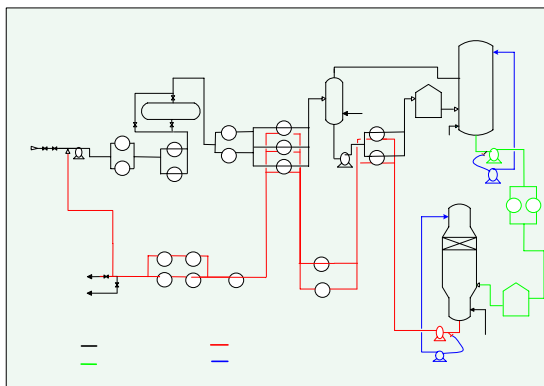


## Why Use TC-5000?

- ◆ Cuts cleaning Time Up to 75% Over Traditional Methods
- ◆ 100% Bio Degradable
- ◆ Safe to All Metallurgy
- ◆ Eliminates Personnel Exposure Hazards
- ◆ Cleans the Piping Associated with the Process Equipment
- ◆ Virtually Eliminates Steam-Out of Equipment
- ◆ Reduces Waste Generation and Waste Treatment
- ◆ Enhances Productivity by Allowing Crews to Enter and Work Inside the Equipment Immediately
- ◆ Safely Removes Pyrophoric Iron Sulfide and Residual H<sub>2</sub>S
- ◆ Allows for the Oil Removed Out of the Unit to be Recovered and Reprocessed
- ◆ Significantly Reduces Hydro-blast and Hydro-jetting Time
- ◆ Allows for Faster Decoking of Heaters
- ◆ Reduces Energy Costs

## Hydrocarbon Decontamination Specialists

*Put the Terra Chem Decontamination Process to Work for You and Gain Improved Performance and Reduced Turnaround Costs*



Vacuum Bottoms after Water-Push



TC-5000 Oil-in-Water Emulsion



Vac. Btms. after Rinsing Emulsion

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## Reduce Turnaround Costs by Slashing Plant Downtime



- ◆ Crude Units
- ◆ Vacuum Units
- ◆ Coker Units
- ◆ Thermal Crackers
- ◆ Hydro-Crackers
- ◆ FCCU
- ◆ Ethylene Units
- ◆ Heat Exchangers
- ◆ Desalters
- ◆ GC/Amine Units

**TERRA CHEM**  
INCORPORATED

Environmentally Friendly Solutions for Hydrocarbon Decontamination

The TC-5000 Process Reduces Turnaround Costs Significantly by Safely Removing Benzene, Inorganic Deposits, and Heavy Sludge from Refinery and Petrochemical Process Units



Vacuum GasOil Draw After Decontamination

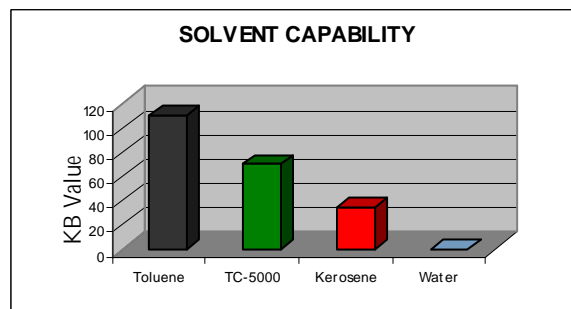
**TC-5000** is a Bio-Degradable Blend of Extractant and Surface-Active Chemicals Capable of Removing Light and Heavy Hydrocarbons. It is Exceptionally Effective in Removing Aromatic Hydrocarbons such as Benzene.

**TC-5000** is a Non-Alkaline, Non-Acidic Product with a Pleasant Orange Scent that Effectively Transports Oil Out of the System. It Allows for the Oil to be Recovered and Reprocessed Afterwards.

**TC-5000** Extracts Hydrocarbons from Amorphous System Deposits such as Iron Sulfide and Coke, as well as from Metal Surfaces, Cracks, and Crevices. The Result is an Effective Hydrocarbon Decontamination of Both System Internals and Deposits.

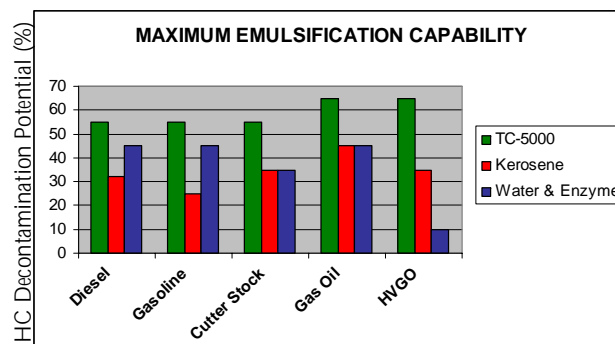
**TC-5000** Greatly Improves the Productivity and Economics of Refinery Turnarounds. Put Terra Chem TC-5000 to Work for You and Gain Improved Performance and Reduced Turnaround Costs.

## Compare the Performance of TC-5000 in These Two Important Categories...



Solvency power is determined by ASTM Method D-1133 or a Kauri-Butanol (KB) value

**TC-5000** contains a solvent with much higher solvency power than kerosene-based and enzyme-based products

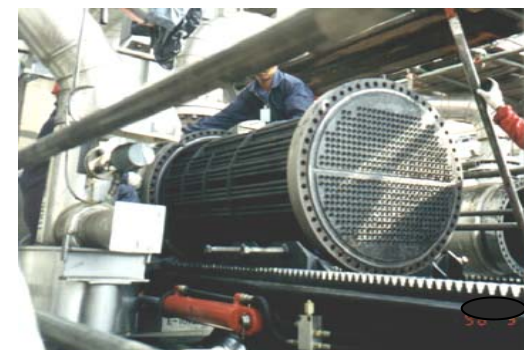


One method to determine Maximum Hydrocarbon Decontamination Capability (MHDP) is by measuring the electrical conductivity of the emulsion. **TC-5000** has the highest MHDP when compared to kerosene-based and water-enzyme products, making it a very effective decontamination product for all cuts of hydrocarbons

... now add Terra Chem Expert Technical Support and You Have the Best Hydrocarbon Decontamination Process in the Market

## TC-5000 Helps Reduce Major Costs to the Refining Industry

1. **Reduces Plant Downtime** on turnarounds by three days or more by allowing for the decontamination of the entire unit at once and maintenance crews to work inside the equipment faster
2. **Reduces Energy Consumption** by improving heat transfer on heaters, piping, and exchangers
3. **Reduces Routine Maintenance Costs and Enhances Productivity and Safety** by reducing mechanical cleaning time, the associated exposure by maintenance personnel, and the time the equipment is out of service



*TC-5000 Significantly Improves Turnaround Labor Costs and Increases Heat Exchanger Efficiency without the Need to Pull Exchanger Bundles for Hydro-jetting*

### Other Successful TC-5000 Applications

◆ **Vapor Phase Decontamination**  
**TC-5000** is a highly effective vapor phase decontamination product, as it has a high solvency value and in vapor phase it can access surfaces and deposits that cannot be contacted by liquid flow.

◆ **Cleaning of Fin-Fan Exterior Surfaces**  
 The external cleaning of fin-fan coolers is commonly overlooked in the Refining and Petrochemical industries, costing its operators millions of dollars in operational deficiencies. **TC-5000F** provides a highly effective and cost efficient solution that can reduce the fans' process outlet temperatures an average of 7°C without damaging the fan's fragile fins.