

**HAZARDOUS POLYMERIZATION:** Hazardous polymerization does not occur.

**CONDITIONS TO AVOID:** None in designed use.
HAZARDOUS DECOMPOSITION PRODUCTS: None

INCOMPATIBLE MATERIALS: None Known

11. TOXICOLOGICAL INFORMATION

ACUTE:
- EYES: Not Available
- DERMAL LD₅₀: Not Available
- ORAL LD₅₀: Not Available
- INHALATION LC₅₀: Due to the products physical characteristics, no suitable testing procedure is available.

EYE EFFECTS: None Known

SKIN EFFECTS: None Known

CARCINOGENICITY: Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union).

SENSITIZATION: Not Tested

REPRODUCTIVE EFFECTS: Not Tested

TERATOGENIC EFFECTS: Not Available

MUTAGENICITY: Not Available

12. ECOLOGICAL INFORMATION

Summary: Generally considered chemically inert in the environment. Used material which has become contaminated may have significantly different characteristics based on the contaminant and should be evaluated accordingly.

Mobility: Not expected to migrate.

Bioaccumulation: According to experience not expected.
Name of Material: Earth ReClaim™ Sorbent

Persistence/Degradability: The methods for determining biodegradability are not applicable for inorganic substances.

13. DISPOSAL CONSIDERATIONS

Information in this section pertains to the product as shipped in its intended composition as described in Section 2 of the MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers or liners. State/provincial and local regulations may be different from federal regulations.

RCRA Classification (40 CFR 261): Not a hazardous waste.

PRODUCT DISPOSAL: May be disposed of in a suitable landfill in accordance with the regulations used by appropriate federal, provincial, state, and local authorities.

EMPTY CONTAINERS: No special handling.

GENERAL COMMENTS: Refer to Section 6, Accidental Release Measures for added information.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

US Department of Transportation
Canadian Transport of Dangerous Goods Regulation
European Transport of Dangerous Goods Regulation
CGVS, GGVE, RID, ADR, IMDG Code, ICAO-TI
United Nations (no UN Number)

DOT/ICAO/IATA

PROPER SHIPPING NAME: Earth ReClaim™ Oil Binding Material
TECHNICAL NAME: NA
PRIMARY HAZARD CLASS/DIVISION: Not Classified
LABEL: Oil Binding Material

15. REGULATORY INFORMATION

UNITED STATES
Name of Material: Earth ReClaim™ Sorbent

DOT LABEL SYMBOL AND HAZARD CLASSIFICATION

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

313 REPORTABLE INGREDIENTS: Not Applicable
TITLE III NOTES: Not Applicable

CERLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: Not Applicable

TSCA (TOXIC SUBSTANCE ACT)

TSCA REGULATORY: All components of this product are listed on or are exempt from the TSCA Inventory.

REGULATIONS

STATE REGULATIONS: Not Available
LOCAL REGULATIONS: Not Available

16. OTHER INFORMATION

Disclaimer:
**************************************************************************************************

Red Lion Scientifics, LLC provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Red Lion Scientifics, LLC MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, Red Lion Scientifics, LLC WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
**************************************************************************************************
BROCHURES

SEA RECLAIM™
Sea ReClaim™ Sorbent

Earth’s Natural Buoyant Oil-Binding Materials for Immediate and Effective Reclamation of Oil Spills

TECHNICAL BULLETIN #2

APPLICATION
Sea ReClaim™ Product

We call our product “Sea ReClaim™” to speak to its function, composition and mode of action. Sea ReClaim™ is a floatable oil binding material for immediate and effective reclamation of oil spills. It works with all types of crude which is dependent upon the process used. Sea ReClaim™ uses nature’s nanotechnology to reclaim the oil and reclaim the sea. The power of natural nanotechnology comes not from the chemistry but from the high surface areas and the natural physical properties of the mined materials themselves. Sea ReClaim™ is composed of natural and modified natural scoriaceous material found naturally in the earth which is currently obtained by mining and metallurgy.

Sea ReClaim™ is a sorbent material and consists solely of the materials listed in § 300.915(g)(1) of the NCP. But it exhibits some of the properties of solidifiers with one distinct difference: it does not transform the oil chemically into a new substance but uses natural physical properties instead to agglomerate the oil into a semi solid mass that can be readily harvested. There is another unique difference. The physical process used for agglomeration and solidification can be reversed by high heat, and the oil can be reclaimed and the raw materials recycled or disposed. Hence Sea ReClaim™ has the benefits of sorbents with some of the properties of solidifiers without the toxic and disposal issues. Sea ReClaim™ is enviro-friendly.

Sea ReClaim™ is also formulated to achieve three things as the means to providing a total solution to crude oil spills: (a) reclaim the oil; (b) naturally eliminate malodors found in crude oil; and (c) permanently and irreversibly bind toxic heavy metals found in both the crude oil and transferred by crude into the sea.

The reaction time for the agglomeration of sweet crude to a semi rigid cake is approximately 10 minutes. Sea ReClaim™ works best in an agitated environment as realized in open seawater. The procedure used for dispersing the material and recovery will depend upon the type of crude oil. Perpetually hydrophobic in nature, Sea ReClaim™ not only floats on the surface of the water but also adheres immediately to any floating petroleum based product and builds a solid mass without the detrimental attributes associated with crude oil. Its incorporation into the contaminant stream results in a floatable, recoverable, recyclable sub product of its original polluting form. All ingredients incorporated into our premier formula are...
derived from earth’s inorganic resources and are Generally Regarded As Safe (GRAS) materials 100% safe to humans, the environment and marine fauna and flora.

Application

Small Surface Spills

For small scale spills on water (salt or fresh), Sea ReClaim™ can be broadcast directly onto the spill, spreading a thin layer from the outer edge into the middle of the spill. Agitation is not necessary but may be helpful.

Large Surface Spills

For large spills on water (fresh or salt), Sea ReClaim™ may be deployed with an air stream directed at the leading edge of the spill. Because of its particulate nature, static buildup may occur if the product is applied at a high rate of delivery. Dispensing equipment should be properly grounded to prevent this. The product is relatively non-abrasive and should not harm machinery or pumping systems. Agitation is not necessary but may be beneficial, especially when the oil spill has been previously treated with other agents or dispersants. Mixing can be accomplished by use of wave action, vessel propellers (wake), and pole mixers or air jets below the surface of the water. The material has a specific gravity of less than one and will move to the surface of the water. Oil and Sea ReClaim™ have a natural affinity for each other and Sea ReClaim™ will seek out the oil.

