

**Work Plan for Window Removal and Remediation  
Rooms: 200 Wing classrooms, Cafeteria and Kitchen  
Thomas Prince School  
Princeton, Massachusetts**

**1) Introduction**

Triumvirate Environmental Inc. (TEI) shall perform the remediation of the specified PCB and Asbestos containing materials in accordance with this “Work Plan for Window Removal and Remediation – Rooms: 200 Wing classrooms, Cafeteria and Kitchen” as prepared by TEI for Thomas Prince School in Princeton, MA in accordance with all applicable local, state, and federal regulations governing PCB’s.

**2) Summary of Scope of work**

**A. Window Removal**

- i. *Common areas (kitchen and cafeteria).* An internal critical barrier will be built inside of each window proposed for removal to prevent potential exposure to contaminated material during removal operations. The removal of the windows will be performed from the outside of the building. No full containment will be built because the work will be performed from outside the building on the roof. The construction of containment is not feasible due to window’s configuration. Alternatively, polyethylene sheeting will be placed to protect adjacent surfaces and extreme care will be used to prevent dust generation and release to the environment.
  
- ii. *200-wing classrooms.* An internal critical barrier will be built inside the classrooms on the opening. Partial containment will be built outside to protect adjacent surfaces and extreme care will be used to prevent dust generation and release to the environment. The removal of the windows will be executed from the outside of the building. External air intakes will be sealed with polyethylene during operation. Exterior louvered vent covers will be removed or cleaned from any caulking using procedures established on 40 CFR 761 subpart S (Double Wash/Rinse Method).

**B. Encapsulation**

- i. After removing the window and remaining caulking, workers will clean the surfaces that were in contact with the caulking, encapsulate the surfaces that were in contact with the caulking plus additional

offset distance in both directions to ensure full coverage of any potential remaining impacted material.

### C. Temporary Window Opening Cover

- i. The generated opening will be close using plywood and wood framing. Insulation will be utilized to seal the gap between the temporary cap and the frame.

### D. Interior Classroom Cleaning - 200 wing

- i. Following window removal, encapsulation and temporary cap, all exposed surfaces within the rooms, i.e. floors, walls, ceilings and exposed surfaces of cabinets, shelves, speakers, clocks, etc., will be cleaned using a general purpose cleaner such as Simple Green Industrial cleaner (specification sheet enclosed in appendix 3).

## 3) Work Area Preparation

### A. General

- ii. *Common areas (kitchen and cafeteria).* In order to prevent dust/debris from escaping the work zone and to protect existing facilities and the environment, ground cover will be placed along the perimeter of where work will take place. A critical barrier consisting in 6 mil polyethylene sheeting will be placed inside the building to seal the opening. The barrier will be sealed against the inside wall utilizing duct tape to ensure that no dust or impacted material is able to enter the interior of the school. The barrier will be protected to prevent puncture with tools during window removal and will be inspected during the work to ensure its integrity is maintained. The work zone will be covered with polyethylene sheeting to protect adjacent surfaces from contained materials.
- iii. *200-wing classrooms.* In order to prevent debris from escaping the work zone, and to protect existing facilities and the environment, ground cover will be placed along the perimeter of where work will take place. A critical barrier consisting in 6 mil polyethylene sheeting will be placed inside the building to seal the opening. The barrier will be sealed against the inside wall utilizing duct tape to ensure that no dust or impacted material is able to enter the interior of the school. The barrier will be protected to prevent puncture with tools during window removal and will be inspected during the work to ensure its integrity is maintained. In addition, a partial

containment will be built outside the building to ensure no release of dust or impacted material outside the working area.

- iv. External air intake vents will be sealed with polyethylene in areas that work is performed.
- v. All workers will be equipped with the appropriate PPE.
- vi. A critical barrier will be placed on the interior of the univent air intake prior to caulking removal.
- vii. Disposal of collected debris will be performed in accordance with the provisions of this plan. All PCB containing waste will be sealed prior to transport to the PCB waste container. Chutes or other transport methods that may generate fugitive dust may not be used during the remedial work.

