

**CHAPTER: ADMINISTRATION**  
**TITLE: CHEMICAL MANAGEMENT**

The Chemical Health and Environmental Management in Schools (C.H.E.M.I.S.) Manual published by the Pan-Educational Institute will be used as the primary document to guide the management of chemicals in Calhoun County Schools.

Copies of the C.H.E.M.I.S. manual will be distributed to all employees who uses chemicals on school property. Staff development for those individuals will be coordinated with the Professional and Service Employees Staff Development Councils.

Acquisition of chemicals:

A. The principal, department chairs, or Director of Supportive Services has the ultimate responsibility for the prudent purchase of all chemical materials.

B. A Material Safety Data Sheet (MSDS) will be required with each chemical purchased and must be present when received.

C. Considerations when making chemical acquisition decisions:

1. Is proper storage available?
2. Will this chemical or end product have to be disposed of as a hazardous material?
3. Have the personnel been trained to handle this chemical?
4. Is the quantity being ordered appropriate for anticipated uses?

When using chemicals:

A. The basic classification of physical hazards presented by the chemicals must be known.

B. The acute and chronic health effects of the chemical must be evaluated by the user.

C. Chemicals on the extremely hazardous materials list are not to be used.

D. Chemicals known to be carcinogens are not to be used without prior approval of the superintendent of schools.

E. Proper ventilation must be used.

F. Personal protective equipment must be used:

1. Appropriate eye protection.
2. Appropriate body protection.

G. Personnel must be familiar with the Spill Management Procedures

Emergency equipment made available may include:

- A. Eyewash Station.
- B. Emergency Showers.
- C. Fire Extinguisher.
- D. Fire Blanket.
- E. First Aid Supplies.
- F. Spill Management Materials.

Storage of chemicals:

- A. Chemicals are to be stored in compatible family groups as shown on Exhibits 1 and 1A.
- B. The J.T. Baker Chemical Company color coding organization scheme, as shown on Exhibit 2, is to be used when storing chemicals.
- C. Chemical containers are to be labeled to include:
  - 1. The name of the chemical as it appears on the MSDS.
  - 2. The appropriate hazard warnings.
  - 3. The name and address of the manufacturer.
  - 4. The National Fire Protection Association 704 label is to be affixed to information marked in the areas rating health, flammability reactivity, and other hazards.
- D. Classroom doors, chemical storage room doors and storage cabinets will be placarded using the National Fire Protection Association 704 System. The size of the placard is to be 4"x4" minimum.

Disposal methods include:

- A. Exhibit 3 lists non-regulated inorganic materials that can be disposed of in an approved landfill with permission of the landfill operator.
- B. Exhibit 4 lists non-regulated organic materials that can be disposed of in an approved landfill with permission of the landfill operator.
- C. Before any chemicals are disposed of in a public sewer system, the public entity operating that system must provide approval to the person carrying out the disposal.
- D. Other wastes must be disposed of in compliance with all local, state, and federal regulations.

An accurate inventory of chemicals will be maintained. A complete physical inventory of chemicals will be conducted in June of each year by principals, supervisors, or their designees.

## Chemical Hazard Communication Program:

### Material Safety Data Sheet (MSDS) Requirements:

1. The Director of Supportive Services will:
  - a. Secure a copy of the MSDS for each product containing chemicals stored in the warehouse and maintenance shop.
  - b. Provide a loose leaf notebook containing copies of each MSDS to all school principals, the maintenance department supervisor, and bus garage chief mechanic.
  - c. Provide each site with updated MSDS as new products are warehoused.
  - d. Provide a list of warehoused products requiring MSDS information.
  - e. Maintain a master file of MSDS for products in the warehouse.
  - f. Maintain the list of products in the warehouse which require an MSDS.
2. Each classroom teacher, Maintenance Supervisor, and Bus Garage Chief Mechanic will:
  - a. Maintain a loose leaf notebook containing required MSDS and master lists in a location accessible to employees and building occupants.
  - b. Add MSDS to the book and product names to the master list that the school/department orders directly from vendors.

### Labeling:

The Director of Supportive Services will:

- A. Oversee the program.
- B. Assist in securing and providing hazard warning labels as needed by principals and department chairs.