Application to Reeds, Grass and Other Aquatic Plants

Sea ReClaim™ may be used to clean weeds, reeds, and other aquatic plants by physically contacting the Sea ReClaim™ with the plant material. This can be accomplished by placing the material on the plant material by broadcasting or by hand action. To maximize the removal of oil from the plant material, it is best to agitate or rub the Sea ReClaim™ onto the surface of the plant. As the Sea ReClaim™ and the oil are removed; the complex can be reclaimed by collection using standard methods.

Application on Beaches to Prevent Oil and Tar Ball Entrenchment

Frequently crude oil and or tar balls wash up on beaches and may be left there as the tide recedes. Material may remain on the surface of the sand until the next tide comes in and may subsequently be covered by additional sand and more oil and tar balls. This
gives the appearance of burying the oil but is just the natural action of tide and wave action. Oil from the Alaskan Valdez spill is still found by digging into the beaches some 40 years after the original spill.

To minimize this buried tar and oil phenomenon, Sea ReClaim™ can be placed on the surface of the sand to collect the oil and tar and make it less adherent to sand to either allow it to work its way to the surface over time or to allow it to be recovered by standard methods currently in use for routine beach cleaning. Such methods include raking or the like.

**Piers, Pilings, Rocks and Other Hard Surfaces**

Oil may be removed from physical objects such as piers, pilings, rocks and other hard surfaces by rubbing Sea ReClaim™ material on the surface of the object working it into the adhered oil. Sea ReClaim™ will attract the oil and encapsulate it for collection by standard means.

**Heavy Crude or Crude Oil with High Asphaltenic Content**

For spills with high asphaltenic content or other heavy (viscous) crude oils, Sea ReClaim™ may not bind and hold the crude oil with the same efficiency or in the same manner as with light crude oils. To bring the high asphaltenic oil into contact with Sea ReClaim™, agitation may be needed to blend the material. As Sea ReClaim™ binds the oil, it may start out with the appearance of granola before blending is complete. If this is encountered, it will be necessary to provide some means of agitation to the spill to improve the contact and blending of Sea ReClaim™ in binding the oil. Mixing can be accomplished by use of wave action, vessel propellers (wake), and pole mixers or air jets below the surface of the water. The resultant mix will be an amorphous agglomerated non-sticky semi-solid or solid material which is easy to recover without binding to the clean up equipment. Submerged oil when fully blended will float on the surface.

**Land Spills**

For spills on land, the product would be applied in the same manner as in the water-based spill situation. Agitation is not necessary but may be beneficial. Contact is obviously necessary. To recover solidified oil or hazardous materials from spills on land, the spent material may be collected and swept up using an industrial vacuum cleaner, broom, or shovel. The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.
Concentration/Application Rate

In general, a 10% to 30% by weight application is required to solidify light, medium, and heavy oils. Solidification may occur faster if additional Sea ReClaim™ is applied. Since Sea ReClaim™ coalesces and aggregates with itself and with the oil, any additional material can be harvested along with the used material. The unused material may be reused or recycled with the harvested contaminated material. If unused material is still floating on the surface in its natural coalesced form it may be redeployed, or directed by guided movement, to the new area for use.

Disposal

The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations or preferably returned to the manufacturer for reprocessing.

Conditions for Use

Sea ReClaim™ is equally effective in fresh or salt water, and under any weather conditions; however, colder temperatures may slow the solidification process. The product is most effective on water temperatures between 32°F and 120°F. Depending on the age and/or viscosity of the oil containing material, varying amounts of Sea ReClaim™ may be required to obtain complete solidification. The recovered solidified oil or resultant non-hazardous materials may be landfilled, incinerated, used as a secondary fuel, or otherwise disposed of according to federal, state and local regulations or preferably returned to the manufacturer for reprocessing and reclamation.

Examples of Application Tools

Sea ReClaim™ can be applied by hand, spread by dumping or by use of special super sack bags. It can also be placed in bags, booms, boat holds, barges, helicopters or aerial spray planes, etc. by those wishing to take advantage of its unique properties. It can also be broadcast by mechanical means using a variety of commercial spreaders. Examples of such products are listed in the table below.
<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Example</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Powered Personal Applicator</td>
<td>- Solo Chemical Granule Spreader</td>
<td>- Inexpensive</td>
<td>- Inefficient for large applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Easy to carry</td>
<td>- Labor intensive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Readily available</td>
<td></td>
</tr>
<tr>
<td>Motorized Personal Applicator</td>
<td>- Solo Motorized Mist / Dust Sprayer</td>
<td>- Improved worker efficiency</td>
<td>- Initial Investment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Even Application</td>
<td>- Needs fuel source</td>
</tr>
<tr>
<td>ATV Application</td>
<td>- Earthway 12V ATV Broadcast Spreader - A1 Utility Ranger</td>
<td>- Very rugged</td>
<td>- Storage and transport for machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Relatively inexpensive</td>
<td>- Requires heavy duty ATV/RTV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Multi purpose</td>
<td>- Needs fuel source</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No defined site infrastructure</td>
<td></td>
</tr>
<tr>
<td>Truck / Trailer Application</td>
<td>- Easy Lawn Granular Hydroseeder - A1 Super Duty - Tifone Airblast Cannon - Finn Granular Hydroseeder</td>
<td>- Excellent coverage</td>
<td>- Moderate initial investment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Easily transportable</td>
<td>- Requires moderate to complete site infrastructure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Large area application</td>
<td></td>
</tr>
<tr>
<td>Aerial Application</td>
<td>- Schweizer 300 / Isoair Initiator - Air Tractor - Piston Engine Robinson R-44 - Turbine Engine Bell 206B Jet Ranger</td>
<td>- Ideal for large open sites</td>
<td>- Profitable only on large scales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Requires no site infrastructure</td>
<td>- Substantial initial investment and maintenance costs</td>
</tr>
</tbody>
</table>

**Potential Benefits of Use of Sea ReClaim™ for Spills**

- A method for the treatment of oil from open aqueous spills, leaking underground storage systems, and in contaminated soil.
- Reclamation of oil from oil spills through extraction of oil from matter composites.
- Maintenance of floatation (surface buoyancy) of crude oil on the surface of water thus preventing settling to the bottom and allowing for control of the oil spill with easy clean up.
• Prevention of the spread of crude oil on aqueous surfaces resulting in readily identifiable floating clumps that remain on the surface of the water until harvested. Clumps do not leach out oil over time.