#### 4) Containment Control

- **Common areas (kitchen and cafeteria).** A critical barrier will be built inside the building. No containment will be built outside. The use of mechanical means will be restricted to operations intended to accomplish the extraction of the window and will not be conduct on PCB's containing materials. The removal of calking will be conducted using hand tools. Additionally, total dust monitoring will be conducted inside and outside the building to ensure air quality.
- **200-wing classrooms.** A critical barrier will be built inside the building. Partial containment will be built outside. The use of mechanical means will be restricted to operations intended to accomplish the extraction of the window and will not be conduct on PCB's containing materials. The removal of calking will be conducted using hand tools. Additionally, total dust monitoring will be conducted inside and outside the building to ensure air quality. A detail for the proposed partial containment is provided in Appendix 5.

#### 5) Standard Operating Procedures

##### A. Window Removal

The window and all window caulking, window glazing, caulking associated with the metal shroud of the exterior intake air vent and the exterior caulking located between the brick and concrete window casing/jamb will be thoroughly removed following an approved procedures and methodologies.

##### a. Cutting/ Grinding Operations for Window Removal

- i. There were found welded and/or bolted connections between the window frame and the opening. These connections are not impacted with PCB's containing materials. Cutting/grinding operations will be performed in mentioned connections in order to extract the window frame.
- ii. Workers may have to be saw cutting around window frame with a concrete tool with no interaction with the contaminated caulking.
- iii. Workers will pull out the window with appropriate tools.
- iv. The removed window will be placed in a goose-necked plastic bags sealed with duct tape to avoid air release. Another option will be wrapping up and the window using 6 mil polyethylene sheeting taped with duct tape.
- v. Work surfaces will be misted to minimize dust during cutting operations using hand sprayers if necessary.

**b. Caulking Removal Operations:**

- i. All the caulking will be removed to the maximum extent practicable, with hand held caulking cutters, while minimizing dust or other airborne particulates generated from the caulking or adjacent building materials. This will not include mechanical grinding/saw cutting.
- ii. Work surfaces will be misted to minimize dust removal operations using hand sprayers.
- iii. Total dust monitoring will be conducted outside of the partial containment to ensure that established action levels for total dust are not exceeded by window / caulking removal activities.
- iv. All removed caulking and debris will be placed in a 5 gallon container or goose-necked plastic bags sealed with duct tape during the cutting operation and managed as PCB waste  $\geq$  50 ppm. Once filled, or at the end of each work shift, 5 gallon containers or/and bags will be carried to the roll-off container set up on site.
- v. Upon the completion of the removal activities, the opening will be visually inspected for the presence of any residual caulking. If residual caulking is observed, it will be removed from the adjacent material with a glass scraper to the maximum extent possible.
- vi. Workers will wear appropriate Tyvek garments, (suits with hoods, booties, etc.), nitrile gloves, and negative pressure,

air-purifying, full-face respiratory protection equipped with HEPA filters during all phases of the removal process. All openings in protective garments will be taped closed using duct-tape or equivalent.

- vii. Upon completion of the removal activities, employees shall HEPA-vacuum and wet wipe the surfaces within the work area enclosure and clean to the point of no visible dust or debris.
- viii. At the end of each work day, any debris collected within the ground cover sheeting will be gathered and placed in a 5 gallon container, covered with a sealable lid or goose-necked plastic bags sealed with duct tape, and managed as PCB waste  $\geq 50$  ppm. The 5 gallon containers or goose-necked plastic bags sealed with duct tape will then be carried to the roll off set up on site.
- ix. Disposable PPE removed for breaks or at the end of the workday and used polyethylene sheeting will be placed in a goose-necked plastic bag sealed with duct tape and then will be carried to the roll off set up on site.
- x. Any additional materials used in the aforementioned procedures will be collected and properly disposed of at the end of each day.

