

**PHOENIX SOIL, LLC
AND
UNITED RETEK OF CT, LLC**

LOW TEMPERATURE THERMAL DESORPTION

AND

STABILIZATION AND SOLIDIFICATION

PRESENTATION TO

RCRA HAZARDOUS WASTE

ADVISORY COMMITTEE

OCTOBER 22, 2015

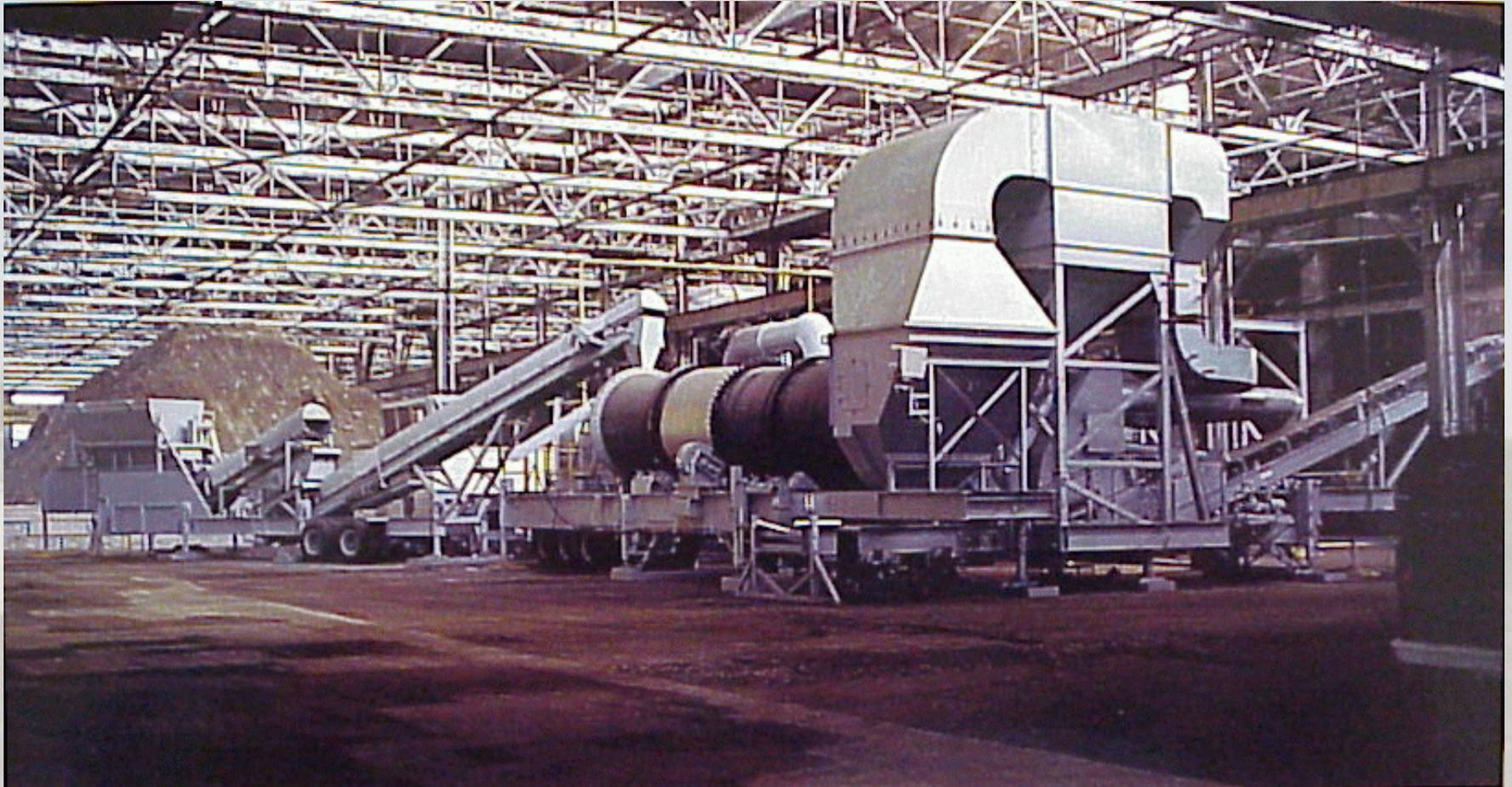
PSLLC & UROC, LLC

GREEN TECHNOLOGY



LTTD IN THE UNITED STATES

PLAINVILLE, CONNECTICUT



LTTD IN EUROPE

BUDAPEST HUNGARY



LTTD IN AUSTRALIA

SIDNEY AUSTRALIA



LTTD IN A NEIGHBORHOOD



PLAINVILLE SITE



PHOENIX SOIL, LLC

OUR NEW FACILITY IN PLAINVILLE CT



PHOENIX SOIL, LLC

OUR NEW FACILITY IN PLAINVILLE CT



PHOENIX SOIL, LLC

ARRIVAL OF NEW STU UNIT



PHOENIX SOIL, LLC

FLYING IN THE NEW STU UNIT



PHOENIX SOIL, LLC

FLYING IN THE STACK



PLAINVILLE CT TREATMENT CAPACITY

RCRA Non-Hazardous Media Contaminated with

Waste Oil, Fuel Oil, Diesel, or Hydraulic Oil	<100,000 ppm
Gasoline, Jet Fuel, Kerosene, <u>Aromatic, or Aliphatic Hydrocarbons</u>	< 30,000 ppm
Non TSCA PCB's	< 50 ppm
US EPA TSCA Demonstration Permit	
TSCA PCB's	< 40 ppm

PRINCIPLES OF OPERATION

- Controlled heating
- Volatilization (500 - 900 °F)
- Steam stripping
- Non-oxidizing atmosphere
- Gross solid removal
- Thermal oxidation of gas stream (1550 - 2300 °F)
- Immediate quench of gas stream (2300  < 420°F)
- PM 2.5 - 10 removal
- Scrubbing of acid gases