• Hydrophobic buoyant matter compositions resulting in an agglomerated, cross-linked matrix that is perpetually buoyant until harvested.

• Maintains the ability to identify, recognize, and control the movement of spilled oil after agglomeration.

Unique Features of the Sea ReClaim™ Product

The following is a list of unique features for the Sea ReClaim™ Product relative to other oil treatment methods.

• Does not sink like other sorbents.

• Oil can be re-released after absorption unlike other sorbents or solidifiers.

• Can be used on the oil’s surface, unlike some other sorbents.

• Perpetually buoyant both before and after contact with oil.

• Does not disperse on the surface continually unlike some other sorbents; coalesces unto itself.

• Uses absorption, adsorption, and two solidification processes.

• Both oleophilic (oil attracting) and hydrophobic (water repellent) unlike some other sorbents.

• Actually prefers oil and seeks it out.

• Solidification involves both hydrocarbon physical attraction enhanced by van-der-Waal’s forces, and hydrogen bonding through mixed clathrate formation.

• Works with all types of crude oil depending upon the process used.
- Applicable to floating surface oil; oil floating right below the surface; submerged oil deep below the surface; floating oil in coastal contact; oil washed up on the shoreline; removal of oil attached to surfaces.

- Works with oil with or without prior use of oil dispersant material.
Sea ReClaim™ Sorbent

Earth’s Natural Buoyant Oil-Binding Materials for Immediate and Effective Reclamation of Oil Spills

TECHNICAL BULLETIN #1

TECHNOLOGY
Sea ReClaim™ Product

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Sea ReClaim™ is a sorbent material and consists solely of the materials listed in § 300.915(g)(1) of the NCP. But it exhibits some of the properties of solidifiers with one distinct difference: it does not transform the oil chemically into a new substance but uses natural physical properties instead to agglomerate the oil into a semi solid mass that can be readily harvested. There is another unique difference. The physical process used for agglomeration and solidification can be reversed by high heat, and the oil can be reclaimed and the raw materials recycled or disposed. Hence Sea ReClaim™ has the benefits of sorbents with some of the properties of solidifiers without the toxic and disposal issues. Sea ReClaim™ is enviro-friendly.

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detrimental attributes associated with crude oil. Its incorporation into the contaminant stream results in a floatable, recoverable, recyclable sub product of its original polluting form. All ingredients incorporated into our premier formula are derived from earth’s inorganic resources and are Generally Regarded As Safe (GRAS) materials 100% safe to humans, the environment and marine fauna and flora.

Our Technology

“Use of Nature’s Nanotechnology”

Sea ReClaim™ is composed of an admixture of natural and modified-natural scoriaceous material derived from the earth. Sea ReClaim™ is derived from earth’s natural scoriaceous material which is both highly porous and buoyant. Although not used in Sea ReClaim™, the most universally known scoriaceous material is lava which is a form of scoria from a geological perspective. Scoria is produced by heat and/or pressure over time. Another well known example of scoria from metallurgy is dross.

Scoriae are natural materials derived from earth’s rock, sand, dirt and dust. Scoriaceous material can be macroporous to mesoporous in porosiveness (porosity). Macroporous materials are large granular porous material that can vary in particle diameter and/or mesh size. Sea ReClaim™ uses macroporous scoria of 0.5--2 mm diameter. Microporous material generally has pore sizes > 50 nm. Mesoporous materials have pore sizes from 2 to 50 nm. Both microporous and mesoporous structures are considered nature’s natural nanotechnology. Sea ReClaim™ uses both microporous and mesoporous natural nanomaterials derived from the earth. Some natural scoriaceous material is modified by Sea ReClaim™ scientists for specific properties necessary for immediate and effective oil spill reclamation. The natural nanomaterials in Sea ReClaim™, since they are derived from the earth, are environmentally friendly when returned to the earth.

One would ask, Why use nature’s nanotechnology? The reason is simple. Found naturally in the earth itself, these nanomaterials afford the means to
deal with the oil spill with some very distinct advantages. Natural nanomaterial benefits derive from their small physical size (nano = 0.000000001 meters = 1 nm), which translates directly into an extremely large surface area. As will be explained later, 5 gm of natural nanomaterial as used in Sea ReClaim™ has the surface area of 10 football fields. This allows a small amount of material to have a significant action on oil, an advantage never seen with conventional sorbents or solidifiers. By way of comparison, activated carbon, another scoriaceous material with pores (not useful with oil spills) has a surface area of only 1 football field per 5 gm.

Another unique advantage to some of nature’s nanomaterials is their unique ability to spontaneously aggregate together upon contact with oil. Nature’s nanomaterials as used in Sea ReClaim™ come unassembled like a jigsaw puzzle. After contact with oil, the nanomaterials spontaneously self assemble into a solid 3-D network, *inter allia*, a solid mass. This very unique property allows the sorbent Sea ReaClaim™ to have physical properties only formerly attributable to chemical solidifiers. Chemical solidifiers are not natural and chemically convert the oil into a new material. Solidifiers are toxic to the environment. Why use a toxic man-made chemical when one can use a natural physical process; the very process that allows scoriaceous material to be formed naturally in the earth in the first place? Natural is always eco-friendly.

Three Unique Functions

*Oil Reclamation · Malodor Elimination · Toxic Heavy Metal Removal*

Sea ReClaim™ uses buoyant materials that are either naturally highly porosive, or modified nanoparticulate material that has been rendered hydrophobic and buoyant. All materials are derived from scoria except for one man-made ceramic material.

There are six oil binding components in Sea ReClaim™.

