

**HEPACO Project No. 7420039**

**BENCH-SCALE TREATABILITY TESTING  
FOR  
REMOVAL ACTION CONTRACT  
FORMER INDUSTRIAL METAL ALLOY SITE  
WINSTON-SALEM, NORTH CAROLINA**

**PREPARED FOR:**

**NK HOLDINGS, LLC**

**PREPARED BY:**



**Serious experience for serious times.™**

**HEPACO, Inc.  
2711 Burch Drive  
Charlotte, N.C. 28269**

**September 26, 2007**

## TABLE OF CONTENTS

<b>Section</b>	<b>Page</b>
<b>1.0 INTRODUCTORY SUMMARY.....</b>	<b>1</b>
<b>2.0 SELECTION AND DESCRIPTION OF TEST SAMPLES.....</b>	<b>1</b>
<b>3.0 MIX DESIGNS.....</b>	<b>1</b>
<b>4.0 TREATABILITY TESTING PROCEDURES .....</b>	<b>2</b>
<b>5.0 TREATABILITY TEST RESULTS .....</b>	<b>3</b>
<b>6.0 CONCLUSION .....</b>	<b>3</b>

### APPENDICES

APPENDIX A – Laboratory Data

APPENDIX B – Product Information – Triple Superphosphate

### LIST OF GRAPHICS

Table 1	IMACO Stabilization Treatability Mix Design Summary
Table 2	TCLP Results for the IMACO Site Treatability Mixes

## 1.0 INTRODUCTORY SUMMARY

On September 11, 2007 HEPACO representative, Mr. James Kessler, visited the former Industrial Metal Alloy Site (IMACO) located at 20 E. Acadia Avenue, Winston-Salem, North Carolina to collect soil samples from the site. The soil samples were specifically taken in order to conduct a bench-scale stabilization treatability study for the effectiveness of utilizing Triple Superphosphate (0-45-0) fertilizer as a possible treatment chemical for the lead impacted soils located at the site.

## 2.0 SELECTION AND DESCRIPTION OF TEST SAMPLES

Upon review of previous testing and analysis that had been completed at the site, HEPACO collected soil samples from areas of the site that represented the highest lead content, the lowest lead content and the average lead content. The soil from these locations were collected with a shovel from 0 to 6 inches below grade and placed into one (1) 5-gallon plastic pail to produce one composite sample from the site. The soil sample was transported to HEPACO's warehouse located in Charlotte, North Carolina for bench-scale testing.

## 3.0 MIX DESIGNS

Based on past experience with lead stabilization projects, HEPACO chose to perform the bench-scale treatability study using triple superphosphate (0-45-0) fertilizer. A sample of triple superphosphate was collected from Weaver Fertilizer Company located in Winston-Salem, North Carolina to perform the bench-scale testing.

The soil was tested with three different doses of the triple superphosphate. Each mix design represents the ratio on a percent basis, of the weight of reagent compared to the weight of the triple superphosphate. The treatment mix is defined as the weight of reagent plus the weight of the soil sample. Therefore, each mix design represents:

$$\frac{(\text{reagent weight})}{(\text{reagent weight} + \text{soil weight})}$$

The treatability mix designs are shown in **Table 1** below. During testing, no water was added to the treatment mixes, nor were any of the samples kiln-dried.

**Table 1 - IMACO Stabilization Treatability Mix Design Summary**

Soil Sample ID	Reagent Name	Mix Ratio (reagent dose/mix weight)	Reagent Dose (g)	Soil Weight (g)	Mix Weight (g)
S1-1.5	Triple Superphosphate	1.6%	10	606	616
S2-3	Triple Superphosphate	3%	20	640	660
S3-4.5	Triple Superphosphate	4.5%	26	546	572

#### **4.0 TREATABILITY TESTING PROCEDURES**

The soil sample was removed from the 5-gallon plastic pail and placed into a stainless steel pan. The soil was thoroughly mixed and pulverized by hand to form a homogenous soil sample. Rocks and debris larger than ½-inch in diameter were removed from the sample and discarded. The remaining sample was divided into 4 equal quadrants. Equal amounts of soil was collected from each quadrant for each sample and placed into four separate stainless steel pans. The soil samples were labeled CS-0, S1-1.5, S2-3 and S3-4.5. Once each sample was collected they were prepared using the following general procedures