#### c. Cleaning of Openings

- i. All surfaces in former contact with caulking will be scraped with a glass scraper or equivalent to remove caulking residue. No mechanical scraping or abrasives will be allowed. Following the scraping, the surfaces in the opening will be wet wiped with Capsur® (See Appendix 2). Decontaminated surfaces will be visually inspected and verified following the EPA Approved plan requirements.
- ii. Any materials used in the aforementioned procedures will be collected and properly disposed of at the end of each day.

#### d. Encapsulation Methods

- i. Concrete surfaces in the opening and additional surfaces specified in the Cleanup and Disposal plan will be encapsulated with Sikagard 62 (See Appendix 1) epoxy, or equivalent. The product will be stored, mixed, and applied according to the product specifications.

- ii. After residual caulking has been removed to the maximum extent possible and the opening has been inspected, the concrete in direct contact with the former caulking and additional surfaces specified in the Cleanup and Disposal Plan will be encapsulated with the first coat of Sikagard 62 (See Appendix 1). The material will be applied with a thin brush to reach irregular surfaces. The coated joint will be inspected to ensure adequate coverage (i.e., the coating has been uniformly applied, and no concrete is visible beneath the epoxy).
- iii. Following the cure time recommended by the product specifications, a second coat of Sikagard 62 epoxy will be applied over the first coat. The coated joint will be inspected to ensure adequate coverage.
- iv. In order to maintain the integrity of the epoxy coating around the opening, no additional surface preparation may be performed before applying caulking (i.e., abrading the epoxy surface is not permitted).

**e. Tools and equipment decontamination**

- i. All the tools employed during the work journey will be HEPA vacuumed and wiped down using an organic solvent such as Diesel Fuel.
- ii. Equipment and/or tools that cannot be decontaminated will be disposed according with regulations.
- iii. Non-porous tools and/or equipment will be decontaminated using the Double Wash/Rinse Method described on 40 CFR 761 subpart S. All the debris produced will be placed in a double polyethylene bag and disposed as PCB's containing materials.

**B. Temporary Window Cover**

- a. Workers will place tied framing into the opening in order to avoid concrete drilling operations. A piece of plywood will be screwed to the temporary framing. The gap between the temporary cap and the opening will be filled using insulation foam.

**C. Interior 200-wing Classrooms Cleaning**

- a. Following window removal and replacement, all exposed surfaces within the rooms, i.e. floors, walls, ceilings and exposed surfaces of

cabinets, shelves, speakers, clocks, etc., will be cleaned via HEPA vacuum.

- b. The interior/exterior surfaces of the plastic light shrouds and the exposed surfaces of the lights and metal housings will be cleaned via HEPA vacuum.
- c. All non-porous surfaces will be sprayed with industrial cleaning product (Simple Green Industrial Cleaner), and wiped with absorbent paper or cloth material to remove remaining dust.
- d. Classroom spaces will be ventilated utilizing HEPA air handling units to remove any residual airborne dust particles.

**e. Unit Ventilators**

- i. The veined vent shroud of the unit ventilator will be cleaned with a HEPA vacuum, brushed to remove dust to the maximum extent possible, and wiped down to remove all visible dust. The accessible portions of the unit ventilator beneath the veined vent shroud will also be cleaned with a HEPA vacuum and wet wiped to remove all visible dust. The cleaning will be consistent with the cleaning conducted in room 2009.
- ii. The readily accessible interior surfaces of the unit ventilator will be cleaned with a HEPA vacuum to remove observable dust. These same surfaces will be sprayed with simple green and wiped with absorbent paper or cloth material to remove remaining dust/dirt. The unit ventilator will be cleaned prior to the interior room cleaning.
- iii. The capacitor of the univents will be replaced as they are expected to contain PCBs. Non-PCB containing replacement capacitors will be installed.
- iv. The interior of the doors of the ventilator will be cleaned via HEPA vacuum and wet wiping.