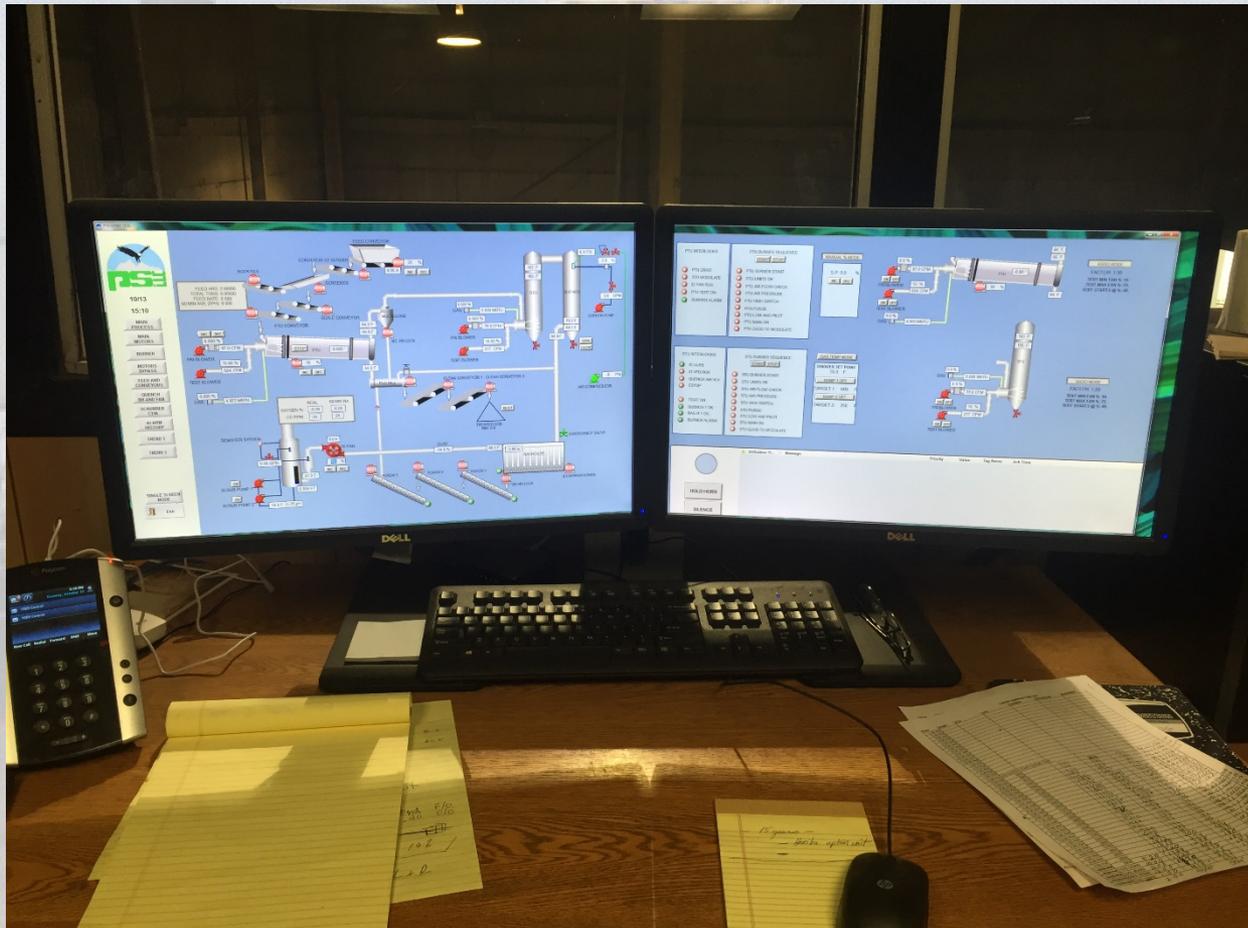
SYSTEM COMPONENTS

- Feed System
 - ▶ Screener (> 2 inch)
 - ▶ Weigh scale
- Primary Treatment Unit (Rotary Kiln)
- Multi-Cone Cyclone
- Pugmill
- Secondary Treatment Unit (Thermal Oxidizer)
- Quench
- Baghouse
- Packed Bed Wet Scrubber

