REM 7786, 7787, 7906
Received 5/7/2015
Document 2533889

COLORADO
Oil & Gas Conservation Commission
Department of Natural Resources

1120 Lincoln Street, Suite 801
Denver, CO 80203

WARNING LETTER Document Number 2533889

Date: May 7, 2015 Via Certified Mail 7014 0510 0002 0093 9098

Monument Global Resources Inc. (Operator No. 10430) ("Monument")
Kerry Smith, ksmith@monumentglobal.com
12160 N. Abrams Rd., Suite 610
Dallas, TX 75243

Spill 1: Cache Unit 9, NWNW Sec 2 T34N R20W, Montezuma County, Colorado
Spill 2: Cache Unit 6, SWSW Sec 35 T35N R20W, Montezuma County, Colorado
Spill 3: Cache Unit 9, NWNW Sec 2 T34N R20 W, Montezuma County, Colorado
Spill 4: Cache Unit 9 NWNW Sec 2 T34N R20 W, Montezuma County, Colorado

This Warning Letter is to inform you that the oil and gas facility or the oil and gas operations listed above may be in violation of the rules and regulations of the Colorado Oil and Conservation Commission ("COGCC") and corrective action is required.

There is reasonable cause to believe that a violation of the Oil and Gas Conservation Act, or of any rule, regulation, or order of the Commission, or of any permit issued by the Commission, has occurred. The Operator's compliance with this Warning Letter is required to resolve these alleged violations. This document requires the Operator to timely respond to the COGCC and to comply with directives as listed by the **Corrective Action Deadline Date.** Failure to do so will result in the issuance of a Notice of Alleged Violation and initiation of enforcement proceedings in which COGCC will seek monetary penalties for the alleged violations pursuant to § 34-60-121, C.R.S. and Rule 523, COGCC Rules of Practice and Procedure, 2 CCR 404-1.

The COGCC requires Monument to implement corrective action(s) for the conditions identified below.

Spill #1: Remediation Project #7786, Spill/Release Report #200372184

After receiving the complaint on April 19, 2013, Staff inspected the site on April 26, 2013 (Doc. No. 200372184, "Field Visit/Follow Up"). Staff observed that the spill/release had reached East McElmo Creek, a water of the state, and that visual impacts of the spill/release was still present in the creek bottom – as far as 600 feet downstream. Complete spill remediation had also not

occurred by that time. In addition, the damaged flowline had been replaced, but the joints on the old line showed evidence of oil leakage and were in poor condition.

On March 18, 2015, COGCC Staff inspected the site of Spill #1 and did not observe evidence of impacts remaining. The approved Form 27 Remediation Work Plan indicated that impacted materials were to be treated with Simple Green and high nitrogen content fertilizer. No evidence of the spill/release remained in the streambed or along the banks. However, Monument has not documented and submitted to COGCC what actions were taken or are planned.

Spill #2: Remediation Project #7787, Spill/Release Report #200372183

After receiving the complaint on April 19, 2013, Staff inspected the site on April 26, 2013 (Doc. No. 200372183, "Field Visit/Follow Up"). Staff observed that the spill/release had reached a tributary of McElmo Creek, a water of the state, and that the spill/release was still present in the tributary and had traveled approximately a quarter mile downstream. Complete spill remediation had also not occurred by that time. In addition, the damaged flowline had been replaced, but the joints on the old line showed evidence of oil leakage.

On March 18, 2015, COGCC Staff inspected the site of Spill #2 and observed that the flowline had been repaired. Additionally, along portions of the spill/release path, Staff observed signs of surface disturbance, oil-staining on overturned rocks, and visible impacted material in the streambed and on the top of the bluff. Based on samples taken on March 25, 2014 by Monument Global's consultant, total petroleum hydrocarbons (TPH) concentration levels and the pH in the soil samples at this site exceed Table 910-1 standards. Further remediation is necessary to bring the site in compliance with COGCC Rules. The approved Form 27 Remediation Work Plan indicated that impacted materials were to be treated with Simple Green and high nitrogen content fertilizer.