**6) PCB Waste Management and Disposal**

- a. Approved PCB waste containers will be set up onsite in secure waste management areas during the entire duration of the project. The PCB waste containers shall be clearly marked in accordance with 40 CFR 761.40, as such to avoid confusion with ordinary waste containers. A detail of the location for mentioned container is provided in Appendix 4
- b. Waste containers will be removed from the waste management areas and transported by a licensed Hazardous Waste Disposal Contractor to Chemical Waste Management's Chemical Service

Facility located in Model City, New York, or the EQ-Wayne Disposal Facility located in Belleville, Michigan. These facilities are approved to accept this type of PCB contaminated waste for disposal in accordance with 40 CFR 761.40, 761.62 and other applicable sections.

- c. Appropriate copies of all waste manifests, waste shipment records and certificates of disposal will be collected and managed by Thomas Prince School, as part of the final report to the EPA. Triumvirate will help to prepare and coordinate these documents as necessary throughout the project.

## **7) Contractor Qualification**

The removal contractor, Triumvirate Environmental, Inc. possesses over twenty years of experience in the environmental industry. They have routinely performed similarly hazardous work operations where occupational exposures to lead, asbestos, PCB's and silica were possible, and have developed comprehensive exposure plans for operating under similar conditions.

## **8) Training and Certification**

Foreman and workers assigned to this project have completed the OSHA 40 hour, Hazardous Waste Operations/Emergency Response (HAZWOPER) training course and eight-hour annual refresher as required. Occupational exposure to PCB's and the unique hazards associated with this operation will be an ongoing topic of daily toolbox talks and jobsite safety meetings throughout the course of this project.

## **9) Health and Safety Plan**

Triumvirate Environmental, Inc. will construct a site-specific Health and Safety Plan for this project and it will be kept on-site and reviewed daily throughout the duration of the project.

# Appendix 1

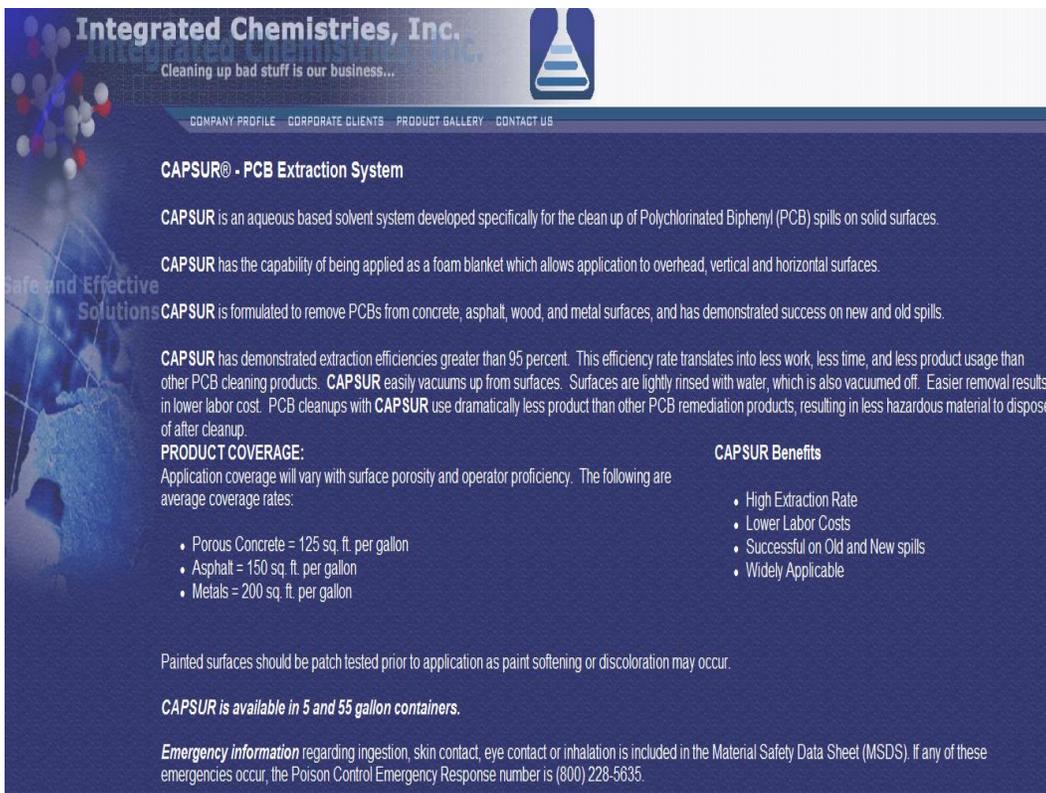
## Technical specifications for Sikagard® 62