PSLLC'S TREATMENT UNIT



PSLLC'S PLC CONTROL UNIT



PRIMARY TREATMENT UNIT

THERMAL DELINEATION IN PTU DRUM



PRIMARY TREATMENT UNIT

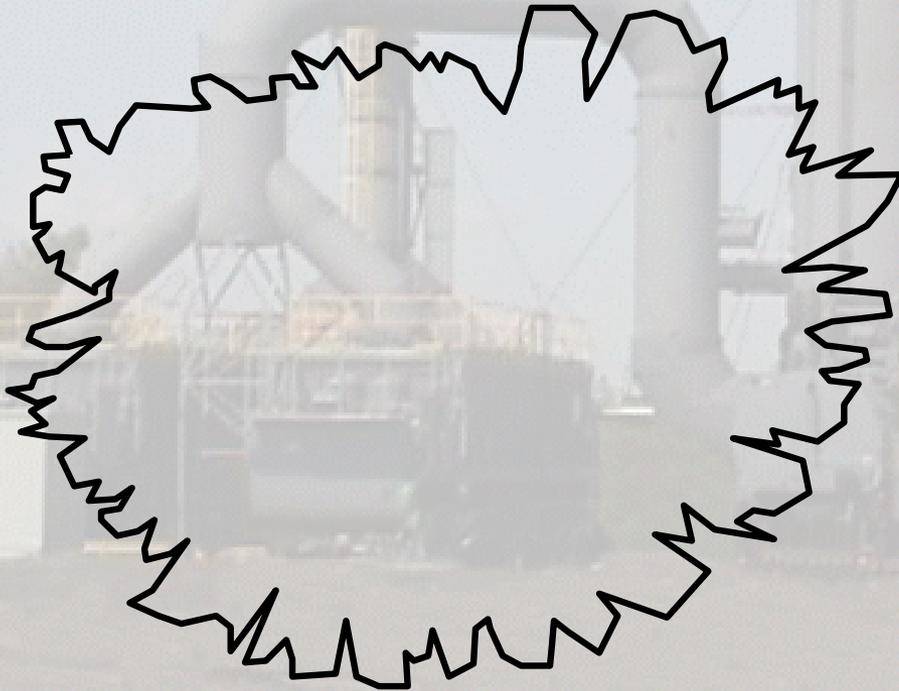
DRUM FLIGHTS



PRIMARY TREATMENT UNIT

STEAM STRIPPING

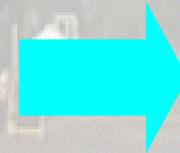
SAND GRAIN



SAND GRAIN EXPANDED