Spill #3: Remediation Project #7906, Spill/Release Report #200381625

On June 10, 2013, an underground flow line was discovered to be leaking in the East McElmo Creek valley. On June 13, 2013, soil samples were collected that showed the spill/release site had levels of TPH, benzene, toluene, xylene (BTEX), and inorganics (EC, SAR, and pH) above Table 910-1 standards. On March 18, 2015, COGCC Staff observed that Monument replaced the flowline and had begun remediation efforts by excavating the impacted material. Further clean-up and remediation is necessary to bring the site in compliance with COGCC Rules.

Spill #4: Cache Unit #9 historic AST location

On March 18, 2015, COGCC Staff observed staining on the ground surface in the area where a former aboveground storage tank (AST) at the Cache Unit #9 Well was located. This spill/release was not reported to COGCC or remediated.

How to Comply with this Warning Letter:

COGCC Environmental Staff met with Mr. Corey Veach (Surface Owner) on March 27, 2015. Mr. Veach conveyed verbal permission for Monument Global to access the property in order to address the outstanding issues outlined below.

Spill #1: Remediation Project #7786, Spill/Release Report #200372184:

- Submit a supplemental report to remediation project #7786 detailing work performed to date, corrective actions taken (including type and quantity of product(s) used for remediation), and any future work plans. **Corrective Action Deadline Date: June 8, 2015.**
- Request "No Further Action". **Corrective Action Deadline Date: June 8, 2015**.

Spill #2: Remediation Project #7787, Spill/Release Report #200372183:

- Further remediation is necessary to address contamination still on location. Landowner's verbal permission to access property has been granted. **Corrective Action Deadline Date: June 8, 2015.**
- Submit a supplemental report to remediation project #7787 to address activities performed to date, products and quantities used, and any future work plans. **Corrective Action Deadline Date: June 8, 2015.**

Spill #3: Remediation Project #7906, Spill/Release Report #200381625:

- Collect confirmation samples and provide analytical results to COGCC. Results from 2013 sampling event indicate TPH, BTEX, PAH, inorganics, and boron levels in excess of Table 910-1 standards. **Corrective Action Deadline Date: June 8, 2015.**
- Remove decommissioned flow line to prevent future impacts. **Corrective Action Deadline Date: June 8, 2015.**

- Once confirmation samples are in accordance with Table 910-1, backfill the excavation with clean fill dirt. **Corrective Action Deadline Date: June 30, 2015.**
- Submit a supplemental report to remediation project #7906 detailing work performed, corrective actions taken, volume and disposition of material removed, and any future work plans. **Corrective Action Deadline Date: July 15, 2015.**
- Document how soil stock pile was treated, where it was stored, and disposed, and future remediation plans, if any. **Corrective Action Deadline Date: July 15, 2015.**
- Request "No Further Action". **Corrective Action Deadline Date: July 15, 2015.**

Spill #4: Cache Unit #9 historic AST location:

- Submit a Form 19 to report historic release in the area where the former above ground storage tank (AST) was located. **Corrective Action Deadline Date: 10-days of receipt of this letter.**
- Submit a Form 27 to address extent of impact and subsequent remediation of this location. **Corrective Action Deadline Date: Within 30-days of receipt of this letter.**

COGCC does not endorse or recommend products or services. However, in order to facilitate remediation, Monument may consider using ESHC Hydrocarbon Cleaner/Degreaser and/or ESHD Hydrocarbon Degrader. Attached are cut sheets regarding these products which have been effective in addressing impacted materials at challenging locations.

Failure to Comply with Warning Letter:

If Monument fails to perform required corrective actions, COGCC will issue a Notice of Alleged Violation and seek penalties pursuant to § 34-60-121, C.R.S. and Rule 523, COGCC Rules of Practice and Procedure, 2 CCR 404-1. (Please note that the COGCC's penalty authority was recently increased to a maximum of $15,000 per day and penalties are no longer capped at a maximum of $10,000 per violation.)

If you have any questions about this Warning Letter, please contact the COGCC representative below.

Sincerely,

Alex Fischer, P.G., Environmental Supervisor – Western Colorado
alex.fischer@state.co.us

CC: Julie Murphy, Hearings Manager
Jeremy Ferrin, Enforcement Officer
Greg Deranleau, Environmental Manager
Jim Hughes, SW Environmental Protection Specialist
Corey Veach, Surface Owner
26899 Road H
Cortez, CO 81321
970-749-0819, e mail address:bugleshy@hotmail.com.

