



INDUSTRIAL WASTEWATER

# WASTEWATER



**CETCO**  
**OILFIELD**  
**SERVICES**  
**COMPANY**

# INDUSTRIAL WASTEWATER TREATMENT PRODUCTS





## Applications

- Adhesives
- Ceramic Slurry Treatment
- Circuit Board Manufacturing
- Coolants
- Die-Casting
- Dye Penetrants
- Fats, Oil & Grease Removal – Including Waste Machine Oil Coolant
- Filter Press Systems
- Floor Scrubber/Mop Water
- Food Processing
- Heavy Metals Removal from Wastewater
- Metal Finishing
- Municipal
- Paints, Inks & Dyes
- Parts Washing
- Printing
- Reuse of Corrugated Water for Starch Makeup
- Sludge Thickening and Conditioning – DAF (Dissolved Air Flotation)
- Steam Cleaning
- Steel Production
- Tank Washing
- Vacuum Drum System
- Vibratory De-Burring



### Industrial Wastewater Treatment Products

CETCO Oilfield Services Company's cutting-edge flocculant technology and quality service has led the wastewater treatment market for over 30 years. Our Industrial Wastewater Treatment Products Division continues to be the pioneer and innovator in the industrial, municipal, and oilfield wastewater markets in delivering solutions to meet its clients' treatment needs.

In addition to its comprehensive line of world-renowned RM-10<sup>®</sup> clay-based flocculants, CETCO Oilfield Services Company offers a complete line of liquid flocculants and coagulants, filtration media, and solidification and stabilization agents for treatment of wastewater containing emulsified oils, heavy metals, and suspended solids using simple equipment and an easy one-step treatment process that works in almost any manufacturer's equipment. This enables CETCO Oilfield Services Company to design an optimal treatment program to fit the wide array of clients' treatment requirements.

# CUTTING-EDGE TECHNOLOGY

clay-based flocculants

are easy to use for the removal of emulsified oils, heavy metals and suspended solids from wastewater

### RM-10® Features and Benefits

| Dry Chemical   | Decreased Process Time   | Versatile Technology  | Cost-Effective  | Consistent Results  |
|--|--|---|---|---|
| <ul style="list-style-type: none"><li>• Packaged in 50# bags or bulk super sacks for easy storage and movement</li><li>• Semi-granular and granular blends minimize dusting</li><li>• Can be easily introduced to a waste stream with a dry feeder</li></ul> | <ul style="list-style-type: none"><li>• RM-10 combines multiple functions of traditional treatment simultaneously into one simple step</li><li>• Base clays used in RM-10 blends allow faster precipitation and setting of soluble metals</li><li>• Typical treatment time required for full reaction is less than two minutes</li></ul> | <ul style="list-style-type: none"><li>• Effective treatment of waste streams with a pH from 2-12</li><li>• Can be utilized in batch or continuous flow treatment schemes and in most cases with existing equipment</li><li>• Removes heavy metals, Total Suspended Solids (TSS), oils, and other organic and inorganic matter</li></ul> | <ul style="list-style-type: none"><li>• Requires very little operator input</li><li>• Only one product to add and maintain</li><li>• Generates a solid waste that is easily de-watered and is typically classified as non-hazardous</li></ul> | <ul style="list-style-type: none"><li>• RM-10 products are more forgiving if overdosing occurs</li><li>• High affinity for metals, organics, and other contaminants</li><li>• Proven technology for over 30 years</li></ul> |

# RM-10®



### Clay-Based Flocculants

For over 30 years, our clay-based, dry, chemical flocculants have cleaned wastewater in one simple step. Our cost-effective waste minimization process uses single reactant chemicals and is safe, simple, and easy to use for the removal of emulsified oils, heavy metals and suspended solids from wastewater.

#### RM-10®

Our trusted RM-10 products are a non-hazardous blend of sodium bentonite, pH adjusting agents, polymers, and other proprietary components. RM-10 offers generators of various wastewater streams a safe, simple, and cost-effective means for pre-treatment and disposal. CETCO Oilfield Services Company currently has over 40 products in granular, semi-granular, and powdered varieties formulated to treat a vast array of industrial/municipal wastewater.