- 1) Aluminum muffin pan was weighed using electronic scale
- 2) Soil material was added to aluminum muffin pan and reweighed using electronic scale.
- 3) Aluminum pan was weighed using electronic scale
- 4) Reagent was added to aluminum muffin pan and weighed using an electronic scale.
- 5) Reagent was added to the soil material and thoroughly mixed by hand (using nitrile gloves) to form each treatment mix.
- 6) The muffin pans containing each treatment mix was allowed to sit at room temperature for 72 hours to cure.

At the end of the 72-hour curing time, samples of the treatment mixes were collected including the control mix, and were sent to Pace Analytical Laboratories for TCLP analysis for RCRA metals.

## 5.0 TREATABILITY TEST RESULTS

The TCLP data for the three mixes and the control sample are summarized in **Table 2** below. The laboratory data for the treated mix analysis are provided in Attachment A.

As expected, all TCLP results for the RCRA metals except lead were below their respective regulatory limits. Lead was successfully stabilized in all three of the mix designs at 1.6%, 3% and 4.5%.

**Table 2 – TCLP Results for the IMACO Site Treatability Mixes**

Soil Sample ID	Reagent Name	Mix Ratio (%)	Lead (mg/l) RL-5	Arsenic (mg/l) RL-5	Barium (mg/l) RL-100	Cadmium (mg/l) RL-1	Chromium (mg/l) RL-5	Mercury (mg/l) RL-0.2	Selenium (mg/l) RL-1	Silver (mg/l) RL-5
CS-0	None (control)	NA	<b>327</b>	0.027	0.40	0.093	ND	ND	ND	0.10
S1-1.5	Triple Superphosphate	1.6%	4.3	0.089	0.098	0.039	ND	ND	ND	ND
S2-3	Triple Superphosphate	3%	1.5	0.16	0.070	0.028	ND	ND	ND	ND
S3-4.5	Triple Superphosphate	4.5%	0.70	0.16	0.054	0.025	ND	ND	ND	0.041

RL – Regulatory Level

**Bold** Results Indicate Samples That Exceed The TCLP Regulatory Limit

## 6.0 CONCLUSION

Bench-scale treatability testing was conducted to assess whether the lead-impacted soil at the IMACO Site could be effectively stabilized to pass TCLP test utilizing triple superphosphate (0-45-0) fertilizer. The testing indicated that the lead and other metals can be stabilized utilizing the selected reagent. HEPACO intentionally collected a soil sample to perform the treatability test that would represent what the expected average TCLP lead concentrations would actually be once full-scale treatment activities would begin at the site. The highest TCLP lead concentration reported to date at the site has been 1,150 mg/l. The TCLP lead concentration in the control sample used in the bench-scale test was 327 mg/l. Based on actual field experience we believe the TCLP lead concentration of the control sample used in the bench-scale test is representative of the average TCLP lead concentration that can be expected at the site during full-scale stabilization activities.

Based on the information gained from the bench-scale test HEPACO is proposing to utilize triple superphosphate as the reagent chemical during full-scale stabilization activities at a mix ratio of 3% by weight. Each ton of soil would require 60 pounds of triple superphosphate (0-45-0) fertilizer, assuming the average TCLP concentrations in untreated soil that were identified in this study. Specific product information for triple superphosphate (0-45-0) is included as Attachment B.

# ATTACHMENT A

## Laboratory Data

September 21, 2007

Mr. James Kessler  
HEPACO  
2711 Burch Dr.  
Charlotte, NC 28269

RE: Project: IMACO 7420039  
Pace Project No.: 923792

Dear Mr. Kessler:

Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2007. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Godwin

kevin.godwin@pacelabs.com  
Project Manager

Enclosures

## REPORT OF LABORATORY ANALYSIS

Page 1 of 10

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..



