Date Received_____
(Leave blank)

Request for Coverage Under
Wisconsin Pollutant Discharge Elimination System (WPDES)
Wastewater Discharge Permit (WI-0046566-06) for
Contaminated Groundwater from Remedial Action Operations

(Revised 8 / 2012)

Please type or print required information, except for the signature.

I. GENERAL INFORMATION

A: FACILITY LOCATION INFORMATION	
Name of Facility / Project Former One Hour Martinizing	Official Representative Onsite Title See Information under Consulting Firm
(Address or Highway / Road with Distance and Direction from nearest City) 36929 Plank Road	Telephone No.: Fax #
City, State, Zip Code Oconomowoc, Wisconsin 53066	County Email Address Waukesha

B: Individual, parent company, or organization with direct control over the facility. Enter full official legal name of the owner or parent company, if there is one, the mailing address, and the name and title of the official representative (responsible party) signing this application if he/she is located at address of parent company.	
Parent Company/Owner Agent for Responsible Party (Brian Cass)	Company Contact Title Rob Hoverman Regional Manager
Mailing Address - PO Box, Street, or Route N16 W23390 Stone Ridge Drive, Suite G	Telephone No.: Fax # 262-290-4001 317-972-7875
City, State, Zip Code Waukesha, WI, 53188	Email Address rhoverman@enviroforensics.com

C: Consulting Firm for Groundwater	
Company Name EnviroForensics, LLC	Company Contact Title Wayne Fassbender Senior Project Manager
Mailing Address - PO Box, Street, or Route N16 W23390 Stone Ridge Drive, Suite G	Telephone No.: Fax # 414-982-3988 317-972-7875
City, State, Zip Code Waukesha, WI 53188	Email Address wfassbender@enviroforensics.com

D. **Name of Person to Receive Discharge Monitoring Report Forms** from Department:

Wayne Fassbender

E. **Any Other Necessary Contact Person** (name, phone, email)

Brian Kappen, 262-290-4001, bkappen@enviroforensics.com

F. **DNR Environmental Response & Repair Project Number, and DNR Project Manager name:**

BRRTS# 02-68-551911, DNR project manager Dave Volkert

II. SPECIFIC INFORMATION ON PROJECT

A. Pollutants

1. The suspected **sources of the pollutants** (estimate of material release quantity and contributing activities)

The primary pollutant is tetrachloroethene (PCE) associated with releases from dry cleaning operations at a former building. Secondary pollutants include relatively low concentrations of the volatile organic compounds (VOCs) trichloroethene and dichloroethene. The quantity of dry cleaning solvent released to the subsurface is unknown.

2. Check **all fuel and waste types** suspected in the contamination at this site:

☐ Unleaded Gasoline	☐ Jet Fuel	☐ Pesticides
☐ Leaded Gasoline	☐ Waste Oil	☐ Fertilizers
☐ Diesel Fuel	☒ Solvents	
☐ Heating Oil	☐ Other:	

3. Check **all pollutants identified at this site**:

☐ BETX (Benzene, Ethylbenzene, Toluene, Xylene)	☐ Pesticides/Fertilizers
☐ PAHs (Polynuclear aromatic hydrocarbons)	☐ Total Recoverable Lead *
☒ VOCs (Volatile Organic Chemicals)	☐ Other

* Include upstream receiving water hardness analysis if lead is detected.

B. Treatment

1. **Describe the existing treatment system**:

Injection of amendments to treat VOCs within the subsurface is proposed. The desired end result is the formation of ethene, a non-hazardous compound.

Treatment Techniques Used

- ☐ Pump & Treat
  - ☐ Air stripping
  - ☐ GAC (Granular Activated Carbon)
- ☒ Augmented Insitu Bioremediation (with chemicals or nutrient addition)
- ☐ Other (describe)

2. **If any cleaning, softening or descaling of the treatment system**

a. Identify any additives that are proposed or being used for cleaning, softening, or descaling of the treatment system. Provide Material Safety Data Sheets, and describe dosage.

None. The treatment proposed is injection only of products to promote reducing conditions in groundwater.

b. Describe what is done to clean, soften or descale, and how often it is done.

c. Where is the reject water from cleaning and descaling discharged?