The RM-10 formulas usually allow one-step removal of emulsified oils, heavy metals, and suspended solids from various wastewater streams. Our system also ensures that the treated effluent will meet POTW (Publicly Owned Treatment Works) discharge limits established by federal, state, and local authorities.

#### AccoFloc®

AccoFloc products are high-swelling sodium bentonite clays, selected for their unique ion exchange capability found only in the Black Hills region of the western United States. This capability allows AccoFloc to increase clarity and remove trace metals from wastewater.

- High activity sodium bentonite clay used to increase clarity, reduce TOC, and remove trace metals from water or wastewater
- Designed to meet the increasingly stringent water quality and discharge regulations required by municipalities

#### AccoFloc is offered in two forms

AccoFloc 350 is a high-quality powdered sodium bentonite chosen especially for its flocculation characteristics.

AccoFloc SDG is a high-quality granular sodium bentonite. It is manufactured as an agglomerated (uniform granular particles) product, which allows it to immediately disperse when mixed with water. Since this product does not clump when added to water, it does not require specialized mixing equipment to create a slurry. AccoFloc 350 and SDG are certified to NSF/ANSI Standard 60, Drinking Water Treatment Chemicals – Health Effects.

# ACCOFLOC®

### Liquid Coagulants and Flocculants

CETCO Oilfield Services Company's wide range of liquid coagulants and flocculants provides an economical yet highly efficient option in treating high volume waste streams. This innovative liquid format allows for easy automation of the treatment process thereby reducing operator involvement. This easy-to-apply line of products was developed for the removal of emulsified oils, suspended solids, insoluble BOD/COD, and metals from wastewater.

#### CETcoags™

The CETcoags are an easy to apply, cost-effective, and comprehensive line of coagulants and coagulant blends. They have proven effective in treating the wastewater generated from a broad spectrum of industrial processes. This is made possible because the CETcoags are themselves different, ranging in composition from totally synthetic to naturally occurring.

#### CETflocs™

The CETflocs are a comprehensive line of flocculants available in both liquid and dry form. Like the CETcoags, they have proved effective in treating a wide range of wastewater compositions. The CETflocs are available in a variety of molecular weights and charge densities.

#### Blends

CETCO Oilfield Services Company's Blends combine the low sludge generation of organic coagulants with the economy of inorganic coagulant aid. Furthermore, they offer ease of application needing only one addition instead of two or more. This requires less equipment which translates into lower maintenance costs.

#### Coagulant Aids

Coagulant Aids are inorganic-based products with decades of proven effectiveness. They are low cost and highly efficient.

## Liquid Coagulants and Flocculants Features and Benefits

| Product  | Function  | Application  | Advantage  |
|--|---|--|--|
| <b>Coagulants:<br/>Synthetic &amp; Natural</b> | Breaks emulsions and releases emulsified FOG and solids | Most industrial wastewater applications containing FOG, solids, and metals | <ul style="list-style-type: none"><li>• Broad spectrum of products is effective over a wide dosage range</li><li>• Very effective on high solids streams</li></ul> |
| <b>Flocculant</b>                              | Increases floc size                                     | Any industry that generates wastewater                                     | <ul style="list-style-type: none"><li>• Forms strong separating floc quickly</li><li>• Available in wide range of molecular weight and charge density</li></ul>    |
| <b>Blends:<br/>Organic &amp; Inorganic</b>     | Breaks emulsions and creates floc                       | Any industry that generates wastewater                                     | <ul style="list-style-type: none"><li>• Allows addition of coagulant and coagulant aid in a single step</li><li>• Lowers overall treatment cost</li></ul>          |

# COAGULANTS & FLOCCULANTS



**CE-200GA UNIT IN ACTION TREATING ALL PLANT WASTEWATER**  
 RM-10 was the primary treatment to remove gross contamination. The PM-100 media was used as a pre-treatment to remove any trace oils after RM-10 and before carbon. The activated carbon was used as a final polish.