## CERTIFICATIONS

Project: IMACO 7420039  
Pace Project No.: 923792

---

### Charlotte Certification IDs

North Carolina Wastewater Certification Number: 12  
North Carolina Field Services Certification Number: 5342  
South Carolina Certification Number: 990060001  
South Carolina Bioassay Certification Number: 990060003  
Tennessee Certification Number: 04010

Virginia Certification Number: 00213  
Florida/NELAP Certification Number: E87627  
Kansas Certification Number: E-10364  
Louisiana/LELAP Certification Number: 04034  
North Carolina Drinking Water Certification Number: 37706

---

### Asheville Certification IDs

Florida/NELAP Certification Number: E87648  
Louisiana/LELAP Certification Number: 03095  
New Jersey Certification Number: NC011  
North Carolina Drinking Water Certification Number: 37712  
North Carolina Wastewater Certification Number: 40  
North Carolina Bioassay Certification Number: 9

Pennsylvania Certification Number: 68-03578  
South Carolina Certification Number: 990300001  
South Carolina Bioassay Certification Number: 990300002  
Tennessee Certification Number: 2980  
Virginia Certification Number: 00072

---

### Eden Certification IDs

North Carolina Drinking Water Certification Number: 37738  
Virginia Drinking Water Certification Number: 00424

North Carolina Wastewater Certification Number: 633

---

## REPORT OF LABORATORY ANALYSIS

Page 2 of 10

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..





## SAMPLE SUMMARY

Project: IMACO 7420039  
Pace Project No.: 923792

Lab ID	Sample ID	Matrix	Date Collected	Date Received
923792001	CS-0	Solid	09/11/07 15:15	09/18/07 08:55
923792002	S1-1.5	Solid	09/17/07 16:30	09/18/07 08:55
923792003	S2-3	Solid	09/17/07 16:35	09/18/07 08:55
923792004	S3-4.5	Solid	09/17/07 16:40	09/18/07 08:55

## REPORT OF LABORATORY ANALYSIS

Page 3 of 10

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## SAMPLE ANALYTE COUNT

Project: IMACO 7420039  
Pace Project No.: 923792

Lab ID	Sample ID	Method	Analytes Reported
923792001	CS-0	EPA 6010	7
		EPA 7470	1
923792002	S1-1.5	EPA 6010	7
		EPA 7470	1
923792003	S2-3	EPA 6010	7
		EPA 7470	1
923792004	S3-4.5	EPA 6010	7
		EPA 7470	1

## REPORT OF LABORATORY ANALYSIS

Page 4 of 10

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..

## ANALYTICAL RESULTS

Project: IMACO 7420039  
Pace Project No.: 923792

<b>Sample: CS-0</b>		<b>Lab ID: 923792001</b>	Collected: 09/11/07 15:15		Received: 09/18/07 08:55		Matrix: Solid	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	0.027	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-38-2	
Barium	0.40	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-39-3	
Cadmium	0.093	mg/L	0.0050	1	09/21/07 10:50	09/21/07 13:58	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-47-3	
Lead	327	mg/L	0.50	20	09/21/07 10:50	09/21/07 15:34	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 13:58	7782-49-2	
Silver	0.10	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-22-4	
<b>7470 Mercury, TCLP</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:25	7439-97-6	

<b>Sample: S1-1.5</b>		<b>Lab ID: 923792002</b>	Collected: 09/17/07 16:30		Received: 09/18/07 08:55		Matrix: Solid	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	0.089	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-38-2	
Barium	0.098	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-39-3	
Cadmium	0.039	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:06	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-47-3	
Lead	4.3	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:06	7782-49-2	
Silver	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-22-4	
<b>7470 Mercury, TCLP</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:30	7439-97-6	

<b>Sample: S2-3</b>		<b>Lab ID: 923792003</b>	Collected: 09/17/07 16:35		Received: 09/18/07 08:55		Matrix: Solid	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	0.16	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-38-2	
Barium	0.070	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-39-3	
Cadmium	0.028	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:14	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-47-3	
Lead	1.5	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:14	7782-49-2	
Silver	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-22-4	
<b>7470 Mercury, TCLP</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:34	7439-97-6	