☐ same discharge point as treated effluent ☐ sanitary sewer ☐ other (please describe)

3. **Anticipated operating schedule** during the new permit term (2012 – 2017)

2018-2020.

4. **Anticipated flowrate** (in gpm), and total volume of treated water to be discharged per month:

The treatment proposed is injection of remediation products only. No groundwater will be discharged. The anticipated flow rate for injections is 5 gallons per minute (gpm), with injections occurring at a two (2) points simultaneously.

5. **Effluent discharge point location**:

The treatment proposed is injection of remediation products only. No groundwater will be discharged.

6. Is an **air permit** from the DNR air management program required? If not, why not

No. There are no air emissions associated with the proposed treatment.

III. DISCHARGE MANAGEMENT PLAN UPDATE

Include the following information:

1. A **summary** of analytical results for contaminants **detected** at the site.

   PCE is present in groundwater at concentrations up to 340 micrograms per liter (µg/L). Trichloroethene (TCE) is also detected at concentrations at low concentrations below the enforcement standard.

2. Results from the most recent **volatile organic compounds (VOC) scan**, including methods used and detection levels.

   The most recent groundwater sampling and analysis was performed in September 2017. PCE concentrations in the proposed injection area ranged from 68 to 340 µg/L. The analysis was EPA Test Method 8260B with detection limits of 0.48 µg/L.

3. Results from an analysis of the **poly-nuclear aromatic hydrocarbons (PAHs)** shown on the right, including methods used and detection levels (unless PAH data are already submitted)

   The lab needs to reach the lowest detection level achievable for each parameter because of the low limit for total PAHs. EPA test method SW-846 8310 is recommended.

benzo(a)anthracene	dibenzo(a,h)anthracene
benzo(a)pyrene	fluoranthene
benzo(b)fluoranthene	indeno(1,2,3-cd)pyrene
benzo(g,h,i)perylene	naphthalene
benzo(k)fluoranthene	phenanthrene
chrysene	pyrene

   Analysis of PAHs has not been performed. There is no reason to suspect PAH impacts in Site groundwater.

4. **Contaminants proposed for periodic monitoring** and demonstration of why any monitoring required in the permit should be exempted due to low level of contaminants in the wastewater discharge.

   The treatment proposed is injection of remediation products only. No wastewater will be discharged.

5. **Information to support request for any alternate effluent limit** for discharges to groundwater (Part 5 of permit) or request for temporary exemption for in-situ discharges (Part 6 of permit).

   Not Applicable.

6. **Plans and specifications for the proposed treatment system** identifying sampling points. For supplier furnished package treatment units, only a flow diagram, design summary, and unit sizing calculations are required.

The following products will be injected. All products are manufactured and distributed by REGENESIS, San Clemente, California; www.Regenesis.com. All products are non-hazardous and non-reactive. Product brochures are submitted with this application.

- 3-D Microemulsion® (3-DME), an electron donor emulsion for enhanced biodegradation;
- Chemical Reducing Solution® (CRS), a food-grade liquid iron based-reagent; and
- Bio-Dechlor Inoculum Plus (BDI), a microbial consortium containing species of Dehalococcoides.

The products will be mixed with potable water to achieve the desired solution concentrations. The products will be injected through direct-push tooling below the water table, which is encountered at approximately 28 feet below ground surface (bgs). The target injection interval is 28 to 40 feet bgs. The injection is designed as follows:

- Mix 3-D Microemulsion® and CRS® together in one solution and inject 610 gallons into each of the 40 injection points shown on Figure 1 (attached).
- Mix BDI in a separate solution and inject 15 gallons into each of the 40 injection points shown on Figure 1.

The total of volume of solutions injected will be approximately 25,000 gallons, or 625 gallons per point.

7. **General description of operations**, identifying operational tasks, who is responsible to do that task, and how frequently the task is done (particularly needed at pump & treat systems).

   The operational tasks are product mixing, advancing direct-push tooling to the target injection depths, injecting the solutions, and monitoring and data recording. EnviroForensics personnel will direct drilling and mixing contractor(s) to perform all of the product mixing and injection activities at the Site per the application design summary (attached). EnviroForensics personnel will be responsible for monitoring and recording flow rate, injection pressure, and injection volume.