One of the main components is naturally mined scoria that is inherently buoyant due to its high porosiveness. This material is highly oleophilic (oil-binding) and hydrophobic (water-repellant) at the same time. It ranges from macroporous to mesoporous in natural nanostructure.
The next three (3) components in Sea ReClaim™ are also modified natural scoria mined from rock that is made to be hydrophobic rendering it perpetually buoyant. When added to water, Sea ReClaim™ is self coalescing and buoyant unlike some other sorbents that either sink or spread over the surface in a layer too thin to be effective or controllable. These three natural materials contain unassembled non-porous nanoparticulate subassemblies with a hydrocarbon-like surface that are naturally physically attracted to oil as “like seeks like”. This material increases crude oil viscosity upon contact and aids in immediate aggregation of the crude oil into an aggregated solidified mass. Hence, Sea ReClaim™ has the benefits of a sorbent with the properties of a solidifier. There is no chemical transformation of the oil into a new (non-oil) substance with Sea ReClaim™ as seen with solidifiers. It’s purely a physical attraction as one loves to bind to the other and tighten up.

The fifth component in Sea ReClaim™ is another modified natural scoria which has an extremely strong affinity for the hydrogen atom found on hydrocarbons in that it cross links them. This aids directly in stabilizing the solid mass again through a natural physical process reversible by heat for reclamation of the oil.

The last component in Sea ReClaim™ is a man-made microporous hollow sphere which is comprised of a nano-cage structure that is selective for binding toxic heavy metals that are found in crude oil and which get absorbed into the sea. Toxic heavy metal binding within the nano-cage is permanent and irreversible hence removing the toxic heavy metals from the environment.

“The Benefits of Sorbents, the Properties of Solidifiers”

Although Sea ReClaim™ is comprised of sorbents, its functionality is a lot like that of solidifiers. Solidifiers are EPA approved chemicals comprising hydrocarbon-like polymers and surfactants which chemically transform oil into a new non-oil substance which must in itself be disposed of or have another use found for used sorbent – oil mixture.

Sea ReClaim™ sorbents behave like solidifiers in that they form a soil-mass. They do so physically by natural means, not chemically. The resultant Oil Kake is different from solidifiers in that the oil is agglomerated.
and solidified but it is not transformed into a new substance. The oil is actually recoverable from the Sea ReClaim™ sorbent after harvesting through heating.

Sea ReClaim™ achieves solidification through the integration of 4 natural mechanisms of action: (1) absorption and (2) adsorption (usually limited to sorbents); (3) solidification by physical attraction between non-polar, hydrocarbon-like nanoconstructs and the hydrocarbons in crude oil enhanced by van-der-Waals forces; (4) as well as by natural hydrogen bonding of hydrocarbons by amorphous unassembled microparticulate nanostructures through a natural process of spontaneous self assembly upon contact directly with crude oil. This interaction results in a stabilized three dimensional cross-linked lattice e.g., the solid mass or Oil Kake.

This naturally occurring process is known as mixed clathrate formation. It is seen in nature most notably with methane snow found on the ocean floor. The hydrogen bonds involved in this natural reaction are the bonds that hold DNA strands together. Hydrogen bonds differ from covalent bonding in that hydrogen bonding is strong yet reversible with heat or enzymes. Hence, oil can be reclaimed from Sea ReClaim™ which gives the product the benefits of a sorbent, but with the properties of a solidifier with an added advantage of oil reclamation.

Sea ReClaim™ has two additional features differentiating it from all other sorbents and solidifiers on the market. One of the modified natural nano materials in Sea ReClaim™ derived from scoria is extremely effective at malodor elimination. Sea ReClaim uses the patent pending proprietary technology of Red Lion Scientifics, LLC. Oil from oil spills is notorious for binding with organic matter readily found in the ocean, which putrefies over time yielding malodors.

The final unique feature of Sea ReClaim™ is the permanent removal of toxic heavy metals found naturally in crude oil. These include lead, mercury, arsenic and chromium among others. These toxic heavy metals, which are also the basis of fossil fuel smokestack emissions, are found in crude oil. Toxic heavy metals in crude oil readily contaminate the seawater and they out-survive the oil spill in the ocean for millennia to come because they are elemental in composition in that they cannot be broken down any further.
Toxic heavy metals readily contaminate plant, fish, and wildlife in the environment and are poisonous for humans as well. The half life for mercury in human tissue as example is 37.5 years, so the only way to not be poisoned by the toxin is to avoid exposure in the first place. Mercury is currently found in all species of fish as a toxic contaminant. Sea ReClaim™ uses a man-made ceramic nanoconstruct in the form of a nano-cage with high internal loading capacity to selectively bind toxic heavy metals and will do so both in oil and in water with extremely high efficiency. Sea ReClaim™ utilizes the proprietary technology of Red Lion Scientifics, LLC.
1. PRODUCT AND COMPANY NAME

PRODUCT NAME: Sea ReClaim™ Sorbent  
PRODUCT CODE:  
PRODUCT FORMULATION NAME: Mixture  
GENERIC NAME: None

MANUFACTURER:  
Eco Renascence  
A Division of Red Lion Scientifics, LLC  
11011 Via Frontera, Suite D  
San Diego, CA 92127  
Phone: (858) 705-6678  
Fax: (858) 705-6694

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: White Powdery Solid, No Odor  
IMMEDIATE CONCERNS: Dust may be irritating to the respiratory tract. Irritating, but will not cause permanent injury to the eye tissue. Repeated exposure may cause skin dryness or cracking. All metal parts of mixing and processing equipment must be earthed/grounded.

POTENTIAL HEALTH EFFECTS
EYES: May cause mechanical irritation. Irritating, but not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.
SKIN: Repeated exposure may cause skin dryness or cracking.
INGESTION: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.
INHALATION: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

CARCINOGENICITY EFFECTS: Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union). See also Section 11.

MEDICAL CONDITIONS AGGRAVATED: Asthma, Respiratory disorder

TARGET ORGAN: Eyes, Lungs

COMMENTS: For detailed toxicological information see Section 11.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients in the product are not known or classified as hazardous. They are Generally Recognized As Safe by the USFDA.

This Proprietary Formulation is comprised of natural scoriaceous materials.

4. FIRST AID MEASURES

EYES: Flush eyes with large quantities of water. If irritation persists consult a physician.

SKIN: Wash with soap and water. Seek medical attention if redness, swelling, itching or burning occurs.

INGESTION: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. Drink water to clear throat and blow nose to evacuate dust.
COMMENT: As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to chemical substances and ensure prompt removal from skin, eyes and clothing.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Nonflammable

FLAMMABLE LIMITS: NA

AUTOIGNITION TEMPERATURE: NA

FLAMMABLE CLASS: NA

FLAME PROPAGATION OR BURNING RATE OF SOLIDS: NA

GENERAL HAZARDS: NONE

EXTinguISHING MEDIA: NA

HAZARDOUS COMBUSTION PRODUCTS: NONE

FIRE FIGHTING PROCEDURE: NONE

FIRE FIGHTING EQUIPMENT: NONE

SENSITIVITY TO STATIC DISCHARGE: NA

SENSITIVITY TO IMPACT: NA

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Vacuum clean material with equipment fitted with HEPA filter. Use a dust suppressant such as water if sweeping is necessary.