## ANALYTICAL RESULTS

Project: IMACO 7420039  
Pace Project No.: 923792

Sample: S3-4.5		Lab ID: 923792004	Collected: 09/17/07 16:40	Received: 09/18/07 08:55	Matrix: Solid			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3010						
Arsenic	0.16	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-38-2	
Barium	0.054	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-39-3	
Cadmium	0.025	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:18	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-47-3	
Lead	0.70	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:18	7782-49-2	
Silver	0.041	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-22-4	
<b>7470 Mercury, TCLP</b>		Analytical Method: EPA 7470 Preparation Method: EPA 7470						
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:37	7439-97-6	

### QUALITY CONTROL DATA

Project: IMACO 7420039  
Pace Project No.: 923792

QC Batch: MERP/1069 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP  
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

METHOD BLANK: 18702

Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	ug/L	ND	0.20	

LABORATORY CONTROL SAMPLE: 18703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.2	90	80-120	

MATRIX SPIKE SAMPLE: 18704

Parameter	Units	923792001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	2.5	2.5	98	75-125	

SAMPLE DUPLICATE: 18705

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	ug/L	ND	.1J	4	20	

### QUALITY CONTROL DATA

Project: IMACO 7420039

Pace Project No.: 923792

QC Batch: MPRP/1204 Analysis Method: EPA 6010  
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP  
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

METHOD BLANK: 18725

Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	mg/L	ND	0.025	
Barium	mg/L	ND	0.025	
Cadmium	mg/L	ND	0.0050	
Chromium	mg/L	ND	0.025	
Lead	mg/L	ND	0.025	
Selenium	mg/L	ND	0.050	
Silver	mg/L	ND	0.025	

LABORATORY CONTROL SAMPLE: 18726

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	2.5	2.6	106	80-120	
Barium	mg/L	2.5	2.2	87	80-120	
Cadmium	mg/L	2.5	2.4	97	80-120	
Chromium	mg/L	2.5	2.4	97	80-120	
Lead	mg/L	2.5	2.3	93	80-120	
Selenium	mg/L	2.5	2.7	108	80-120	
Silver	mg/L	1.2	1.3	101	80-120	

MATRIX SPIKE SAMPLE: 18727

Parameter	Units	923792001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.027	2.5	2.6	104	75-125	
Barium	mg/L	0.40	2.5	2.5	85	75-125	
Cadmium	mg/L	0.093	2.5	2.5	96	75-125	
Chromium	mg/L	ND	2.5	2.4	98	75-125	
Lead	mg/L	327	2.5	326	-36	75-125 M3	
Selenium	mg/L	ND	2.5	2.6	105	75-125	
Silver	mg/L	0.10	1.2	1.3	96	75-125	

SAMPLE DUPLICATE: 18728

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/L	0.089	0.080	11	20	
Barium	mg/L	0.098	0.099	1	20	
Cadmium	mg/L	0.039	0.039	.1	20	
Chromium	mg/L	ND	.005J	70	20 M3	
Lead	mg/L	4.3	4.3	.6	20	

Date: 09/21/2007 05:17 PM

### REPORT OF LABORATORY ANALYSIS

Page 8 of 10

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc..



### QUALITY CONTROL DATA

Project: IMACO 7420039  
Pace Project No.: 923792

SAMPLE DUPLICATE: 18728

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Selenium	mg/L	ND	.02J	34	20	M3
Silver	mg/L	ND	.018J	13	20	

## QUALIFIERS

Project: IMACO 7420039  
Pace Project No.: 923792

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### ANALYTE QUALIFIERS

M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.