8. A **site plan** that identifies general land uses, underground storage tanks and pipelines, groundwater monitoring and recovery wells, contaminant plume definition and zone of influence, other known spills in the area, septic tanks and drain fields, separation distances to potable water supply wells and residences, and other pertinent information.

   A site plan depicting the proposed injection point locations relative to site contaminants is attached. All injections will be performed below the water table which is encountered at a depth of approximately 28 feet. Monitoring wells will be used to evaluate pilot test performance. There are no storage tanks, septic tanks, or drain fields, and no potable water supply wells within 1,000 feet of the site. The site is commercial with nearby commercial and industrial properties. The direction of groundwater flow is east-northeast toward a wetland on the north side of Hwy 16.

9. A **detailed map** of the discharge location, showing if discharge is direct or via a storm sewer or other conveyance. Indicate distance from site to discharge location and other impacted water bodies or wetlands.

   - If a city storm sewer is used, approval from the municipality is required.
   - If a new outfall structure is proposed, the plans should identify the outfall and incorporate appropriate erosion control methods. A permit for riprap projects (available at most DNR offices) should be obtained.
   - Wetland discharges are not allowed unless they meet wetland protection requirements of Ch. NR 103, Wis. Admin. Code.

   The treatment proposed is injection of remediation products to groundwater, only. No remedial process water will be discharged to storm water conveyance systems or surface water bodies.

III. SIGNATURES

A. Signature of person completing the form, attesting to the accuracy and completeness of the statements made.

B.

Name	Title	Date Signed
	Project Manager	2/20/2018

Address	Email	Telephone Number
N16W23390 Stone Ridge Drive, Suite G, Waukesha, WI 53188	bkappen@enviroforensics.com	262-290-4001

B. This application must be signed by the official representative of the permitted facility (responsible party) who is: the owner, the sole proprietor for a sole proprietorship, a general partner for a partnership, or by a ranking elected official or other duly authorized representative for a unit of government, or an executive officer of at least the level of vice president for a corporation, having overall responsibility for the operation of the facility. If the application is not signed, or is found to be incomplete, it will be returned.

Typed or Printed Name of Official Representative	Title
Rob Hoverman	Regional Director

