

VeruSOL™

Ecofriendly, Biodegradable Surfactant

VeruSOL™ is an innovative clear formulation made with citrus extracts and plant-derived surfactants; advancing a new microemulsion technology to achieve excellent efficiency in a wide range of applications.

Provides companies with reliable environmental cleanup, enhanced oil recovery, and industrial cleanup of oils.

100 YEAR OLD COAL TAR IN SOIL AT 20 FOOT DEPTH...



BEFORE



AFTER

SAME LOCATION BEFORE AND AFTER.

Soil and Groundwater Cleanup

VeruSOL™ can be combined with oxidants including hydrogen peroxide or sodium persulfate in VeruTEK's proprietary S-ISCO™ (Surfactant-Enhanced In Situ Chemical Oxidation) process.

Features and Benefits

- **An ecofriendly surfactant** – VeruSOL™ is made from plant materials and biodegrades in the environment. It is nontoxic.
- **Controlled solubilization** – VeruSOL™ forms stable Winsor Type I emulsions with contaminants and contaminant nonaqueous phase liquids for targeted destruction by coeluted oxidants such as hydrogen peroxide.
- **Safe to use** – VeruSOL™ is easily manipulated due to its nontoxic and non-irritant properties.
- **Applications** – VeruSOL™ is ideal for environmental cleanup strategies and for industrial cleaning. It can be used to extract oils, and with oxidants, used to extract minerals.

- VeruSOL™ is designed for reliable cleanup of free phase products and NAPLS
- VeruSOL™ with Peroxide is 10X more efficient than any ISCO oxidant alone
- Green technology providing certainty in the toughest of environmental remediation scenarios
- Applicators can choose from a range of flexible options:
 - VeruSOL™
Review of site data and support for dosage calculation.
 - VeruSOL™ + Peroxide
S-ISCO™ technical support
 - VeruSOL™ + Peroxide
Project Implementation



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For more VeruSOL™ product information, check out our website at:

www.verutek.com

VeruSOL™ Green Environmental In-Situ Cleanup and Resource Extraction

	Applications	Benefits
MGP Sites DNAPL/NAPL Superfund Oil & Gas	<ul style="list-style-type: none"> • Surfactant-Enhanced In Situ Chemical Oxidation (S-ISCO™) destruction of free phase and dissolved contaminants in soils and groundwater • DNAPL/NAPL • Coal Tar, Creosote, Oil • Chlorinated Solvents • PCBs • MTBE, Gasoline • Historic contamination and sources 	<p>Low cost remediation - certainty in cleanup schedule and performance</p> <p>Contamination treated in-place without excavation or air emission issues</p> <p>Enables destruction of free phase and DNAPL</p> <p>Can safely travel under buildings and production equipment to treat target contaminants</p>
Property Redevelopment	<ul style="list-style-type: none"> • Brownfield's • Municipal Setting Designations (MSDs) • Industrial properties • In-place cleanup under parking lots, buildings, foundations 	<p>No costly transport of contaminated materials to landfills or incineration</p>
Pipeline Railroad Industrial	<ul style="list-style-type: none"> • In-place cleanup under and between piping, railways, and equipment • Fleet maintenance bays, underground storage tanks and sumps • Concrete floors, foundations and structures; including PCBs • Spill containment areas, product loading terminals and pump stations 	<p>Enables cleanup without disturbance of structures or operations</p> <p>Eliminates need to retreat - significantly extends effectiveness of common treatment oxidants (such as Persulfate or Peroxide)</p>
Residential	<ul style="list-style-type: none"> • Home heating oil tanks and leaks • Concrete basements and water wells • Pesticides/herbicides in gardens and children's play areas 	<p>Regulator approved</p>
Oil Sands and Uranium Extraction	<ul style="list-style-type: none"> • Enhanced extraction of uranium from ore deposits • Effective in oil sands extraction 	<p>VeruSOL™ is easily manipulated due to its nontoxic and non-irritant properties.</p>

VeruSOL Properties

Specific Gravity	0.968 to 0.985 @ 77°F (25°C)
Density	8.63 lb/gal
Physical State	Liquid
Availability	5 gal pail 55 gal drum 275 gal tote Tanker

- Outstanding handling properties
- Stable product with long shelf life
- Highly soluble and easy to mix

VeruSOL'S Success

S-ISCO™ – Surfactant Enhanced In-Situ Chemical Oxidation (S-ISCO)™ is a below ground solution designed to destroy subsurface NAPLs and overcome the limitations/failures of traditional ISCO solutions.

S-ESCO™ – Surface solution that overcomes the inherent costs and limitations of excavation – 1/3 cost of excavation.

S-EPR™ – VeruSOL™ enhances the efficiency of product removal from the subsurface. VeruSOL™ can increase oil or contaminant solubilization up to 100X



Traditional ISCO vs. S-ISCO

For more VeruSOL™ product information, check out our website at:

www.verutek.com