**CHAIN-OF-CUSTODY / Analytical Request Document**  
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

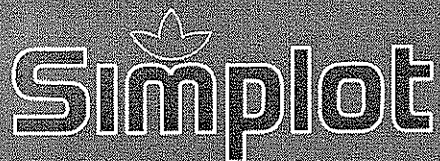
<b>Section A</b> Required Client Information:		<b>Section B</b> Required Project Information:		<b>Section C</b> Invoice Information:	
Company: <b>EMACO</b>	Report To: <b>HEPARO, Inc</b>	Attention: <b>HEPARO, Inc</b>	Company Name: <b>MT James Kessler</b>	REGULATORY AGENCY	Page: <b>1</b> of <b>1</b>
Address: <b>20 E Acadia St.</b>	Copy To:		Address: <b>2711 South 60th Street</b>	NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER	<b>1138037</b>
Email To: <b>j.kessler@heparo.com</b>	Purchase Order No.:		Pace Quote Reference: <b>NC 18227</b>	RCRA <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>	
Phone: <b>704.538.7817</b>	Project Name: <b>EMACO</b>		Pace Project Manager: <b>1825-1</b>	Site Location STATE: <b>NC</b>	
Requested Due Date: <b>7/28/07</b>	Project Number: <b>7420039</b>				

Section D Required Client Information										Matrix Codes MATRIX / CODE										Requested Analysis Filtered (Y/N)										Residual Chlorine (Y/N)																																																																																																																							
SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE										Matrix Codes DW WT Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other										Matrix Code (see valid codes to left)										SAMPLE TYPE (G=GRAB C=COMP)										COLLECTED										SAMPLE TEMP AT COLLECTION										# OF CONTAINERS										Preservatives										Analysis Test										Pace Project No./Lab I.D.																																																											
ITEM #										DATE										TIME										DATE										TIME										UNPRESERVED										H <sub>2</sub> SO <sub>4</sub>										HNO <sub>3</sub>										HCl										NaOH										Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>										Methanol										Other										TCLP RCRA 8 metals										923792									
1										CS-O										SLC										9/11/07/1500										9/11/07/1515										1										✓										✓										✓										923792																																																											
2										SL-1.5										SLC										9/11/07/1520										9/11/07/1630										1										✓										✓										✓										923792																																																											
3										SL-3										SLC										9/11/07/1525										9/11/07/1635										1										✓										✓										✓										923792																																																											
4										SL-4.5										SLC										9/11/07/1530										9/11/07/1640										1										✓										✓										✓										923792																																																											
5																																																																																																																																																					
6																																																																																																																																																					
7																																																																																																																																																					
8																																																																																																																																																					
9																																																																																																																																																					
10																																																																																																																																																					
11																																																																																																																																																					
12																																																																																																																																																					
ADDITIONAL COMMENTS										RELINQUISHED BY / AFFILIATION										DATE										TIME										ACCEPTED BY / AFFILIATION										DATE										TIME										SAMPLE CONDITIONS																																																																															
July 2007										July 2007										180707										8:00										Jmooe										918										855										36										4										W										4																																																	

<b>ADDITIONAL COMMENTS</b>		<b>RELINQUISHED BY / AFFILIATION</b>		<b>DATE</b>	<b>TIME</b>	<b>ACCEPTED BY / AFFILIATION</b>		<b>DATE</b>	<b>TIME</b>	<b>SAMPLE CONDITIONS</b>	
		<b>July Williams</b>		<b>18SEP07</b>	<b>8:00</b>	<b>James B Kessler</b>		<b>9/18/07</b>	<b>8:55</b>	<b>66</b>	<b>W</b>

# ATTACHMENT B

## Product Information for Triple Superphosphate (0-45-0)



# TRIPLE SUPERPHOSPHATE

## 0-45-0

### GUARANTEED ANALYSIS

Available Phosphate ( $P_2O_5$ ) .....	45.0%
Calcium (Ca) .....	15.5%

Derived from Monocalcium Phosphate and Dicalcium Phosphate.

Warning: This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, requires notification of potential exposure to substances identified by the State of California as causing cancer, birth defects or other reproductive harm.