LARGE SPILL: Clean up promptly with mechanical means as required and place in suitable contained for use or recycling as necessary. Use proper vacuum to remove remaining product. Use a dust suppressant such as water if sweeping is necessary.
ENVIRONMENTAL PRECAUTIONS: No special environmental precautions are required. Local authorities should be advised if significant spillages cannot be contained.

GENERAL PROCEDURES: Wear goggles if release creates conditions where eye contact is probable. Ventilate area if necessary.

COMMENTS: See Section 13 for disposal information and Section 15 for Regulatory requirements.

7. HANDLING AND STORAGE

HANDLING: Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with eyes. Seal broken containers immediately. Continue to follow all MSDS/Label warnings when handling empty containers. All metal parts of mixing and processing equipment must be earthed/grounded.

STORAGE: Keep containers tightly closed in a dry well-ventilated place. Keep at ambient temperature.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

INHALATION STANDARDS: Inhalation standards for this material have not been established.

Goggles: Goggles or Safety Glasses with side shields are recommended. 
Gloves: Wear suitable gloves. 
Respirator: Approved respirator may be necessary if local dust exhaust ventilation is not adequate. 
Skin and Body Protection: Wear suitable protective clothing. No special protective equipment is necessary.

Engineering Controls: Ensure adequate ventilation to maintain minimal dust in area. Provide adequate exhaust ventilation at machinery and at places where dust can be generated.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Powdery Colloidal Solid

ODOR: NONE
COLOR: White

pH: 6.0-7.5 When Suspended in Water

VAPOR PRESSURE: NA

VAPOR DENSITY: NA

BOILING POINT: NA

FREEZING POINT: NA

MELTING POINT: >2000 Degrees F

FLASHPOINT AND METHOD: NA

SOLUBILITY IN WATER: Insoluble, hydrophobic and buoyant

EVAPORATION RATE: NA

DENSITY: NA

SPECIFIC GRAVITY: 0.12g/cm³

VISCOSITY: NA

MOLECULAR WEIGHT: NA

COEFF. OIL/WATER: NA

10. STABILITY AND REACTIVITY

STABILITY: The material is stable.

HAZARDOUS POLYMERIZATION: Hazardous polymerization does not occur.

CONDITIONS TO AVOID: None in designed use.

HAZARDOUS DECOMPOSITION PRODUCTS: None

INCOMPATIBLE MATERIALS: None Known
11. TOXICOLOGICAL INFORMATION

ACUTE:

EYES: Not Available
DERMAL LD$_{50}$: Not Available
ORAL LD$_{50}$: Not Available
INHALATION LC$_{50}$: Due to the product's physical characteristics, no suitable testing procedure is available.

EYE EFFECTS: None Known

SKIN EFFECTS: None Known

CARCINOGENICITY: Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union).

SENSITIZATION: Not Tested

REPRODUCTIVE EFFECTS: Not Tested

TERATOGENIC EFFECTS: Not Available

MUTAGENICITY: Not Available

12. ECOLOGICAL INFORMATION

Summary: Generally considered chemically inert in the environment. Used material which has become contaminated may have significantly different characteristics based on the contaminant and should be evaluated accordingly.

Mobility: Not expected to migrate.

Bioaccumulation: According to experience not expected.

Persistence/Degradability: The methods for determining biodegradability are not applicable for inorganic substances.
13. DISPOSAL CONSIDERATIONS

Information in this section pertains to the product as shipped in its intended composition as described in Section 2 of the MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers or liners. State/provincial and local regulations may be different from federal regulations.

RCRA Classification (40 CFR 261): Not a hazardous waste.
PRODUCT DISPOSAL: May be disposed of in a suitable landfill in accordance with the regulations used by appropriate federal, provincial, state, and local authorities.
EMPTY CONTAINERS: No special handling.
GENERAL COMMENTS: Refer to Section 6, Accidental Release Measures for added information.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

US Department of Transportation
Canadian Transport of Dangerous Goods Regulation
European Transport of Dangerous Goods Regulation
CGVS, GGVE, RID, ADR, IMDG Code, ICAO-TI
United Nations (no UN Number)

DOT/ICAO/IATA

PROPER SHIPPING NAME: Sea ReClaim™ Floatable Oil Binding Material
TECHNICAL NAME: NA
PRIMARY HAZARD CLASS/DIVISION: Not Classified
LABEL: Floatable Oil Binding Material

15. REGULATORY INFORMATION

UNITED STATES

DOT LABEL SYMBOL AND HAZARD CLASSIFICATION
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

313 REPORTABLE INGREDIENTS: Not Applicable
TITLE III NOTES: Not Applicable

CERLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: Not Applicable

TSCA (TOXIC SUBSTANCE ACT)

TSCA REGULATORY: All components of this product are listed on or are exempt from the TSCA Inventory.

REGULATIONS

STATE REGULATIONS: Not Available
LOCAL REGULATIONS: Not Available

16. OTHER INFORMATION

Disclaimer:
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Eco Renascence provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Eco Renascence MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, Eco Renascence WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
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BROCHURES

DRI REMEDIATE™
Dri-Remediation™
Industrial Wetness Prevention & Remediation Formulas

Earth’s Natural Materials for Immediate and Effective Control & Elimination of Moisture

TECHNICAL BULLETIN #1
TECHNOLOGY
The Problem with Water

Water damage describes a large number of possible losses caused by water intruding where it will enable attack of a material or structure by destructive processes such as staining, rotting of wood, growth, rusting of steel, de-laminating of materials such as plywood, growth of microbes and many others.

The damage may be imperceptibly slow and minor such as water spots that could eventually mar a surface, or it may be instantaneous and catastrophic such as flooding. However fast it occurs, water damage is a very major contributor to loss of property.

Water damage can originate by different sources such as: a broken dishwasher hose, washing machine overflow, dishwasher leakage, broken pipes, clogged toilet, leaking roof, and moisture behind walls, foundation cracks, plumbing leaks, and bad weather (snow, rain, floods).