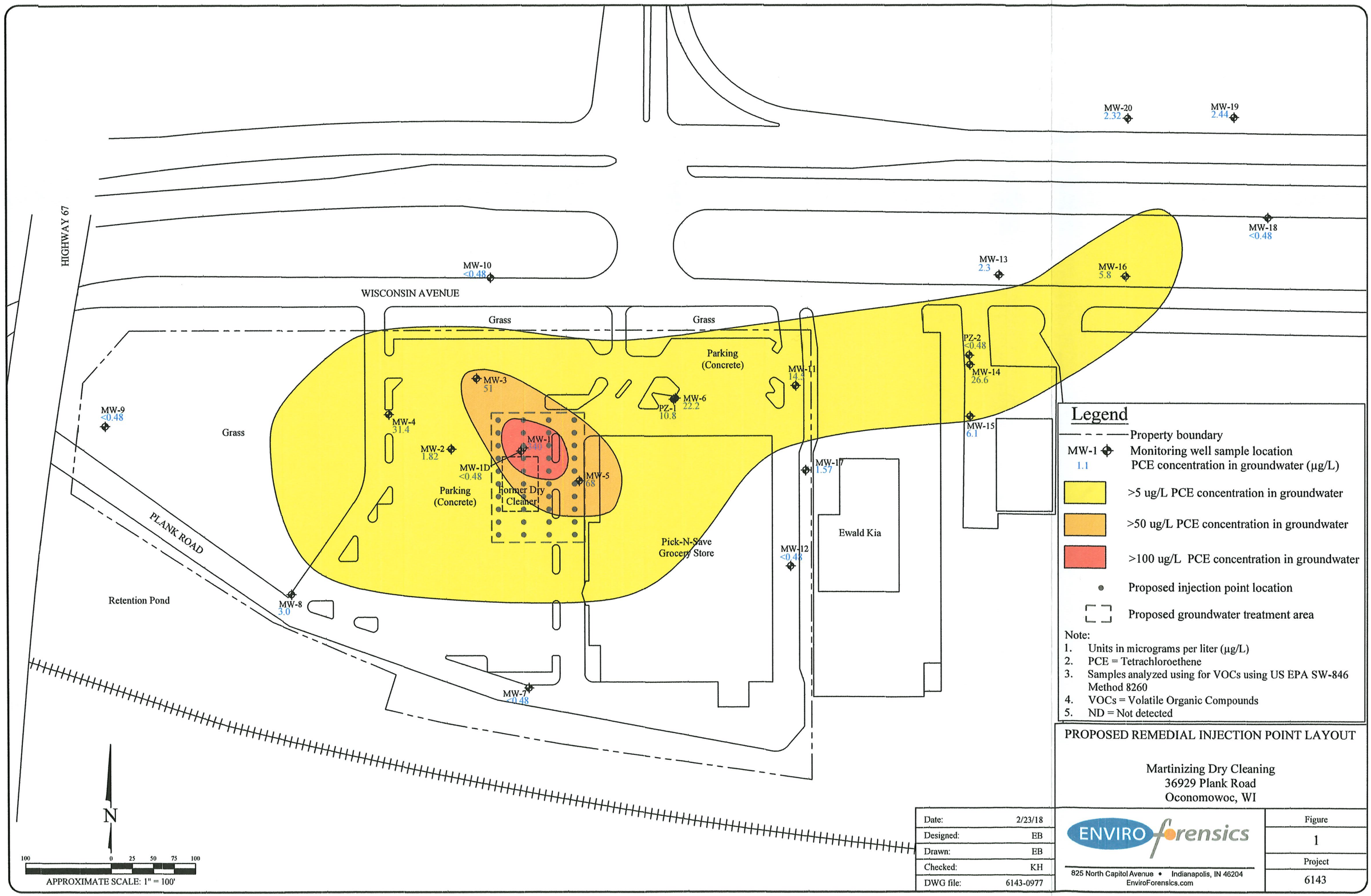
Signature of Official Representative	Date Signed
	2/26/2018

Submit this General Permit Request for Coverage:

Department of Natural Resources,
Water Permits Central Intake - WT/3,
P.O. Box 7185,
Madison, WI 53707-7185.

The decision on whether to cover this discharge under the remediation general permit will be made by regional DNR wastewater staff. Upon receipt in Madison, this application will be forwarded to the appropriate regional staff person.

A copy of the submittal should also be sent to the Department Remediation & Redevelopment Project Manager.
Watershed Central:\General Permits\Reissue Docs\Grw Remediation\Request For Coverage 2012.doc



Legend

- Property boundary
- MW-1 / 1.1 — Monitoring well sample location; PCE concentration in groundwater (µg/L)
- >5 ug/L PCE concentration in groundwater
- >50 ug/L PCE concentration in groundwater
- >100 ug/L PCE concentration in groundwater
- Proposed injection point location
- Proposed groundwater treatment area

Note:
1. Units in micrograms per liter (µg/L)
2. PCE = Tetrachloroethene
3. Samples analyzed using for VOCs using US EPA SW-846 Method 8260
4. VOCs = Volatile Organic Compounds
5. ND = Not detected