Information regarding the contents and levels of metals in this product is available on the Internet at <http://www.regulatory-info-jr.com>

### PHYSICAL CHARACTERISTICS

Lbs. of Nutrients/Ton:	Phosphate ( $P_2O_5$ )	900
	Calcium (Ca)	340
	Magnesium (Mg)	12
	Sulfur (S)	16
	Combined Nutrient Total	1268
Angle of Repose:	30°	
Bulk Density:	59.4 lbs. per cubic foot (poured)	
	62.7 lbs. per cubic foot (packed)	
pH (20% solution):	3.1	
Solubility in Water:	90% (% of total $P_2O_5$ )	
Granule Size:	87% passes through a 4.00mm (5 Tyler) and is retained by a 2.00mm (9 Tyler) screen.	
	100% retained by a 1.18mm (14 Tyler) screen.	
	Average granule size 2.37mm.	

### USES

1. Highly effective in eliminating phosphorus deficiencies in all crops, under all soil conditions. It is uniformly sized and blends well with most fertilizers. It is a preferred source of  $P_2O_5$  in high analysis bulk blends.
2. Most effective when applied preplant in bands or broadcast incorporated to alfalfa and other legumes. However, it can be applied effectively as a topdressing on established stands anytime during the year that soil and weather conditions permit. For annual crops it is most effective when tilled in prior to planting.
3. For specific crop recommendations, see your local distributor.

### ADVANTAGES

1. Its high concentration of  $P_2O_5$  in uniform, free-flowing granules assures even applications to the field. It stores exceptionally well.

### SAFETY

Triple Superphosphate-Simplot 0-45-0. Slight abrasion may result from eye contact or prolonged skin contact. Not generally considered toxic. Nonflammable. 0-45-0 is not regulated by DOT.

**Material Safety Data Sheet**  
**J. R. Simplot Company**  
**AgriBusiness**

Trade Name: Triple Superphosphate  
Registration No: None

M12030

**SECTION 1**

**CHEMICAL PRODUCT AND COMPANY INFORMATION**

<b>Manufacturer or Formulator:</b> J.R. Simplot Company P.O. Box 70013 Boise, ID 83707 <b>Emergency Phone - Chemtrec:</b> 1-800-424-9300	<b>Product Name:</b> Triple Superphosphate <b>Common Name:</b> 0-45-0 <b>Chemical Type:</b> Inorganic Chemical Fertilizer
---	---

**SECTION 2**

**COMPOSITION INFORMATION**

Chemical Name and Synonyms	C.A.S. No.	Chemical Formula	WT% Hazardous	TLV	PEL
None listed					
<b>Non-Hazardous</b>					
100%					
This is a homogeneous granular product derived from:					
Mono-calcium Phosphate	7758-23-8	Ca <sub>2</sub> H <sub>3</sub> O <sub>4</sub> P		10 mg/m <sup>3</sup> Nuisance Dust	15 mg/m <sup>3</sup> Nuisance Dust
Mono-dicalcium Phosphate	N/A	N/A		Not listed	Not available

**SECTION 3**

**HAZARDS IDENTIFICATION**

**Ingestion:** Minimal hazard under normal conditions and use. Ingestion of large quantities may cause gastrointestinal discomfort, vomiting, weakness or other medically related problems.

**Inhalation:** Dusty conditions may cause mechanical aggravation to respiratory mucous membranes.

**Eye Contact:** Dust from this product may cause particulate discomfort to eyes.

**Skin Absorption:** Not normally absorbed through the skin.

**Skin Contact:** Slight dermal abrasion is possible with prolonged contact, especially around cuffs and collars.

**Effects of Overdose:** Ingestion of large doses may cause diarrhea, nausea, abdominal cramps or formation of methemoglobinemia. Seek medical attention.

**SECTION 4**

**FIRST AID MEASURES**

**Ingestion:** If large amount is ingested, give 2-3 glasses of water and induce vomiting. Seek medical attention.

**Inhalation:** Remove to fresh air. Seek medical attention if condition persists.

**Eyes:** Flush eyes with running water for at least 15 minutes. Seek medical attention if condition persists.

**Skin:** Wash with soap and water. Seek medical attention if condition persists.

**Notes to Physician:** Consult standard literature. Treatment based on the sound judgment of the physician and the individual reactions.