If your building has water damage due to
- flooding,
- sewage back-up from flooding in the area,
- plumbing or roof leaks,
- damp basement or crawl space,
- overflows from sinks or bathtub, or
- high humidity: steam cooking, dryer vents, humidifiers,

mildew, mold, fungus, algae and/or bacteria will develop within 24-48 hours of water exposure. Even worse, mold will continue to grow until steps are taken to eliminate the source of moisture, and effectively deal with the mold, algae or bacteria problem.
Current Situation

The methods for drying an area that has been damaged by water have not changed significantly in the past few decades. The methods currently in common use include:

**Cold air blowing**: This approach involves the use of industrial fans to move the air out of the area and take the moisture in the space with it. Due to the fact that this process depends on the relative humidity and the air’s ability to contain water, it usually takes inordinate long periods to dry an area. With this method, any mold or algae forming colonies are spread throughout the area and contaminate the personnel in the area.

**Hot Air Blowing**: Similar to the cold air process with the exception the air flow is heated to an elevated temperature and thus carries more water out of the area. This heat can cause damage to materials in the area and has all the drawbacks of the cold air method.

**Silica Gel**: This chemical drying agent has been used for years on small areas and is usually contained in some form of container or bag. Silica gel is a granular, vitreous, porous form of silicon dioxide made synthetically from sodium silicate. As a desiccant it has a strong affinity for water molecules but is limited to 2-4X in water pickup.

**Extended or synthetic starch molecules**: While these materials have a high affinity for water, they form a paste of plastic like film which makes removal difficult. They may pick up to 500x their own weight in water.

**Sodium polyacrylate**: A synthetic polymer widely used in consumer products like diapers. It has the ability to absorb as much as 200 to 300 times its mass in water. The resulting gel is difficult to remove and the material swells to fill all available space making it sticky and odiferous as the un-removed material dries.

**Clays and Bentonite**: These unique clays will generally swell to double its own dry volume when it comes in contact with moisture and when completely hydrated it has the capabilities to swell up to 18 times its own dry volume. It cannot be applied to vertical surfaces and usually forms a paste material which is difficult to remove.
Dri-Remediation™ Products

Dri-Remediation™ products are unique when compared to the current product offerings. These products chemically bond (adsorb) the water as well as draw water to the material (absorb). The materials absorb and adsorb up to 50,000x their weight in water and can regenerate to their original state when left to dry. Hence they can be left in place or do not need as stringent a cleanup process. The material can be knocked down off of vertical surfaces and all material can be vacuumed up using industrial vacuums. Most of all, the Dri-Remediation™ material is rapid drying and quick to remove water and permitting return of the area to normal use faster.

Dri-Remediation™ Technology

We call our product line “Dri-Remediation™” to speak to its function, composition and mode of action.

Dri-Remediation™ is comprised of a proprietary blend of naturally derived nanomaterials. The power of natural nanotechnology comes not from the chemistry but from the high surface area and the natural physical properties of the materials themselves. Dri-Remediation™ is composed of natural and modified natural scoraceous material found in the environment.

All ingredients incorporated into our premier formulations are derived from earth’s resources and are Generally Regarded As Safe (GRAS) materials 100% safe to humans, animals, plants and the environment. Dri-Remediation™ uses exclusive nanotechnology blend that incorporates EPA registered ingredients that helps prevents the growth of mold, mildew, algae, bacteria and fungus on the coating surface.

Once applied, Dri-Remediation™ materials create a permanent, invisible barrier that inhibits the future growth of mold, mildew, fungus, algae and bacteria on the coating surface. Dri-Remediation(tm) materials are effective against the growth of odor causing bacteria, fungi (mold and mildew) and algae on the coating surface. Our exclusive Nano-Technology is Formaldehyde Free, Safe and Easy to Apply.

Dri-Remediation™ Products with Bind Fresh™ technology are proprietary formulations that use nanomaterials to quickly adsorb and encapsulate moisture. Dri-Remediation™ Products also capture and chemically bind microbe related odiferous compounds to securely lock them away. They also have residual insecticidal properties.
Bind Fresh™ technology is unique in that the tiny nanostructures are self-assembling and tailor themselves upon assembly to the molecular structure of the moisture; microbes and other odiferous compounds present to chemically bond and entrap them. This entrapment occurs no matter the size or shape of the materials(s) or whether the materials(s) are present in solid, liquid or gaseous form.

PRODUCTS:

**Dri-Remediation™ Powder (50069).** This Powder is best used in areas with moisture or dampness visible in the area to be treated. The material may be used on all vertical or horizontal interior surfaces including wallboard, plastic, metal, plaster, stucco, concrete, wood and other surfaces.

**Dri-Remediation™ HD Powder (50068).** HD Powder is a heavy duty product best used in areas with high moisture or when standing water was recently present in the area to be treated. The material may be used on any vertical or horizontal interior or exterior surface including wallboard, plastic, metal, plaster, stucco, concrete, wood and other surfaces.

**Dri-Remediation™ Granules (50072).** Granules are used in areas with very high moisture or when water is visible in the area to be treated. The material may be used on all horizontal surfaces such as floor made of any material including tile, concrete, carpet, wood and other surfaces.

**Dri-Remediation™ Carpet Powder (50071).** Carpet Powder is designed for use in areas with light to moderate moisture or dampness visible in the carpet area to be treated. The material is designed to be used on all carpet surfaces. The formulation is non-staining and may be applied to any material.

**Dri-Remediation™ Prevention Sachets (50070).** Sachets are designed for use in new or remodel construction to prevent microbe growth and moisture build-up. The material is to be inserted into wall stud bays. This material is self-regenerative for the life of the product or structure.
Our Technology

“Use of Nature’s Nanotechnology”

Dri-Remediation™ is composed of an admixture of natural and modified-natural material derived from the earth. Dri-Remediation™ dry powder is comprised of nano-constructs which spontaneously self-assemble to chemically bond to fungus, mold hyphae and spores, algae and/or bacteria. Dri-Remediation™ is derived from earth’s natural material which is highly hydroscopic. Although not used in Dri-Remediation™, the most universally known material of this type is lava which is a form of scoria from a geological perspective.

Scoriae are natural materials derived from earth’s rock, sand, dirt and dust. Scoriaceous material can be macroporous to mesoporous in porosiveness (porosity). Macroporous materials are large granular porousive materials that can vary in particle diameter and/or mesh size.