Attachments: April 6, 2015 Cache Unit Investigation, Document Number 2533890
Earthsmart Solutions data sheet.

REM 7786, 7787, 7906
Received 4/6/2015
Document 2533890

Monument Global Resources, Inc.

Cache Unit Investigations

April 6, 2015

Spill #1:

NOAV #200379257

REM Project #7786

Spill/Release Report #200372184

Approximate location where produced fluids entered the East Fork of McElmo Creek, from an underground flow line that had corroded. The East Fork of McElmo Creek is an intermittent stream. The streambed indicates that high energy flows occur during storm events. The Monument Global Cache Unit #9 pump jack is visible in the background. Remediation project #7786 indicates that contaminated soils were treated with Simple Green and high nitrogen content fertilizer.

Site of historic AST associated with Cache Unit #9 API #05-083-05148. Poly flow line on risers has replaced underground flow line where spill was generated from. Landowner, Corey Veach met COGCC SW EPS on March 24, 2015 to walk location and extent of releases.

View facing downstream (west) of Spill #1 in streambed of the East Fork of McElmo Creek. Cache Unit #9 is directly south of this location. No evidence of a release remains in the streambed or along the banks.

Aerial map showing extent of release. Coordinates were taken from field notes of Karen Spray's site inspection on 4/26/13. The East Fork of McElmo Creek flows from right to left.

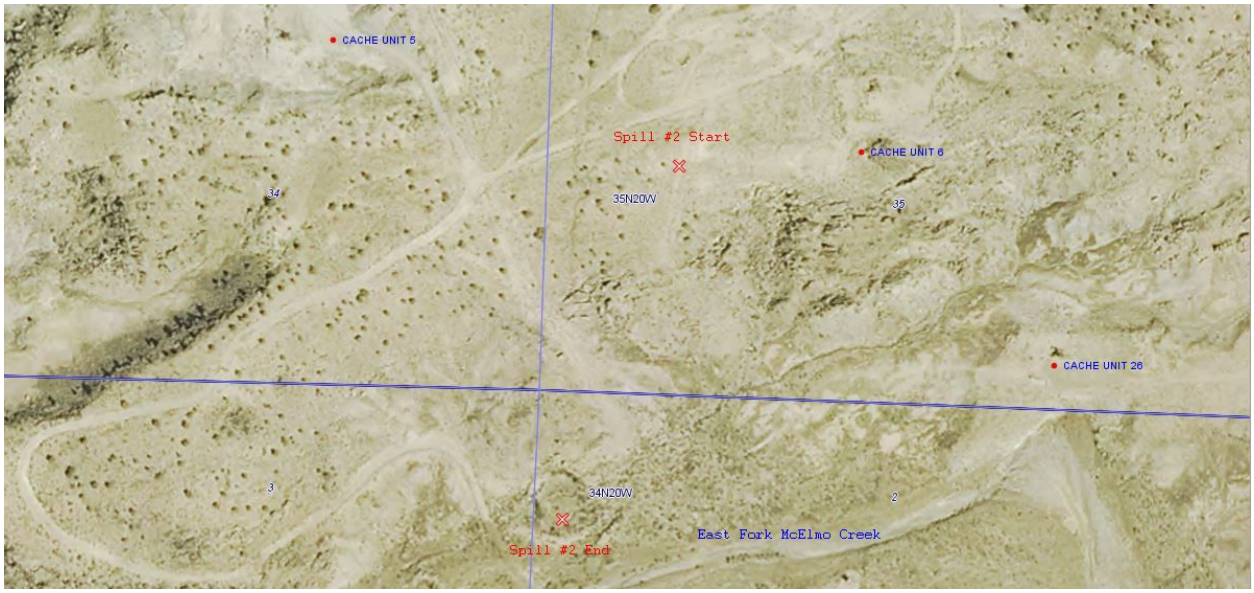
Spill #2:

NOAV #200379270

REM Project #7787

Spill/Release Report #200372183

View from cliff face looking north towards Monument Global Cache Unit #6. Area impacted by Spill #2. A historic release from a corroded flow line was documented as the cause of this release. Remediation project #7787 indicates that the flow line was repaired and the impacted materials were treated with Simple Green and high nitrogen content fertilizer.