ORGANIC CONTAMINATION

WATER



BUD WITHIN PERMIT

SOIL MEETING CT RSR LEVELS FOR
RESIDENTIAL DIRECT EXPOSURE
GA POLLUTANT MOBILITY CRITERIA



SOIL SOLD AS CLEAN FILL

POST TREATED SOIL

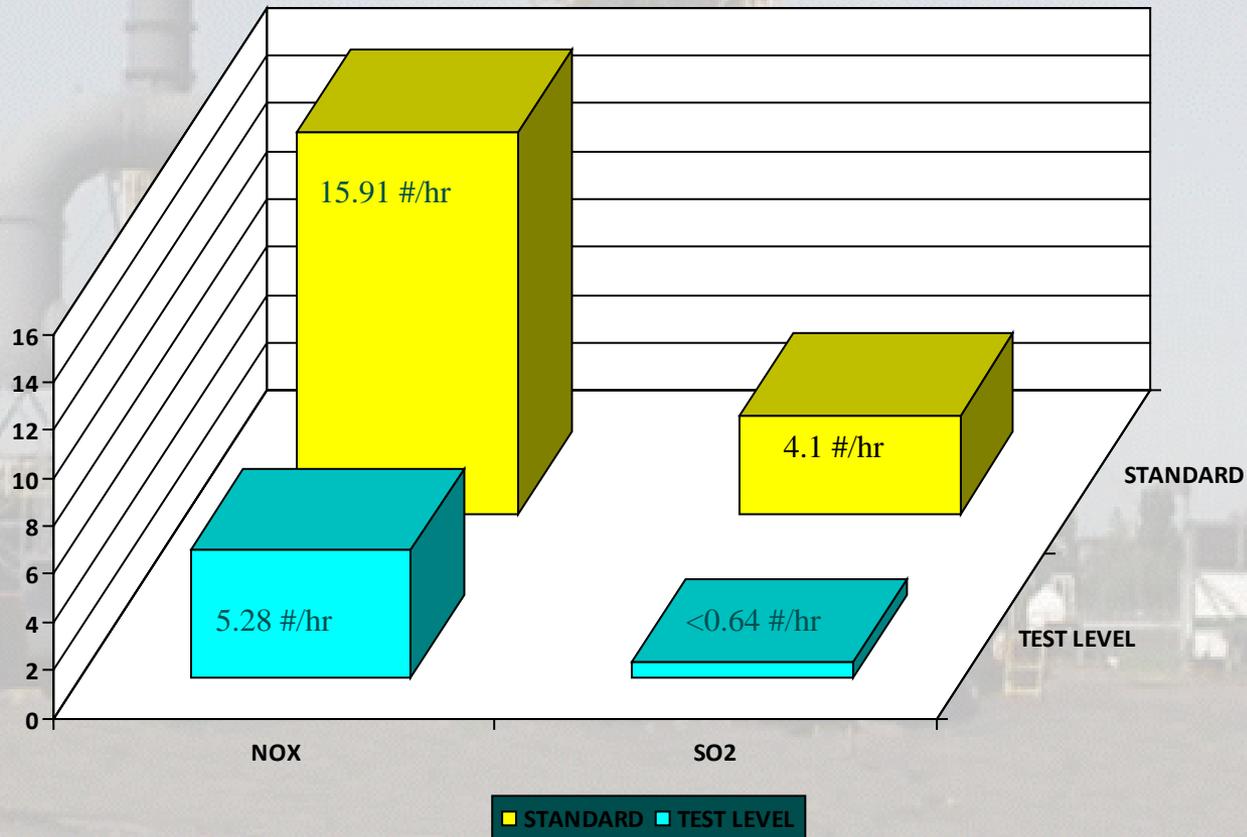
UNIVERSITY OF CONNECTICUT
SCHOOL OF AGRICULTURE AND NATURAL RESOURCES



POTTING SOIL