Microporous material generally has pore sizes > 50 nm. Mesoporous materials have pore sizes from 2 to 50 nm. Both microporous and mesoporous structures are considered nature’s natural nanotechnology. Dri-Remediation™ uses both microporous and mesoporous size natural nanomaterials derived from the earth. Some natural material is modified by Dri-Remediation™ scientists for specific properties necessary for immediate and effective inactivating microbes and/or their elimination. The natural nanomaterials in Dri-Remediation™, since they are derived from the earth, are environmentally friendly when returned to the earth.

One would ask, Why use nature’s nanotechnology? The reason is simple. Found naturally in the earth itself, these nanomaterials afford the means to deal with moisture and/or microbes with some very distinct advantages. Natural nanomaterial benefits derive from their small physical size (nano = 0.000000001 meters= 1 nm), which translates directly into an extremely large surface area. As will be explained later, 5 gm. of natural nanomaterial as used in Dri-Remediation™ has the surface area of 10 football fields, with 5 x 10^20 reactive functional groups per 5 grams to chemically bond to moisture and microbes. This equates to over 10 functionally reactive bonding groups per square nm of surface area. This allows a small amount of material to have a significant action on moisture and/or microbes, an advantage never seen with conventional products. Dri-Remediation does not ABSORB water like a sponge but rather ADSORBS water and CHEMICALLY bonds to it. (By way of comparison, activated carbon, another scoriaceous material with pores (commonly used for odor
Another unique advantage to some of nature's nanomaterials is their unique ability to spontaneously self-assemble. Nature's nanomaterials as used in Dri-Remediation™ come unassembled like a jigsaw puzzle. After contact with moisture, microbes and/or malodors the nanomaterials spontaneously self-assemble into a new 3-D network encasing and chemically bonding the material.

Dri-Remediation™ uses materials that are either naturally highly porosive and hydroscopic or modified nanoparticulate. All materials are derived from scoria.

Dri-Remediation™ achieves excess water and mold elimination through the integration of 3 natural mechanisms of action: (1) absorption (as expected with any hydroscopic material); (2) adsorption (specific to the process of bonding and entrapment); and (3) as well as by natural bonding of water and mold by the high density of specific functional groups on amorphous unassembled nanoparticulate nanostructure subassemblies; these unassembled nanoparticulate structures undergo a natural process of spontaneous self-assembly upon contact with the material. This interaction results in a stabilized three dimensional cross-linked chemically bonded network.

Dri-Remediation™ uses the patent pending proprietary technology of Red Lion Scientifics, LLC.

**Basic Properties of Dri-Remediation™**

A total solution to the problem of moisture, microbe or malodor control comprises the following key elements most effectively found in Dri-Remediation™

**Environmentally Friendly.** The materials and method to be used for moisture, microbe or malodor elimination must be environmentally friendly in that they are not harmful to human or animal life or the environment.

**Non polluting.** Any materials used for moisture, microbe or malodor elimination must be non-polluting. This rules out any chemical or organic formulations that can have long term impacts on the environment.
Non Toxic. The material used must be totally nontoxic for all animal and plant life. This also includes all microscopic and microbial species found in soil. By necessity this warrants that the materials used must be derived from inorganic sources, from the abundance of earth’s natural resources.

GRAS. All materials used for moisture, microbe or malodor elimination must be Generally Regarded As Safe (GRAS). This means that chemists, physicists, and environmentalists at all levels of science and government all currently agree, without exception, that the materials used are generally regarded as safe and are currently classified as such.

Ultrahigh Efficiency. In order for a product to be effective at removal of moisture and microbe under the duration requirements and various levels of malodor products from accumulated material from microbe decay, it must exhibit efficiency in terms of microbe and malodor capture that meets and exceeds the requirement. This requirement is met through nanotechnology as described earlier.

Chemical Bonding. Only Dri-Remediation™ chemically bonds microbe upon contact. Others claim to bind but they do not chemically bond.

Green. In order to be truly “green” a material must be of the earth in its natural state or recyclable back to the earth not affecting its natural state. It is preferable to not require the breakdown of the material to return to its natural state.

Sustainable. In order for a material to be sustainable, it must be available on a continuous basis for generations to come. Although this term usually applies to organic based materials, it is also applicable to inorganic materials as well. For an inorganic (non-living) material, originally derived from the earth, to be sustainable it must upon return to the earth through recycling contribute back to it in an unaltered form to the total mass of inorganic material existing on the earth prior to its use. A sustainable inorganic material would fulfill those requirements and would not be destroyed, altered, or modified by its use. It would simply return to its original state and function in the biosphere as intended.

Product Application

No specific application requirements are necessary for using Dri-Remediation™ products. Each individual Product Data Sheet has instructions on application.
1. PRODUCT AND COMPANY NAME

PRODUCT NAME: Dri-Remediation™ HD Powder
PRODUCT CODE:
PRODUCT FORMULATION NAME: Mixture
GENERIC NAME: None

MANUFACTURER:
Red Lion Scientifics, LLC
11011 Via Frontera
Suite D
San Diego, CA 92127
Phone: (858) 705-6678
Fax: (858) 705-6694

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
PHYSICAL APPEARANCE: White Powdery Solid, No Odor
IMMEDIATE CONCERNS: Dust may be irritating to the respiratory tract.
Irritating, but will not cause permanent injury to the eye tissue. Repeated exposure may cause skin dryness or cracking.

POTENTIAL HEALTH EFFECTS
EYES: May cause mechanical irritation. Irritating, but not permanently injure eye tissue. Low hazard for usual industrial or commercial handling.
SKIN: Repeated exposure may cause skin dryness or cracking. Get medical attention if irritation develops and persist.
INGESTION: Health injuries are not known or expected under normal use. Low hazard for usual industrial or commercial handling.

INHALATION: Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.

CARCINOGENICITY EFFECTS: Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union). See also Section 11.

MEDICAL CONDITIONS AGGRAVATED: Asthma, Respiratory disorder. Individuals with pulmonary and/or respiratory disease, including but not limited to asthma and bronchitis should be precluded from exposure to dust during application.

TARGET ORGAN: Eyes, Lungs

COMMENTS: For detailed toxicological information see Section 11.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients in the product are not known or classified as hazardous.

Proprietary formulation.