Aerial map showing extent of release. Produced fluids from spill #2 reportedly did not reach the East Fork of McElmo Creek.

Area where produced fluids ran over the cliff face. This area has had some surface disturbance.

Overturned rocks near edge of cliff are oil stained.

View to the south of impacted drainage and terrain where produced fluids flowed off of bluff. Impacted material is visible in streambed, as well as on top of the bluff.

Impacted material from Spill #2 remains on top of the bluff west of the Monument Global Cache Unit #6.

Impacted rocks and soil in streambed of tributary drainage to the East Fork of McElmo Creek.

Wattles anchored across tributary drainage of the East Fork of McElmo Creek. This is the furthest extent reported for spill #2. Impacts from spill #2 are still present on top of the bluff and in the drainage below.

Spill #3:

REM Project #7906

Spill/Release Report #200381625

An underground flow line was discovered to be leaking on June 10, 2013.

Open excavation from Spill #3 in East Fork McElmo Creek valley. Underground flow line can be seen in pool of standing water. No sheen or odor noted during this inspection. Replacement poly flow line can be seen behind excavation.

Furthest extent of spill #3 and excavated material. Material was stock piled on Monument Global Cache Unit #26 location. Per conversation with Tom Fox, material has been moved to tank battery across the valley to be land farmed.

View to the south showing location of spill #3 in relation to the East Fork of McElmo Creek and the Cache Unit #9. Facility where impacted material has been transported to can be seen left of the pump jack in this photo.

Spill #1 Analytical Summary:

Spill #1 (200372184) was sampled by Souder Miller and Associates (SMA) on 5/23/13. Sample results indicated TPH levels in exceedance of Table 910-1 standards. This sample identified as "source" was re-sampled on 3/25/14 and the results indicated TPH levels were in compliance with Table 910-1.

Spill #2 Analytical Summary:

SMA collected samples of impacted material associated with spill #2 on 5/23/13. TPH levels of the sample identified as "source #2" exceed Table 910-1 standards. Electrical Conductivity (EC) results of this sample also exceed standards set forth by the COGCC. This site has no record of being re-sampled.

Samples labeled "Cliff bottom at wash" and "Collection pit at end" were sampled on 3/25/14. TPH concentration levels in these samples exceed Table 910-1 standards. Analytical results indicate that pH is above Table 910-1 standards at these locations. There is no record of re-sampling at these sites.

Spill #3 Analytical Summary:

On 6/13/13 SMA collected samples from spill #3. Samples identified as "Surface #1" and "Surface #2" had TPH concentration levels that exceed Table 910-1 standards. A sample collected on 3/25/14 labeled "soil stockpile" also had elevated TPH values. The "Surface #2" sample also contained benzene, toluene, and xylene concentration levels in exceedance of

COGCC standards. These three samples and a fourth labeled “Excavation”, contained elevated values for inorganics (EC, SAR, and pH)

Summary of Recent COGCC Involvement:

3/18/15 - Southwest field inspector Joe McLaren and southwest EPS Jim Hughes conducted a joint field inspection of the Monument Global Cache Units #6, #8 and #9.

3/24/15 - Phone conversation with Monument Global representative Tom Fox regarding remediation work performed to date. According to Mr. Fox, during remedial activities at the third spill, the landowner made Monument Global representatives leave his property. The open excavation of the underground flow line was left. Impacted material from this excavation was stock piled on the Cache Unit #26 location. This material was not present on site during a field visit on 3/27/15 by COGCC staff. Mr. Fox has stated that the material has been moved across the valley to the tank battery location, near the Cache Unit #20. Mr. Fox also described the locations and extent of the spills in the area.

3/27/15 - Phone conversation and site visit between landowner Corey Veach and SW EPS Jim Hughes. Mr. Veach and COGCC staff walked the area of the releases. Mr. Veach verbally gave Monument Global access to his land to complete remediation work. Mr. Veach expressed concerns about potentially impacted material at the site of the historic AST associated with the Cache Unit #9.

3/31/15 – Phone conversation with Shawna Chubbuck of SMA, requesting lab results of sampling program conducted in the Cache Unit on behalf of Monument Global.