Construction	<b>Product Data Sheet</b> Edition 05/02/2009 Identification no: 01 06 06 01 001 0 000001 Sikagard®-62	
	<b>Sikagard®-62</b> 2-Part Epoxy Protective coating	
	<b>Product Description</b>	Sikagard®-62 is a 2-pack solvent-free high build coating material based on epoxy resin.
	<b>Uses</b>	<ul style="list-style-type: none"> <li>■ As an abrasion-resistant universal coating material designed for normal to moderately aggressive chemical environments. Sikagard®-62 is suitable for use on concrete, stone, cementitious mortars and renderings (including polymer-modified), epoxy cements (EpoCem), epoxy mortars, iron and steel.</li> <li>■ For linings to storage tanks and silos, bund areas. As anti-corrosion coating in food-processing plants, sewage works, farms and agricultural enterprises, chemical and pharmaceutical plants, beverage industries and bottling plants.</li> <li>■ Also used as part of glass fibre-reinforcement self-supporting linings with crack-bridging properties on bund areas and storage tanks.</li> </ul>
	<b>Characteristics / Advantages</b>	<ul style="list-style-type: none"> <li>■ Solvent-free</li> <li>■ Good chemical and mechanical resistance</li> <li>■ Easy to mix and work</li> <li>■ High-build</li> <li>■ Impervious to liquids</li> </ul>
	<b>Product Data</b>	
	<b>Form</b>	
	<b>Appearance / Colours</b>	Resin - Part A: Coloured, liquid Hardener - Part B: Transparent, liquid Pebble gray (RAL 7032). Additional colour shades on request. Under sun radiation it may come to discolouration and colour deviation; this has no influence to the function of the coating.
	<b>Packaging</b>	Part A: 3.75 kg containers Part B: 1.25 kg, containers Part A+B: 5.0 kg ready to mix units
	<b>Storage</b>	
<b>Storage Conditions / Shelf-Life</b>	12 months from date of production if stored properly in undamaged sealed containers in dry conditions at temperatures between +5°C and +30°C.	
<b>Technical Data</b>		
<b>Chemical Base</b>	Epoxy resin	
		
1		
Sikagard®-62 1/4		

<b>Density</b>	Part A: - 1.45 kg/litre Part B: - 1.02 kg/litre Mixed resin: - 1.37 kg/litre All density values at +23°C																														
<b>Solid Content</b>	- 100% (by volume), - 100% (by weight)																														
<b>Mechanical / Physical Properties</b>																															
<b>Bond Strength</b>	> 1.5 N/mm <sup>2</sup> (tallus in concrete) ISO 4624																														
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<b>Chemical Resistance</b>	See separate chemical resistance list																														
<b>Thermal Resistance</b>	<table border="1"> <tr> <td>Exposure*</td> <td>Dry heat</td> </tr> <tr> <td>Permanent</td> <td>+50°C</td> </tr> <tr> <td>Short-term max. 7 d</td> <td>+80°C</td> </tr> <tr> <td>Short-term max. 12 h</td> <td>+100°C</td> </tr> </table> <p>Short-term humid heat* up to +80°C where exposure is only occasional (steam cleaning etc.). *No simultaneous chemical load.</p>	Exposure*	Dry heat	Permanent	+50°C	Short-term max. 7 d	+80°C	Short-term max. 12 h	+100°C																						
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<b>System Information</b>																															
<b>System Structure</b>	<p><i>Roller coating:</i> Primer: 1 x Sikagard®-62 Coating: 2 - 3 x Sikagard®-62</p> <p><i>Glass fabric reinforced system:</i> Primer: 1 x Sikagard®-62 Coating: 1 x Sikagard®-62 imbedding of glass fabric 2 - 3 x Sikagard®-62</p>																														
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<b>Substrate Quality</b>	<p>The concrete substrate must be sound and of sufficient compressive strength (minimum 25 N/mm<sup>2</sup>) with a minimum pull off strength of 1.5 N/mm<sup>2</sup>.</p> <p>The substrate must be clean, dry and free of all contaminants such as dirt, oil, grease, coatings and surface treatments, etc.</p> <p>If in doubt apply a test area first.</p>																														