4. FIRST AID MEASURES

EYES: Flush eyes with large quantities of water. If irritation persists consult a physician.

SKIN: Wash with soap and water. Seek medical attention if redness, swelling, itching or burning occurs.

INGESTION: Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air. Drink water to clear throat and blow nose to evacuate dust.

COMMENT: As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to chemical substances and ensure prompt removal from skin, eyes and clothing.
5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Nonflammable

FLAMMABLE LIMITS: NA

AUTOIGNITION TEMPERATURE: NA

FLAMMABLE CLASS: NA

FLAME PROPAGATION OR BURNING RATE OF SOLIDS: NA

GENERAL HAZARDS: NONE

EXTINGUISHING MEDIA: NA

HAZARDOUS COMBUSTION PRODUCTS: Ammonia and Nitrogen oxides may be released at high temperatures.

FIRE FIGHTING PROCEDURE: NONE

FIRE FIGHTING EQUIPMENT: NONE

SENSITIVITY TO STATIC DISCHARGE: NA

SENSITIVITY TO IMPACT: NA

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Vacuum clean material with equipment. Use a dust suppressant such as water if sweeping is necessary.

LARGE SPILL: Clean up promptly with mechanical means as required and place in suitable contained for use or recycling as necessary. Use a dust suppressant such as water if sweeping is necessary.

ENVIRONMENTAL PRECAUTIONS: No special environmental precautions are required. Local authorities should be advised if significant spillages cannot be contained.

GENERAL PROCEDURES: Wear goggles if release creates conditions where eye contact is probable. Ventilating area if necessary.
7. HANDLING AND STORAGE

HANDLING: Minimize dust generation and accumulation. Avoid breathing dust. Avoid contact with eyes. Seal broken containers immediately. Continue to follow all MSDS/Label warnings when handling empty containers.

STORAGE: Keep containers tightly closed in a dry well-ventilated place. Keep at ambient temperature.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

INHALATION STANDARDS: Inhalation standards for this material have not been established.

Goggles: Goggles or Safety Glasses with side shields are recommended.
Gloves: Wear suitable gloves.
Respirator: Approved respirator may be necessary if local dust exhaust ventilation is not adequate.
Skin and Body Protection: Wear suitable protective clothing. No special protective equipment is necessary.

Engineering Controls: Ensure adequate ventilation to maintain minimal dust in area. Provide adequate exhaust ventilation at machinery and at places where dust can be generated.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Powdery Solid

ODOR: NONE

COLOR: White

pH: 7.0-7.5 When Suspended in Water

VAPOR PRESSURE: NA

VAPOR DENSITY: NA
BOILING POINT: NA
FREEZING POINT: NA
MELTING POINT: >2000 Degrees F
FLASHPOINT AND METHOD: NA
SOLUBILITY IN WATER: Insoluble, hydrophobic and buoyant
EVAPORATION RATE: NA
DENSITY: NA
SPECIFIC GRAVITY: 0.12g/cm³
VISCOSITY: NA
MOLECULAR WEIGHT: NA
COEFF. OIL/WATER: NA

10. STABILITY AND REACTIVITY

STABILITY: The material is stable.
HAZARDOUS POLYMERIZATION: Hazardous polymerization does not occur.
CONDITIONS TO AVOID: None in designed use. Keep away from strong bases.
HAZARDOUS DECOMPOSITION PRODUCTS: Trace Ammonia and nitrogen oxides.
INCOMPATIBLE MATERIALS: Strong bases.

11. TOXICOLOGICAL INFORMATION

ACUTE:
   EYES: Not Available
   DERMAL LD₉₀: Not Available
   ORAL LD₉₀: Not Available
INHALATION LC$_{50}$: Due to the product's physical characteristics, no suitable testing procedure is available.

**EYE EFFECTS:** None Known

**SKIN EFFECTS:** None Known

**CARCINOGENICITY:** Does not contain any substance greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists) or EU (European Union).

**SENSITIZATION:** Not Tested

**REPRODUCTIVE EFFECTS:** Not Tested

**TERATOGENIC EFFECTS:** Not Available

**MUTAGENICITY:** Not Available

### 12. ECOLOGICAL INFORMATION

**Summary:** Generally considered chemically inert in the environment. Used material which has become contaminated may have significantly different characteristics based on the contaminant and should be evaluated accordingly.

**Mobility:** Not expected to migrate.

**Bioaccumulation:** According to experience not expected.

**Persistence/Degradability:** The methods for determining biodegradability are not applicable for inorganic substances.

### 13. DISPOSAL CONSIDERATIONS

Information in this section pertains to the product as shipped in its intended composition as described in Section 2 of the MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers or liners. State/provincial and local regulations may be different from federal regulations.

**RCRA Classification (40 CFR 261):** Not a hazardous waste.
PRODUCT DISPOSAL: May be disposed of in a suitable landfill in accordance with the regulations used by appropriate federal, provincial, state, and local authorities.

EMPTY CONTAINERS: No special handling.

GENERAL COMMENTS: Refer to Section 6, Accidental Release Measures for added information.

14. TRANSPORT INFORMATION

Not classified as dangerous in the meaning of transport regulations.

US Department of Transportation
Canadian Transport of Dangerous Goods Regulation
European Transport of Dangerous Goods Regulation
CGVS, GGVE, RID, ADR, IMDG Code, ICAO-TI
United Nations (no UN Number)

DOT/ICAO/IATA

PROPER SHIPPING NAME: Dri Remediation™ HD Powder
TECHNICAL NAME: NA
PRIMARY HAZARD CLASS/DIVISION: Not Classified
LABEL: Dri-Remediation™ HD Powder Formulation

15. REGULATORY INFORMATION

UNITED STATES

DOT LABEL SYMBOL AND HAZARD CLASSIFICATION

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

313 REPORTABLE INGREDIENTS: Not Applicable
TITLE III NOTES: Not Applicable

CERLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: Not Applicable

TSCA (TOXIC SUBSTANCE ACT)
TSCA REGULATORY: All components of this product are listed on or are exempt from the TSCA Inventory.

REGULATIONS

STATE REGULATIONS: Not Available
LOCAL REGULATIONS: Not Available

16. OTHER INFORMATION

Disclaimer:
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Red Lion Scientifics, LLC provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Red Lion Scientifics, LLC MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, Red Lion Scientifics, LLC WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
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