PROPOSED REMEDIAL INJECTION POINT LAYOUT

Martinizing Dry Cleaning
36929 Plank Road
Oconomowoc, WI

Date:	2/23/18
Designed:	EB
Drawn:	EB
Checked:	KH
DWG file:	6143-0977

ENVIRO forensics
825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com

Figure
1
Project
6143

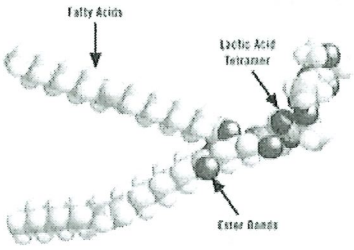
3-D MICROEMULSION
Factory Emulsified

3-D Microemulsion® Factory Emulsified Technical Description

3-D Microemulsion (3DME®) is comprised of a patented molecular structure containing oleic acids (i.e., oil component) and lactates/polylactates, which are molecularly bound to one another (figure 1). The 3DME molecule contains both a soluble (hydrophilic) and in-soluble (lipophilic) region. These two regions of the molecule are designed to be balanced in size and relative strength. The balanced hydrophilic/lipophilic regions of 3DME result in an electron donor with physical properties allowing it to initially adsorb to the aquifer material in the area of application, then slowly redistribute via very small 3DME "bundles" called micelles. These 3DME micelles spontaneously form within sections of the aquifer where concentrations of 3DME reach several hundred parts per million. The micelles' small size and mobility allow it to move with groundwater flow through the aquifer matrix, passing easily through the pore throats in between soil grains resulting in the further redistribution of 3DME within the aquifer. This allows for advective distribution of the oleic acids which are otherwise insoluble and unable to distribute in this manner, allowing for increased persistence of the lactate/polylactates component due to their initial attachment to the oleic acids.

Example of 3-D Microemulsion

FIGURE 1: THE 3-D MICROEMULSION MOLECULAR STRUCTURE



Due to its patented molecular structure, 3DME offers far greater transport when compared to blended emulsified vegetable oil (EVO) products, which fail to distribute beyond the limits of pumping. 3DME also provides greater persistence when compared to soluble substrates such as lactates or simple sugars. The 3DME molecular structures capitalize on the best features of the two electron-donor types while at the same time, minimize their limitations. 3DME is delivered to the site as a ready-to-apply emulsion that is simply diluted with water to generate a large volume of a 3DME colloidal suspension.

Suspension of 3DME generated by this mixing range from micelles on the order of .02 microns to .05 microns in diameter, to "swollen" micelles, (termed "microemulsions") which are on the order of .05 to 5 microns in diameter. Once injected into the subsurface in high volumes, the colloidal suspension mixes and dilutes in existing pore waters. The micelles/microemulsions on the injection front will then begin to sorb onto the surfaces of soils as a result of zeta potential attraction and organic matter within the soils themselves. As the sorption continues, the 3DME will "coat" pore surfaces developing a layer of molecules and in some cases a bilayer. This sorption process continues as the micelles/microemulsion moves outward and disassociates into their hydrophilic/hydrophobic components. The specialized chemistry of 3DME results in a staged release of electron donors: free lactate (immediate); polylactate esters (mid-range) and free fatty acids & fatty acid esters (long-term). Material longevity of three years or greater has been seen at most sites as determined from biogeochemical analyses.

For a list of treatable contaminants with the use of 3DME, view the Range of Treatable Contaminants Guide

Chemical Composition

- Hydrogen Release Compound Partitioning Electron Donor – CAS #823190-10-9
- Sodium Lactate – CAS# 72-17-3
- Water – CAS# – 7732-18-5

3-D MICROEMULSION
Factory Emulsified

3-D Microemulsion® Factory Emulsified Technical Description

Properties

- Density – Approximately 1.0 grams per cubic centimeter (relative to water)
- pH – Neutral (approximately 6.5 to 7.5 standard units)
- Solubility – Soluble in Water
- Appearance – White emulsion
- Odor – Not detectable
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage

Store in original tightly closed container

Store in a cool, dry, well-ventilated place

Store away from incompatible materials

Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Handling

Avoid contact with eyes, skin, and clothing

Provide adequate ventilation

Wear appropriate personal protective equipment

Observe good industrial hygiene practices

Applications

- 3DME is diluted with water prior to application. Resulting emulsion has viscosity similar to water.
- Easily injects into formation through direct push injection points, injection wells or other injection delivery systems.

Application instructions for this product are contained here 3DME FE Application Instructions.

Health and Safety

Material is food grade and relatively safe to handle. We recommend avoiding contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including vinyl or rubber gloves, and eye protection are recommended when handling this product. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: SDS-3DME FE.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

CHEMICAL REDUCING SOLUTION

CRS® Technical Description

CRS® (Chemical Reducing Solution) is an iron-based reagent that facilitates biogeochemical *in situ* chemical reduction (ISCR) of halogenated contaminants such as chlorinated ethenes and ethanes. CRS is a pH neutral, liquid iron solution that is easily mixed with 3-D Microemulsion® Factory Emulsified before injection into a contaminated aquifer. CRS provides a soluble, food-grade source of ferrous iron (Fe^{2+}), designed to precipitate as reduced iron sulfides, oxides, and/or hydroxides. These Fe^{2+} minerals are capable of destroying chlorinated solvents via chemical reduction pathways, thus improving the efficiency of the overall reductive dechlorination process by providing multiple pathways for contaminant degradation in groundwater.