## Appendix 2

### Technical Specification for CAPSUR®



**Integrated Chemistries, Inc.**  
Cleaning up bad stuff is our business...

COMPANY PROFILE CORPORATE CLIENTS PRODUCT GALLERY CONTACT US

#### CAPSUR® - PCB Extraction System

CAPSUR is an aqueous based solvent system developed specifically for the clean up of Polychlorinated Biphenyl (PCB) spills on solid surfaces.

CAPSUR has the capability of being applied as a foam blanket which allows application to overhead, vertical and horizontal surfaces.

CAPSUR is formulated to remove PCBs from concrete, asphalt, wood, and metal surfaces, and has demonstrated success on new and old spills.

CAPSUR has demonstrated extraction efficiencies greater than 95 percent. This efficiency rate translates into less work, less time, and less product usage than other PCB cleaning products. CAPSUR easily vacuums up from surfaces. Surfaces are lightly rinsed with water, which is also vacuumed off. Easier removal results in lower labor cost. PCB cleanups with CAPSUR use dramatically less product than other PCB remediation products, resulting in less hazardous material to dispose of after cleanup.

**PRODUCT COVERAGE:**  
Application coverage will vary with surface porosity and operator proficiency. The following are average coverage rates:

- Porous Concrete = 125 sq. ft. per gallon
- Asphalt = 150 sq. ft. per gallon
- Metals = 200 sq. ft. per gallon

**CAPSUR Benefits**

- High Extraction Rate
- Lower Labor Costs
- Successful on Old and New spills
- Widely Applicable

Painted surfaces should be patch tested prior to application as paint softening or discoloration may occur.

*CAPSUR is available in 5 and 55 gallon containers.*

**Emergency information** regarding ingestion, skin contact, eye contact or inhalation is included in the Material Safety Data Sheet (MSDS). If any of these emergencies occur, the Poison Control Emergency Response number is (800) 228-5635.

## Appendix 3

### Technical specifications for All Purpose Cleaner Simple Green

Material Safety Data Sheet: Simple Green® All-Purpose Cleaner and Simple Green® Scrubbing Pad  
 Version No. 13005-12B Date of Issue: February 2012 ANSI-Z400.1-2003 Format

#### Section 1: PRODUCT & COMPANY IDENTIFICATION

Product Name: Simple Green® All-Purpose Cleaner  
 Additional Names: Simple Green® Concentrated Cleaner Degreaser Deodorizer  
 Simple Green® Scrubbing Pad (Fluid in pad only)

Manufacturer's Part Number: \*Please refer to page 4

Company: Sunshine Makers, Inc.  
 15922 Pacific Coast Highway  
 Huntington Beach, CA 92649 USA  
 Telephone: 800-228-0709 • 562-795-6000 Fax: 562-592-3830  
 Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

#### Section 2: HAZARDS IDENTIFICATION

**Emergency Overview:** CAUTION. Irritant. This is a Green colored liquid with a sassafras added odor. Scrubbing pad is a green fibrous rectangle infused with Simple Green Cleaner.