Phone conversation with Monument Global representative Tom Fox regarding remediation plan for historic AST location near the Cache Unit #9. Mr. Fox stated that equipment will be brought in to excavate and remove impacted material. Mr. Fox was made aware of the landowner’s recently granted access for remediation efforts.

ESHC – HYDROCARBON CLEANER / DEGREASER

ESHC is an environmentally safe, non-hazardous, biodegradable formulation for use in removing fresh and aged petroleum hydrocarbons from both hard and porous surfaces. When used as directed **ESHC** will effectively clean, liquefy and degrade a wide range of hydrocarbons including gasoline, diesel, motor oil, crude oil, glycol, hydraulic fluid, benzene, toluene, ethyl benzene, xylene, etc. **ESHC** is safe for use on gravel, sand, railroad ballast, concrete, brick, metal, rubber, plastics, porcelain, wood, textiles, etc. Our Earth Smart Hydrocarbon Cleaner does NOT contain acids, caustics, chemicals, petroleum distillates or VOC's and is D-Limonene free. In addition, **ESHC** is environmentally friendly and leaves no residue.

BENEFITS OF ESHC:

- Biodegradable
- Non Toxic - Non Hazardous
- Does not produce fumes
- Non Flammable
- Non Combustible
- Non Corrosive - Contains corrosion inhibitors
- Does not contain VOC's
- Environmentally safe alternative to solvent based cleaners
- Contains no petroleum distillates
- Phosphate free
- Non abrasive
- Deep cleans surfaces – Provides visible results in minutes
- Fast drying
- D-Limonene free
- Leaves no residue
- Enhances the natural degradation processes
- Eliminates unsightly areas
- Reduces potential liability
- Lowers disposal costs
- Certified for use in Southern California
- Can be used in concentrated form or diluted form

***ESHC** IS SAFE FOR USE ON ANY SURFACE THAT IS COMPATABLE WITH WATER*

TYPICAL APPLICATIONS:

- New and aged hydrocarbon spills
- Restaurant and Commercial Kitchens
- Coffee Machines, Ovens
- Hood Fans, Grease Traps
- Oil field equipment
- Railroad ballast
- Locomotives
- Floors, sidewalks, parking lots, storage tanks, filling stations, docks, oil platforms, etc.
- Electric transformers, sumps, machinery, aircraft, rolling stock, etc.

VARIOUS APPLICATION TECHNIQUES:

- Spraying
- Pouring
- Pressure Washing
- Ultrasonic Cleaning
- Parts Washer
- Dipping
- Soaking
- Brushing
- Sponging
- Wiping
- Flooding

Note:

ESHC does not vaporize. It is not odorous and does not damage human tissue. It is safe to use in and around food prep areas and commercial kitchens. It is biodegradable and is NOT **DOT** regulated. **ESHC** constituents are NOT CERCLA hazardous (40 CFR 302.4), or SARA toxic (40 CFR 372, subpart D) and unused **ESHC** would not be considered a hazardous waste (40 CFR 261, subparts C, D, Appendix VIII).

APPLICATIONS TO HARD SURFACES (concrete, steel, cast, aluminum, wood, glass, etc.):

1. Dilute at a rate of 1:10 – 1:20 in water and apply to the affected area
2. Allow sufficient contact time (typically, 10 – 20 minutes) for the product to loosen or dissolve deposits. Do not allow to dry - Keep the area moist by misting with diluted solution or water. For aged stains, agitate, using a fibre pad or brush. Typically, the longer the contact time, the less agitation will be required
3. Rinse or flush with water. Where rinsing is not possible, wipe with wet cloth or sponge

ADDITIONAL DILUTION RATES:

Parts Washers - Dilute 1:20
Pressure Washers - Dilute 1:50 to 1:100
Ultrasonic Cleaners - Dilute 1:50

Note: WARMER TEMPERATURES WILL REDUCE CLEANING TIME

SAFETY:

ESHC is produced in accordance with NOSB (National Organic Standards Board) guidelines. The materials used in the production process are derived from naturally occurring and sustainable sources and are consistent with organic principals and the National List of Allowed Substances. **ESHC** does NOT contain synthetic chemicals, animal components, and animal by products, manure or manure by-products. **ESHC** is environmentally safe and is not harmful to animals, plants and humans.