### Organophilic Clay Media

With an extremely high surface area, CETCO Oilfield Services Company's organophilic clays, PM-100™ and PM-199™, have the ability to adsorb up to 50% of their weight in oil and grease, making them extremely cost-effective media as opposed to activated carbon. These organically modified clays have a great affinity for oil and grease and other low-soluble and high-molecular weight organics. In addition to PM-100, CETCO Oilfield Services Company offers GAC (Granular Activated Carbon) and other absorption media for removal of heavy metals, organic, and inorganic matter.

### PM-100™ and PM-199™

PM-100 is a chemically modified clay/anthracite filtration media that reliably removes oil, grease, and other low-soluble, high-molecular weight organics from wastewater. This mixed media is designed for flow-through systems.

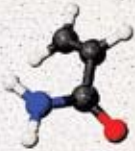
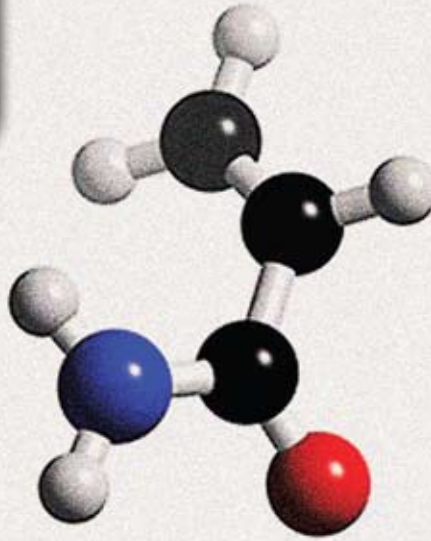
- Low-solubility organics are adsorbed onto the product surface while clean water passes through
- Offers a highly efficient post-treatment for various industrial wastewater streams
- Increases overall efficiency of GAC when used as a pre-treatment by preventing surface pores from being blinded by oils, greases, and other less water-soluble organics
- Can extend the lifetime of GAC by as much as 500%, resulting in higher carbon sorption capacity and more effective and consistent removal of heavy metals and solvents
- PM-199 is a 100% organophilic clay media offered in a disposable cartridge used in our EC-510 filtration system

## Organophilic Clay Media Features and Benefits

| Granular Product  | Organically Modified  | Cost-Effective   | Versatile Technology   | Consistent Results  |
|---|---|--|--|---|
| <ul style="list-style-type: none"> <li>• PM-100 is a modified clay/anthracite media</li> <li>• PM-199 is 100% modified clay</li> <li>• Non-reactive, non-hazardous</li> <li>• Packaged in 50# boxes, bags, or bulk super sacks</li> </ul> | <ul style="list-style-type: none"> <li>• High affinity for low-soluble organic molecules</li> <li>• Allows water to pass and will not be depleted if organic material is not present</li> </ul> | <ul style="list-style-type: none"> <li>• Can adsorb up to 50% of its weight in oil and other high-molecular weight organics</li> <li>• Extends the life and adsorbency of activated carbon by removal of larger molecular organics which tend to blind the pore structure of activated carbon</li> </ul> | <ul style="list-style-type: none"> <li>• Removes dissolved, mechanically emulsified, and free oil from wastewater</li> <li>• Can be easily adapted in general filtration systems</li> <li>• Can be applied as a fixed-bed media or in removal cartridge filters</li> </ul> | <ul style="list-style-type: none"> <li>• Can accommodate surges in organic concentration levels caused by plant upsets</li> <li>• Unique sorption mechanism eliminates blinding and maintains flow rates</li> </ul> |

# PM-100™ & PM-199™

LiquiSorb™ is capable of absorbing up to 250x its weight in water



#### Stabilization and Solidification Agents

CETCO Oilfield Services Company revolutionizes the wastewater treatment market with its broad range of innovative stabilization and solidification products. These products ensure compliance with federal, state, and local disposal standards while offering a more cost-effective and safer approach than lime, fly ash, diatomaceous earth, or other traditional absorbents.

#### LiquiSorb™

LiquiSorb is a granular cross-linked super absorbent media that rapidly absorbs and retains large volumes of aqueous matter. It is ideally suited for the absorption and solidification of general industrial wastewaters.