**NFPA/HMIS Rating:**  
 Health = 1 = slight  
 Fire, Reactivity, and Special = 0 = minimal

#### Potential Health Effects

**Eye Contact:** Mildly irritating.  
**Skin Contact:** No adverse effects expected under typical use conditions. Prolonged exposure may cause dryness. Chemically sensitive individuals may experience mild irritation.  
**Ingestion:** May cause stomach or intestinal irritation if swallowed.  
**Inhalation:** No adverse effects expected under typical use conditions. Adequate ventilation should be present for prolonged usage in small enclosed areas.

#### Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	≥ 78%
2-butoxyethanol	111-76-2	≤ 5%
Ethoxylated Alcohol	68439-46-3	≤ 5%
Tetrapotassium Pyrophosphate	7320-34-5	≤ 5%
Sodium Citrate	68-04-2	≤ 5%
Fragrance	Proprietary Mixture	≤ 1%
Colorant	Proprietary Mixture	≤ 1%

#### Section 4: FIRST AID MEASURES

**If inhaled:** If adverse effect occurs, move to fresh air.  
**If on skin:** If adverse effect occurs, rinse skin with water.  
**If in eyes:** Flush with plenty of water. After 5 minutes of flushing, remove contact lenses, if present. Continue flushing for at least 10 more minutes. If irritation persists seek medical attention.  
**If ingested:** Drink plenty of water to dilute.

Material Safety Data Sheet: Simple Green® All-Purpose Cleaner and Simple Green® Scrubbing Pad

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ANSI-Z400.1-2003 Format

**Section 5: FIRE FIGHTING MEASURES**

This formula is stable, non-flammable, and will not burn. No special procedures necessary

Flammability: Non-flammable  
Flash Point: Non-flammable

Suitable Extinguishing Media: Use Dry chemical, CO2, water spray or "alcohol" foam.  
Extinguishing Media to Avoid: High volume jet water.  
Special Exposure Hazards: In event of fire created carbon oxides, oxides of phosphorus may be formed.  
Special Protective Equipment: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

**Section 6: ACCIDENTAL RELEASE MEASURES**

Personal Precautions: See section 8 – personal protection.  
Environmental Precautions: Do not allow into open waterways and ground water systems.  
Method for Clean Up: Dilute with water and rinse into sanitary sewer system or soak up with inert absorbent material.

**Section 7: HANDLING AND STORAGE**

Handling: Keep container tightly closed. Ensure adequate ventilation. Keep out of reach of children.  
Storage: Keep in cool dry area.

**Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**

Exposure Limit Values:

2-butoxyethanol	OSHA PEL TWA 50 ppm (240 mg/m <sup>3</sup> )	ACGIH TLV 20 ppm (97 mg/m <sup>3</sup> )
Tetrapotassium Pyrophosphate		5 mg/m <sup>3</sup>

Exposure Controls:  
Eye Contact: Use protective glasses if splashing or spray-back is likely.  
Respiratory: Use in well ventilated areas.  
Skin Contact: Prolonged exposure or dermal sensitive individuals should use protective gloves.

**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Green Liquid	Vapor Pressure:	18 mmHg @20°C; 23.5 mmHg @26°C
Odor:	Added Sassafras odor	Density:	8.5 lb/gal;
Specific Gravity:	1.010 ± 0.010	Water Solubility:	100%
pH:	9.5 ± 0.5	VOC composite Partial Pressure:	TBD
Boiling Point:	~210°F (98 °C)	VOC: CARB Method 310	3.8%
Freezing Point:	~ 32°F (0°C)	SCAQMD Method 313	2.8%
Nutrient Content:	Phosphorous: 0.28% Chloride: ~110 ppm	Sulfur: ~180 ppm Fluorine: ~90 ppm	

Appendix 4  
PCB's storage location



Roll-off Container



## Appendix 5 Partial containment



### Notes:

- Partial containment will be built using wood frames, PVC tubes, 6 mil polyethylene sheeting, and duct tape.
- The Partial containment will be attached to the building with the best of our means to provide a sealed barrier.