COMPLIANCE:

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
c) Sections 5 and 13, reference 42FR64583
d) Does not contain marine pollutants as defined in 49 CFR 171.8.

STORAGE & HANDLING:

Store in a cool location away from direct sunlight - No special handling required

PACKAGING:

2 Litre Jug
20 Litre (5 gallon) HDPE Pail
205 Litre (45 gallon) Barrel
1000 Litre Tote

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Cleaner

I. GENERAL SUPPLIER INFORMATION

Product Identifier:	ESHC – Hydrocarbon Cleaner
Product Code:	6618
Application:	Hydrocarbon Degrader / Hard Surface Cleaner
IHC:	3402.20.51.00
Manufacturer:	Earth Smart Solutions
Address:	120 – 60 Industry Way S.E., Calgary, AB., CA. T3S 0A2
Toll Free:	1-866-444-7174
Fax:	403-264-9606
Email:	info@earth-smart-solutions.com

II. HAZARDOUS INGREDIENTS

Hazardous Components:	None – GRAS (Generally recognized as safe)

III. PHYSICAL / CHEMICAL DATA

Form:	Liquid
Color:	Blue
Odor:	Neutral
Bulk Density:	0.6 - 0.8 gr/cc
Solubility:	99.9%
pH:	6.5 – 7.5
Nutrients:	Bio-Stimulants, Micronutrients
Specific Gravity:	1.0

IV. FIRE & EXPLOSION DATA

Flash Point:	N/A Non Flammable (Method ASTM D93)
Special Fire Fighting Procedures:	None
Extinguishing Media:	N/A
Sensitive to mechanical impact:	No
Sensitive to static discharge:	No

V. REACTIVITY DATA

Stability:	Stable
Conditions to Avoid:	Accumulation of product in confined area.
Hazardous Byproducts:	None
Hazardous Polymerization:	Will not occur.
Incompatibility:	Normally un-reactive; however, avoid strong bases at high temperatures,

	strong acids, strong oxidizing agents and materials reactive with hydroxyl compounds

VI. HEALTH HAZARDS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known

CARCINOGEN:	No – IARC, NTP, OSHA
Eye Contact:	May cause moderate irritation excess blinking and tear production
First Aid:	Flush with water - Seek medical attention as required
Recommended Precautions:	Safety goggles - Avoid creating mist in confined areas
Skin Contact:	May cause irritation if a person has a history of dermal allergic reaction
First Aid:	Wash with soap and water
Recommended Precautions:	Limit exposure
Ingestion:	Considered non toxic but may lead to nausea or diarrhea
First Aid:	Drink water or milk - do not induce vomiting - Seek medical attention as req.
Recommended Precautions:	Store in safe place - KEEP OUT OF REACH OF CHILDREN
Inhalation:	May causes irritation
First Aid:	Calm the individual - provide fresh air - Seek medical attention as required
Recommended Precautions:	Use approved respiratory mask in confined areas. Avoid creating mist in confined areas. Provide ventilation when creating mist in confined areas
General Precautions:	Use common sense procedures - Wash hands after use

VII. STORAGE AND HANDLING

Storage:	Store at temperatures between 41 degrees F and 104 degrees F (5 C and 4C) Close containers after use
Handling:	No special handling required

VIII. CONTROL MEASURES

Respiratory Protection:	When creating mist in confined areas
Ventilation:	Mechanical (General)
Gloves:	As required
Eye Protection:	As required
Hygienic Practices:	Wash hands after handling product
Waste Disposal:	Small spills can be washed away with large amounts of water. Large spills, if contained, can be returned to container. Check with regulatory agencies before disposing of large quantities.

IX. COMPLIANCE

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there

under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
c) Sections 5 and 13, reference 42FR64583
d) Does not contain marine pollutants as defined in 49 CFR 171.8

X. BIOLOGICAL HAZARD DATA

Product has been shown to be free of Salmonella and Shigella using standard procedures outlined by AOAC and the USDA.