Example of CRS

For a list of treatable contaminants with the use of CRS, view the Range of Treatable Contaminants Guide.

Chemical Composition

• Water	7732-18-5
• Ferrous Gluconate	299-29-6

Properties

- Appearance – Dark green to black
- Odor – Odorless
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Miscible
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage

Store in original tightly closed container

Store away from incompatible materials

Recommended storage containers: plastic-lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Store in a cool, dry, well-ventilated place

Keep away from extreme heat and strong oxidizing agents

Handling

Avoid prolonged exposure

Observe good industrial hygiene practices

Wear appropriate personal protective equipment

Avoid contact with eyes, skin, and clothing

Avoid breathing spray mist

Use with adequate ventilation

CHEMICAL REDUCING SOLUTION

CRS® Technical Description

Applications

- Permanent injection wells
- Direct-push injection points

Application instructions for this product are contained in the CRS Application Instructions.

Health and Safety

The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200. Observe good industrial hygiene practices. Wash hands after handling. Store away from incompatible materials. Dispose of waste and residues in accordance with local authority requirements. Please review the CRS PLUS Material Safety Data Sheet for additional storage, usage, and handling requirements.

REGENESIS

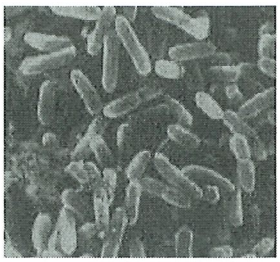
www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

BIO-DECHLOR INOCULUM

BDI PLUS® Technical Description

Bio-Dechlor INOCULUM Plus (BDI PLUS®) is an enriched natural consortium containing species of Dehalococcoides sp. (DHC). BDI PLUS has been shown to simulate the rapid and complete dechlorination of chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE) and vinyl chloride (VC) to non-toxic end products, ethene, carbon dioxide and water.

The culture also contains microbes capable of dehalogenating halomethanes (e.g., carbon tetrachloride and chloroform) and haloethanes (e.g., 1,1,1-TCA and 1,1-DCA) as well as mixtures of these contaminants.



Species of Dehalococcoides sp. (DHC)

For a list of treatable contaminants with the use of BDI PLUS, view the Range of Treatable Contaminants Guide

Chemical Composition

- Non-hazardous, naturally-occurring, non-altered anaerobic microbes and enzymes in a water-based medium.

Properties

- Appearance – Murky, yellow to grey water
- Odor – Musty
- pH 6.0 to 8.0
- Density – Approximately 1.0 grams per cubic centimeter (0.9 to 1.1 g/cc)
- Solubility – Soluble in Water
- Vapor Pressure – None
- Non-hazardous

Storage and Handling Guidelines

Storage

Store in original tightly closed container

Store away from incompatible materials

Recommended storage containers: plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass

Store in a cool, dry area at 4-5°C (39 - 41°F)

Material may be stored for up to 3 weeks at 2-4°C without aeration

Handling

Avoid prolonged exposure

Observe good industrial hygiene practices

Wear appropriate personal protective equipment

BIO-DECHLOR INOCULUM

BDI PLUS® Technical Description

Applications

- BDI PLUS is delivered to the site in liquid form and is designed to be injected directly into the saturated zone requiring treatment.
- Most often diluted with de-oxygenated water prior to injection into either hydraulic push injection points or properly constructed injection wells.
- The typical dilution rate of the injected culture is 10 gallons of deoxygenated water to 1 liter of standard BDI PLUS culture.

Application instructions for this product are contained here BDI PLUS Application Instructions.

Health and Safety

Material is non-hazardous and relatively safe to handle; however avoid contact with eyes and prolonged contact with skin. OSHA Level D personal protection equipment including: vinyl or rubber gloves and safety goggles or a splash shield are recommended when handling this product. An eyewash station is recommended. Please review the Material Safety Data Sheet for additional storage, usage, and handling requirements here: BDI PLUS SDS.

REGENESIS

www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000