- Capable of absorbing up to 250x its weight in water
- Less than 1% free swell
- Non-biodegradable
- Non-exothermic
- Helps treated solids pass Paint Filter Liquids Test (EPA 9095) and Liquid Release Test (EPA 9096)
- Requires no mixing – gels in less than 2 minutes

#### Sorbond®

A proprietary blend of clay and inorganic minerals that is highly effective in the stabilization and solidification of heavy metals and wastewater containing organic matter.

- Effective on a variety of wastewater streams with pH 2-12
- Non-biodegradable
- Safe to use
- Enhances de-watering of solids and passes Paint Filter Liquids Test (EPA 9095)
- Helps solids pass Toxicity Characteristic Leaching Procedure (TCLP) (EPA 1311)
- Offers high compressive strengths for solidified matter
- Low exothermic reaction during treatment

#### Insta-Sorb™

A proprietary blend of clay and inorganic minerals, Insta-Sorb offers the same capabilities of Sorbond, while increasing absorption efficiency with oily wastewaters.

- Non-biodegradable
- Enhances de-watering of solids and helps treated solids pass Paint Filter Liquids Test (EPA 9095)
- Requires mixing – sets up in less than 24 hours
- Available in powder form
- Minimal humidity effects

# STABILIZE



# 1 STEP PROCESS

*liquid to solid in minutes*

# PitDry™

## **PitDry™ OP and PitDry™ HDD**

This revolutionary new application is the only one on the market that converts spent drilling fluids into disposable, dumpable solids in minutes. With this unique process, available only from CETCO Oilfield Services Company, you simply pump spent fluid through one of our partner's patented mixers, the PDM-300 or the PDA-300, while adding our PitDry reagent.

PitDry is a powdered, inorganic mineral formula used for the solidification and stabilization of drill fluids. PitDry chemically fixates heavy metal bearing wastes, stabilizes hydrocarbons and other organic and inorganic material while minimizing total solids volume by as much as 20%.

- Economical disposal solution
- Proven results – ensures compliance
- Simple one-step process – sets up in 24-72 hours
- Converts liquid to solid in minutes
- Flexible – manually operated units and fully automatic mixing systems are available
- Mobile – small foot plan unit, stationary or portable
- Operates on a wide range of pH
- Low exothermic reaction during treatment
- High adsorption capability promotes encapsulation for heavy metals and organic contaminants (both Micro and Macro Encapsulation)
- Treats solids to pass all the following tests:
  - Paint Filter Liquids Test – EPA Test Method 9095
  - Slump Test – CSA Test Method A23.25C
  - Liquid Release Test (LRT) Procedure – EPA Test Method 9096
  - Toxicity Characteristic Leaching Procedure – EPA Test Method 1311
  - Leachable BTEX (benzene, toluene, ethyl benzene, and Xylenes)
- Solids meet Class II Landfill Criteria

Simply pump spent fluid through a PDM-300 machine while adding PitDry reagent.



# SOLIDIFY

# Absorbents doing a solid job

## Absorption Ratio Chart

| Product                | Description                        | Function Ratio by Weight (absorbent: water)  | Typical Absorption                             |
|------------------------|------------------------------------|--|--|
| <b>LiquiSorb™ 200</b>  | Superabsorbent Media               | <ul style="list-style-type: none"> <li>• Solidification of aqueous matter, increases volume by less than 1%</li> </ul>   | 1:25 DI water<br>1:75 Typical<br>1:40 2% Salts |
| <b>LiquiSorb™ 1000</b> | Superabsorbent and Adsorbent Media | <ul style="list-style-type: none"> <li>• Solidification of aqueous solutions and semi solids containing organic matter</li> </ul>  | Dependent on organics present                  |
| <b>Sorbond® UP/UG</b>  | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification of general wastes ranging pH 2-12</li> </ul>   | Up to 1:9                                      |
| <b>Sorbond® LPCII</b>  | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification/Stabilization of wastes containing heavy metals</li> </ul>   | Up to 1:7                                      |
| <b>Sorbond® LOC</b>    | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification/Stabilization of wastes containing organics</li> </ul>   | Dependent on organics present                  |
| <b>Insta-Sorb™</b>     | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification/Stabilization</li> <li>• More efficient than Sorbond in aqueous solutions</li> </ul>   | Dependent on organics present                  |
| <b>PitDry™ HDD</b>     | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification of aqueous matter range, low to high solids</li> <li>• Decreases overall weight and volume by 20%</li> </ul>   | 1:50 DI water<br>1:40 Typical<br>1:25 2% Salts |
| <b>PitDry™ OP</b>      | Clay-Based Absorbent Media         | <ul style="list-style-type: none"> <li>• Solidification of aqueous matter range, low to high solids</li> <li>• Contaminants include hydrocarbons and other organics</li> <li>• Decreases overall weight and volume by 20%</li> </ul> | 1:50 DI water<br>1:25 Typical<br>1:20 2% Salts |