XI. PREPARATION DATA

Information Sources: Suppliers MSDSs, DSL, TSCA, EPA, IARC, NTP, OSHA.
Preparation Date: March 12, 2007
Last Revised: July 15, 2012

ESHD – HYDROCARBON DEGRADER

ESHD is a natural product formulated for use in hydrocarbon bioremediation of soil, sand, gravel, etc. It is environmentally safe and effective in cleaning up soils contaminated with petroleum hydrocarbons and other contaminants including gasoline, diesel, crude oil, benzene, toluene, ethyl benzene, and xylene, etc.

BENEFITS OF ESHD:

- Deep Cleans Soils
- Enhances Natural Processes
- Eliminates Unsightly Areas
- Reduces Pollution Liability
- Lowers Disposal Costs

TYPICAL REMEDIATION PROTOCOL:

There is not a standard protocol for bio-remediating contaminated soils. There are however several guidelines which should be followed:

1. Till or rake the soil to optimize oxygen transfer
2. Apply **ESMS** Micronutrient Bio-Stimulant to oxidize the affected soil and stimulate indigenous microbes
3. Apply **ESHD** Hydrocarbon Degrader and rake or till the soil at seven to ten day intervals or as required to ensure essential intimate contact between the microbial cultures and the contaminates
4. Application can be carried out with the aid any appropriate fertilizer or seed spreading equipment. Dry or wet application can be used.

** The degradation process is directly affected by soil pH, nutrient levels, oxygen availability, soil type, environmental conditions (humidity, temperature, rainfall amounts), indigenous biomass, degree of contamination and the concentration of contaminates. Accordingly, application rates and intervals will vary from site to site. Repeated applications may be needed for heavily contaminated soil.

SEE PRODUCT LABEL FOR SPECIFIC APPLICATION PROTOCOLS

TYPICAL APPLICATION RATES - INSITU BIOREMEDIATION:

Spill Size	ESHD-S Required	ESMS Required (diluted solution)
Small Spills	12 to 20 oz. (360 to 600 grams) / 100 sq.ft.	1 gallon (4 Litres) / 100 sq.ft.
Large Spills Up To 1 Foot Deep	100 to 125 lbs. (45 to 57 kgs.) / acre	400 galls. (1500 Litres) / acre
Large Spills Up To 1.5 Feet Deep	125 to 200 lbs. (57 to 90 kgs.) / acre	500 galls. (1900 Litres) / acre

** In treatment environments with high biomass levels **ESHD** application rates can be reduced.

EXCAVATED SOIL:

Typically the soil is placed in a lined containment cell in lifts of 8 to 12 inches deep. **ESHD-Hydrocarbon Degrader & ESMS-Micronutrient Bio Stimulant** application rates are the same as those for small spills.

DIRECT INJECTION:

This method is site specific and consultation with an Earth Smart technical representative or an experienced contractor is recommended.

SPECIFICATIONS:

Form: Free-flowing granular powder
Color: Beige
Nutrient Content: Biological nutrients & stimulants
Plate Count: 5 x 10^9
pH: 6.5 – 7.5 (re-hydrated state)
Bulk Density: 0.6 - 0.8 gr. /cc
Water Solubility: Moderate - disperses in water
Flash Point: N/A
Sensitive to static discharge: Not sensitive
Stability: Max loss 1 log/yr

SAFETY:

ESHD is produced in accordance with NOSB (National Organic Standards Board) guidelines. The materials used in the production process are derived from naturally occurring and sustainable sources and are consistent with organic principals and the National List of Allowed Substances. **ESHD** does NOT contain synthetic chemicals, animal components, and animal by products, manure or manure by-products. **ESHD** is environmentally safe and is not harmful to animals, plants and humans.

COMPLIANCE:

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;
b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and
c) Sections 5 and 13, reference 42FR64583
d) Does not contain marine pollutants as defined in 49 CFR 171.8.