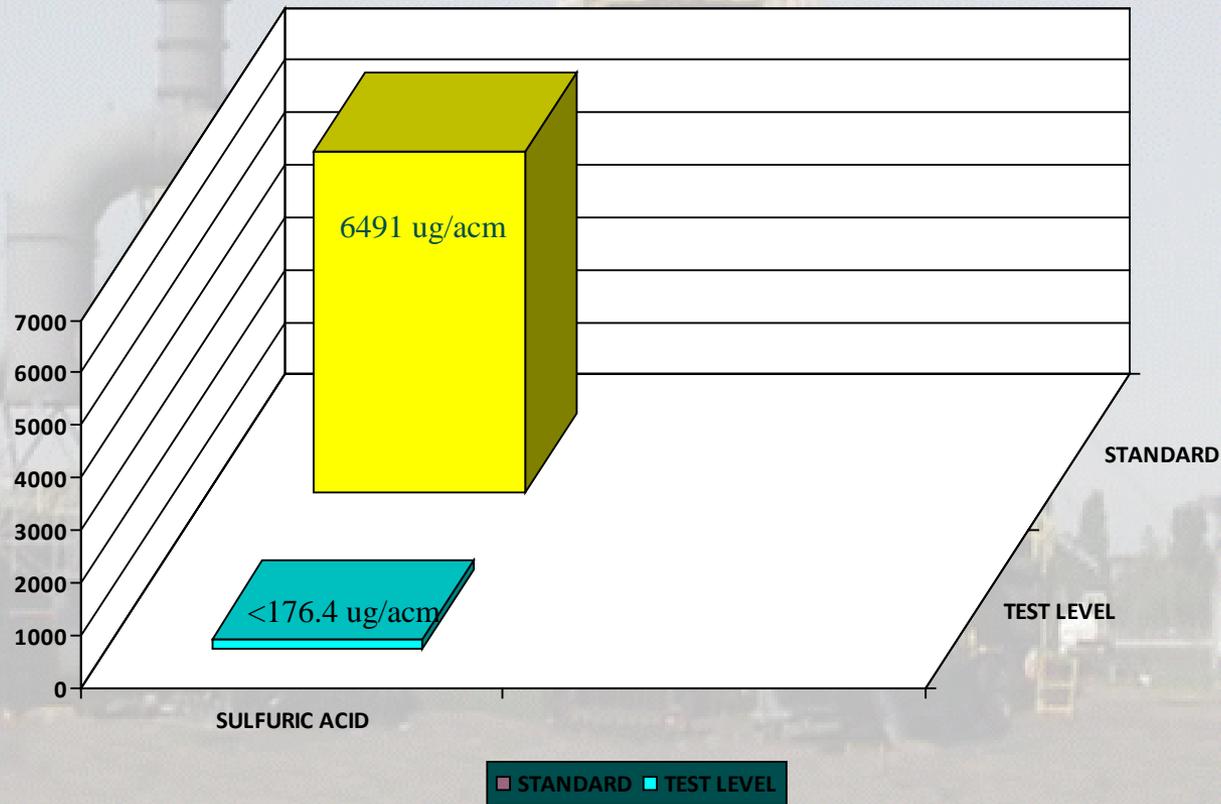
AIR EMISSIONS

2012 ANNUAL STACK TEST



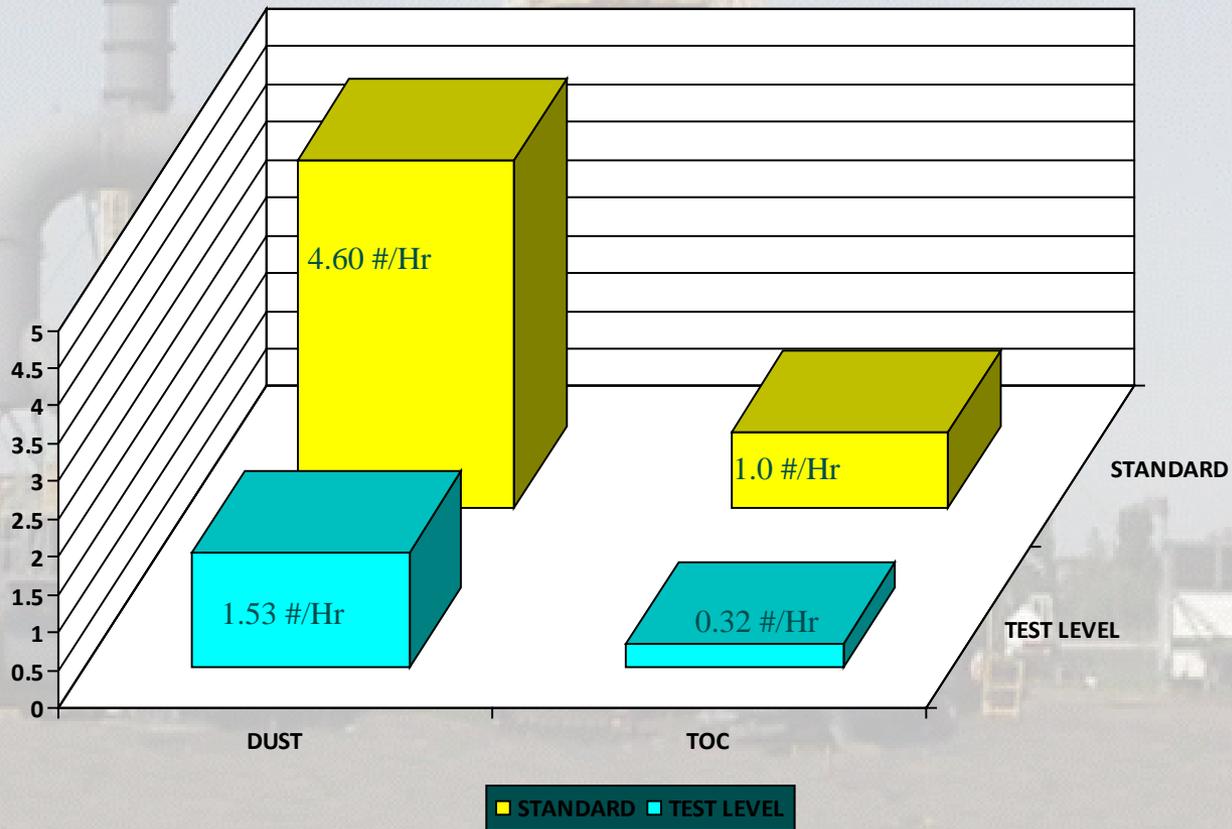
AIR EMISSIONS

2012 ANNUAL STACK TEST



AIR EMISSIONS

2012 ANNUAL STACK TEST



PHOENIX SOIL LABORATORY

STATE CERTIFICATION # 0222



PHOENIX SOIL, LLC

TIRE WASHER



UNITED RETEK
OF
CONNECTICUT, LLC

PERMIT TO OPERATE

A MOBILE WASTE STABILIZATION FACILITY

PERMIT NO. DEP/HWM-200-003

THE S's OF HAZARDOUS WASTE CLEANUP



SOLIDIFICATION



STABILIZATION

SOLIDIFICATION

- ✓ FORMS PHYSICAL BOND
- ✓ ENCAPSULATES AND IMMOBILIZES CONTAMINANTS
- ✓ LOWERS PERMEABILITY: THUS INHIBITS WATER MOVEMENT AND PREVENTS LEACHING