**SECTION 5**

**FIRE FIGHTING MEASURES**

**Extinguishing Media:** Use media suitable to extinguish source of fire.

**Special Fire Fighting Procedures:** Product is not combustible.

**Unusual Fire and Explosion Hazards:** During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH<sub>3</sub>, SO<sub>x</sub>, PO<sub>x</sub> or CN.

**SECTION 6**

**ACCIDENTAL RELEASE MEASURES**

**Environmental Precautions:** Keep out of water supplies, lakes, ponds, streams and rivers. This product is a fertilizer and may promote algae growth.

**Steps to be taken in case material is released or spilled:**  
Keep from entering waterways. Sweep up material and place in suitable container for use as a fertilizer or for disposal.

**SECTION 7**

**HANDLING AND STORAGE**

**Precautions to be taken in handling and storing:**  
Store in a cool, dry area. Prevent spillage and separate from strong oxidizers. Use normal safety procedures and good personal hygiene. Keep out of the reach of children.

**SECTION 8**

**EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Ventilation Protection:** Adequate ventilation.

**Respiratory Protection:** Approved dust respirator when necessary.

**Protective Clothing:** Normal clean work clothing.

**Eye Protection:** In dusty conditions, safety glasses with side shields or goggles may be necessary.

Trade Name: Triple Superphosphate  
Registration No: None

M12030

## SECTION 9

## PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	Not applicable	Solubility in Water:	Soluble
Density:	68 lbs/ft <sup>3</sup>	% Volatiles (by volume):	Not applicable
Flashpoint:	Non-flammable	Vapor Pressure, mm Hg:	Not applicable
pH:	1 g to 10 g H <sub>2</sub> O: 2.3-3	Reaction with Water:	None
Appearance:	Off-white granules.		
Extinguishing Media:	Use media suitable to extinguish source of fire.		

## SECTION 10

## STABILITY AND REACTIVITY

Stability (Normal Conditions): Stable  
Conditions to Avoid: Extremely high temperatures.  
Incompatibility (Material to Avoid): Strong oxidizing agents. Prolonged contact may cause oxidation of unprotected metals.  
Hazardous Decomposition Products: During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH<sub>3</sub>, SO<sub>x</sub>, PO<sub>x</sub> or CN.  
Hazardous Polymerization: Will not occur

## SECTION 11

## TOXICOLOGY INFORMATION

Acute Oral Toxicity: LD<sub>50</sub> (rat) is 5,000-6,000 mg/kg (ppm); not acutely toxic by oral exposure. (TFI Product Testing Results, OECD Guideline 425)  
Acute Aquatic Toxicity: Fish 96-hour LC<sub>50</sub> is 1,560-5,900 mg/L (ppm); daphnia 24-hour EC<sub>50</sub>: 1,790-1,825 mg/L; algae no toxicity up to 87.6 mg/L. Non-toxic to aquatic organisms. (TFI Product Testing Results)

## SECTION 12

## ECOLOGICAL INFORMATION

None listed.

## SECTION 13

## DISPOSAL CONSIDERATIONS

Waste Disposal Procedures: Pick up with a shovel and broom and use as a fertilizer by applying to soil using good agricultural and soil management.

## SECTION 14

## TRANSPORT INFORMATION

Shipping name:	Not regulated by DOT	C.A.S. Number:	7758-23-8
Hazard Class:	None	D.O.T. Number:	None
Reportable Quantity (RQ):	None	Haz Waste No:	None
Labels Required:	None	EPA Regist No:	None
Placard:	None		

## SECTION 15

## REGULATORY INFORMATION

Carcinogenicity: by IARC?: Yes ( ) No (X) by NTP?: Yes ( ) No (X)

Not on the 302 list of SARA reportable quantities.

## SECTION 16

## OTHER INFORMATION

Flash Point (Test Method):	Non-flammable	Flammable Limits	LOWER	UPPER
Autoignition Temperature:	Not applicable	(% BY VOLUME)	N/A	N/A

MSDS Version Number: 7

**Disclaimer:** This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. **NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION HEREIN PROVIDED.** It is the user's responsibility to satisfy themselves as to the suitability and completeness of such information for their own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

Reviewed by: The Environmental Health & Safety Department  
March 2007 (208) 389-7394