STORAGE & HANDLING:

Store in a cool location away from direct sunlight - No special handling required

PACKAGING:

10 kg. (22 lb.) HDPE Pail - 250 gr. (8.8oz.) water soluble pouches
10 kg. (22 lb.) HDPE Pail - Bulk
110 lb. Fiber Drum - Bulk

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Degrader

I. PRODUCT IDENTIFICATION

Product Identifier:	ESHC – Hydrocarbon Degrader
Product Code:	6621-10
Designation:	CLASS 60 - NON-HAZ
Application:	Oil Spill Cleanup – Bioremediation
IHC:	3402.20.51.00
Manufacturer:	Earth Smart Solutions
Address:	120 – 60 Industry Way S.E., Calgary, AB., CA. T3S 0A2
Toll Free:	1-866-444-7174
Fax:	403-264-9606
Email:	info@earth-smart-solutions.com

II. HAZARDOUS INGREDIENTS

Hazardous Components:	None – GRAS (Generally recognized as safe)

III. PHYSICAL / CHEMICAL DATA

Physical state:	Free-flowing Powder
Plate Count:	5×10^9
Color:	Brown
Odor:	Yeast like odour
Bulk Density:	0.6 - 0.8 gr/cc
Water Solubility:	Moderate - disperses in water
pH:	6.0 to 7.0 when mixed with water

IV. FIRE & EXPLOSION DATA

Flammable or combustible:	Not flammable or combustible
Flash point (deg. C):	None
Upper flammable limit:	Not applicable
Lower flammable limit:	Not applicable
Auto ignition temperature:	Not applicable
Flammability classification:	Not applicable
Conditions of flammability:	Not applicable
Special fire fighting procedures:	None
Hazardous combustion products:	None
Sensitivity to mechanical impact:	Not sensitive
Sensitive to static discharge:	Not sensitive

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Degrader

V. REACTIVITY DATA

Stability:	Stable
Conditions to Avoid:	Accumulation of product in confined area
Hazardous Byproducts:	None
Hazardous Polymerization:	Will not occur
Incompatibility:	Acids or alkalis

VI. TOXICOLOGICAL PROPERTIES

Primary routes of exposure:	Eye contact and Ingestion
Sensitizer:	Not known to be a sensitizer
Carcinogen:	No – IARC, NTP, OSHA
Mutagen:	Not known to be a mutagen

VII. HEALTH HAZARDS

Eye Contact:	May cause irritation
First Aid:	Flush with water - Contact a physician as required
Recommended Precautions:	Safety goggles as needed. Avoid creating dust in an enclosed environment
Skin Contact:	Exposure can cause irritation if a person has a history of dermal allergic reaction
First Aid:	Wash with soap and water
Recommended Precautions:	Limit exposure
Ingestion:	Considered non toxic but may lead to nausea or diarrhea
First Aid:	Give water or milk to dilute product, do not induce vomiting. Contact physician as required
Recommended Precautions:	Store in safe place. Wear protective mask as required
Inhalation:	May cause Irritation
First Aid:	Move to fresh air - Contact a physician as required
Recommended Precautions:	Avoid creating dust in confined areas – Store in a safe place
General Precautions:	Use common sense - Wash hands after use

VIII. PREVENTION MEASURES

Gloves:	No special requirements
Respirator:	No special requirements
Eye protection:	No special requirements
Footwear:	No special requirements
Clothing:	No special requirements
Other:	No special requirements
Engineering controls:	No special requirements

MATERIAL SAFETY DATA SHEET

ESHC – Hydrocarbon Degrader

Leak & Spill procedures: Flush away with water

Waste Disposal: Flush to sewer

Special shipping information: NON –HAZ, None required

IX. STORAGE AND HANDLING OF PRODUCT

Storage: Store in cool, dry conditions away from direct sunlight

Handling: No special handling required.

X. COMPLIANCE

Fully complies with EPA Toxic Substance Control Act (TSCA) and the rules, orders and regulations promulgated there under including:

a) Sections 4, 5, 6 & 7; Title 40 Chapter 1, 707.20 thru 707.75;

b) 40 CFR Sections 704.3. 710.2(e) and 720.3(c); and

c) Sections 5 and 13, reference 42FR64583

d) Does not contain marine pollutants as defined in 49 CFR 171.8

XI. CONTROL MEASURES

Waste Disposal: Small spills can be washed away with water. Large spillages, if contained, can be returned to container

Check with regulators before disposing of large quantities.

Ventilation: Mechanical (General)

XII. PREPARATION DATA

Information sources: Suppliers MSDSs, DSL, TSCA, EPA, IARC, NTP, OSHA.

Preparation Date: January 4, 2001

Last Revised: July 15, 2012