STABILIZATION

Stabilization refers to processes that reduce risk posed by a waste by converting the contaminants into a less soluble, mobile or toxic form.

For example:

Phosphate
Stabilization
Study

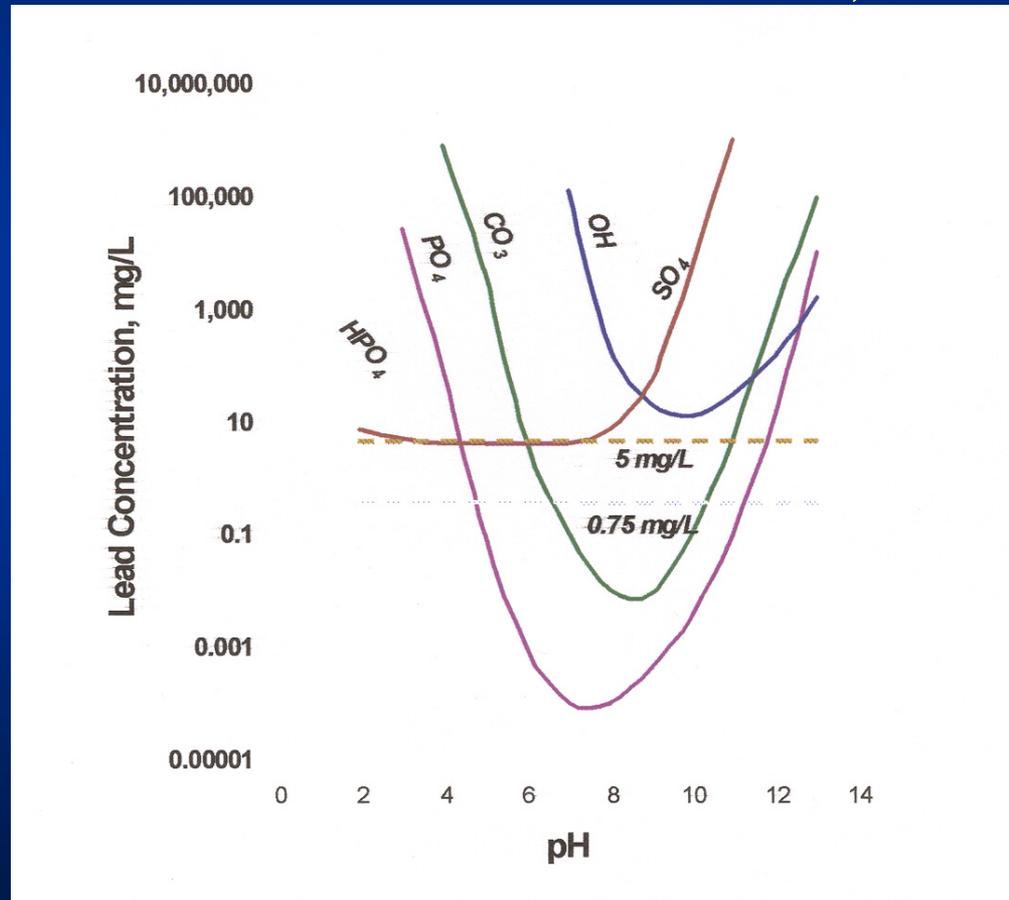


Chart Provided by American Minerals

PERMIT NO. DEP/HWM-200-003
LIMITATIONS

< 200 TONS / HOUR

< 1,600 TONS / DAY

> 50 FEET FROM PROPERTY LINE

SEDIMENT TREATMENT



- Only Permitted Sediment Treatment
- Lowers Aquatic Toxicity
- Stabilize Dredging Sediments Within 24 Hours