## Research and Testing Laboratory

CETCO Oilfield Services Company's commitment to research and development has helped make us a leader in water treatment. Our extensively equipped laboratory and team of scientists provide innovative products and wastewater treatment programs for industrial, municipal, pipeline, and oil production wastewater. Based on our evaluation of each customer's wastewater, we provide efficient and cost-effective treatment options using our specialized line of products while providing unsurpassed customer support.

CETCO Oilfield Services Company's Research and Testing Laboratory performs a wide range of instrumental and wet-chemical analyses using state-of-the-art analytical equipment. Some of the laboratory's capabilities include:

- Total Suspended Solids (TSS) - Water is pulled through a pre-weighed glass filter by a vacuum pump. The filter is dried and the final weight is recorded. Results are recorded in parts per million (ppm) and 100 mls of water are required for the test.
- Fat, Oil, and Grease (FOG) - Hexane extraction infrared analysis is based on EPA method 1664. Results are recorded in parts per million (ppm) and 100 mls of water are needed for the test.
- Metals Analysis - Water is digested with acid in a microwave, filtered, and then analyzed with an ICP (Inductively Coupled Plasma) Spectrometer, which is capable of determining the presence and concentration of most metals.
- Total Organic Carbon (TOC) - Measures level of total organic carbon in water. (TOC is a more direct and

convenient expression of total organic content than the BOD or COD, but does not provide the same information and does not replace these tests.)

- Chemical Oxygen Demand (COD) - A spectrophotometer is used to measure the chemical oxygen demand in water. Results are recorded in parts per million (ppm) and 20 mls are required for the test.
- Toxicity Characteristic Leaching Procedure (TCLP) - Determines the ability of elements to leach from a sludge. Sludge, acid, and DI (Deionized) water are mixed overnight and the resulting solution is filtered. The filtered water is then analyzed for contaminants of concern.
- Atomic Absorption (AA) - Used to measure the level of exchangeable or leachable elements in a sample. A solid, generally a clay, is digested, filtered, and analyzed on a flame spectrometer.
- X-Ray Diffraction (XRD) - Used to identify mineral components of a solid (i.e. bentonite, limestone, diatomaceous earth, etc). Two grams of material are required, but the test is non-destructive so the material can be returned or reused.
- X-Ray Florescence (XRF) - Used to identify the percentage of an element present in a solid. Results are recorded as a percentage, and 2 grams of the sold are required for the test.
- Thermo-Gravimetric Analysis (TGA) - Used to measure and identify the organic components in a solid. A small amount of material is slowly heated, and its weight loss is measured. Results are recorded as a percentage, and less than one gram is required for testing.

WATER TREATMENT | PIPELINE | WELL TESTING | WASTEWATER | RENTALS | NITROGEN | REELED TUBING



**CETCO**  
**OILFIELD**  
**SERVICES**  
**COMPANY**

800.527.9948

[www.cetcooilfieldservices.com](http://www.cetcooilfieldservices.com)



CETCO Oilfield Services Company is a wholly-owned subsidiary of AMCOL International Corporation

[www.cetcooilfieldservices.com](http://www.cetcooilfieldservices.com)



**CETCO**  
**OILFIELD**  
**SERVICES**  
**COMPANY**

© 2008  
CETCO Oilfield Services Company