SEDIMENT TREATMENT



PERMIT NO. DEP/HWM-200-003

PERMITTED METALS

ARSENIC (D004)

BARIUM (D005)

CADMIUM (D006)

CHROMIUM (D007)

LEAD (D008)

MERCURY (D009)

SELENIUM (D010)

SILVER (D011)

PERMIT NO. DEP/HWM-200-003
ACCEPTANCE LEVELS

Mercury	< 0.2 mg/l (TCLP)
PCB's	< 1000 ppm
Cyanide	< 4,100 ppm
Gasoline	<20,000 ppm
Light Oils	< 30,000 ppm
Heavy Oils	< 40,000 ppm
Pesticides	< 10 X RCRA Levels

CHEMICAL AGENTS PERMITTED

Chemical	Physical State	Chemical Designated Use
Lime	Powder or slurry	pH adjustment, pozzuolanic
Lime kiln dust	Powder or slurry	pH adjustment, pozzuolanic
Cement	Powder or slurry	pH adjustment, pozzuolanic
Cement kiln dust	Powder or slurry	pH adjustment, pozzuolanic
Sodium Hydroxide	Powder or liquid	pH adjustment, hydroxide ion reaction
Sodium Carbonate	Powder or liquid	pH adjustment
Sodium hydro sulfite	Powder or liquid	Sulfite precipitation, Cr reduction
Sodium hydro sulfide	Powder or liquid	Sulfide precipitation
Sodium Bisulfide	Powder or liquid	Sulfide precipitation, reducing agent
Sodium Sulfide	Powder or liquid	Sulfide precipitation
Sodium Borohydride	Powder or liquid	Metal reducing
Trisodium Phosphate	Powder or liquid	Metal reducing
Aluminum Sulfate	Powder or slurry	Coagulation, sulfide precipitation
Ferrous Sulfate	Powder or liquid	Sulfide precipitation, reducing agent
Asphalt Emulsion	Liquid	Solidification/stabilization
Sulfuric Acid	Liquid	pH adjustment
Phosphoric Acid	Liquid	pH adjustment
Nitric Acid	Liquid	pH adjustment, oxidizer
Ferric Chloride	Liquid	pH adjustment, coagulant
Sodium hyperchlorite	Liquid	Cyanide and organic oxidation
Hydrogen Peroxide	Liquid	Organic and metal oxidation
Potassium Permanganate	Powder or liquid	Organic and metal oxidation
Potassium Persulfate	Powder or liquid	Organic and metal oxidation
Sodium Persulfate	Powder or liquid	Organic and metal oxidation
Commercial Oxidants Agent	Liquid	Organic and metal oxidation
Commercial Reducing Agent	Liquid	Organic and metal Reduction

IN-SITU TREATMENT



- Good for sites with limited area
- Eliminates the creation of RCRA Hazardous waste
- Lowers Cost of Move / Demobe

EX-SITU TREATMENT



- Excellent for large scale projects
- Computer controls ensure homogeneous blending

STATE OF THE ART PUGMILL



RECYCLING / BENEFICIAL REUSE

- Solidification/Stabilization that results in a product that is suitable to replace other virgin materials

Section II B (1) (a) (iv) The Permittee may utilize clean aggregate (gravel, sand, concrete, asphalt) and asphaltic emulsions, like Portland cement or combinations of these, to convert the treated material and aggregate into a desired product.

Mixing in Stone with Treated Material



PROCESSING RCC



INSTALLING RCC



INSTALLING RCC



ROLLING RCC



PAVING OVER RCC



RCC AFTER WINTER FREEZE/THAW AND HEAVY TRUCKS TRAFFIC



For More Information



Call 860-747-8888

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