Principals and department chairs will:

- A. Ensure that storage rooms where chemicals are stored and laboratories have the proper hazard warning labels on the doors.
- B. Ensure that chemical storage cabinets have the proper hazard warning label affixed.
- C. Ensure that chemical storage containers have the proper hazard warning labels affixed.

### Training:

The Director of Supportive Services will:

- A. Secure and provide information and training regarding hazard labeling to principals, classroom teachers, supervisors, maintenance personnel and mechanics.
- B. Secure and provide training to appropriate employees to interpret MSDS information.

Principals and supervisors will:

- A. Provide training to appropriate employees they supervise regarding MSDS information.
- B. Provide training to appropriate employees regarding hazardous material labeling.
- C. Ensure that employees are aware of the location of the MSDS information.

Reporting:

School principals and supervisors will submit an inventory of chemicals stored during the previous school year by July 1 of each year to the Director of Supportive Services.

The Director of Supportive Services will:

- A. Compile inventories of chemicals submitted by facilities and submit them to the Local Emergency Planning Committee (L.E.P.C.) and local fire departments having jurisdiction over a facility by August 1 of each year for the previous school year.
- B. Report chemicals stored in reportable quantities to State Emergency Response Committee (S.E.R.C.).

**EXHIBIT 1**

The inorganic/organic compatible family storage system suggest separating organic and inorganic chemicals, which are further sorted into compatible families. Chemicals are then sorted within these separate family groups.

<b>INORGANIC</b>	<b>ORGANIC</b>
<ul style="list-style-type: none"><li>1. Metals, hydrides.</li><li>2. Halides, sulfates, fulfites, thiosulfates, Phosphates, halogens</li><li>3. Amides, nitrates** (except ammonium nitrate), nitrites**, azides**, nitric acid.</li><li>4. Hydroxides, oxides, silicates, carbonates, carbon.</li><li>5. Sulfides, selenides, phosphides, carbides, nitrides.</li><li>6. Chlorates, per chlorites**, perchloric acid**, chlorites, hypochlorite's, peroxides***, hydrogen peroxide.</li><li>7. Arsenates, cyanides, cyanides</li><li>8. Borates, chromates, magnates', permanganates</li><li>9. Acids (except nitric).</li><li>10. Sulfur, phosphorus**, arsenic,, phosphorus pent oxide**.</li></ul>	<ul style="list-style-type: none"><li>1. Acids, anhydrides, peracids.</li><li>2. Alcohols, glycols, amines, amides, imines, imides.</li><li>3. Hydrocarbons, esters, aldehydes.</li><li>4. Ethers**, ketones, ketenes, halogenated hydrocarbons, ethylene oxide.</li><li>5. Epoxy compounds, isocyanides.</li><li>6. Peroxides', hydro peroxides, asides.</li><li>7. Sulfides, polysulfide's, sulfoxides, nitrides'.</li><li>8. Phenols, cresols.</li></ul>
<p>**These chemicals deserve special attention due to their potential instability. Be sure to follow local fire codes when storing flammable chemicals in separate cabinets.</p>	

## STORAGE SUGGESTIONS

1. Avoid floor chemical storage (even temporary).
2. No top shelf chemical storage
3. No chemicals stored above eye level.
4. Shelf assemblies are firmly secured to walls. Avoid island shelf assemblies.
5. Provide anti-roll lips on all shelves.
6. Ideally shelving assemblies would be of wood construction, except for stron oxidizers.
7. Avoid metal, adjustable shelf supports and clips. Better fixed, wooden supports.
8. Isolated from other acids. Store both inorganic and some organic acids in the acid cabinet.
9. Store flammables in a dedicated flammables cabinet.
10. Store severe poisons in a dedicated poisons cabinet.

### EXHIBIT 1A

#### Suggested Shelf Storage Pattern - Inorganic

<b>Inorganic #10</b>  Sulfur, Phosphorus, Arsenic, Phosphorus Pentoxide	<b>Inorganic #7</b>  Arsenates, Cyanides, Cyanales (Store away from any water)	<b>Inorganic #9</b>  Acids except Nitric  (Acids are best stored in dedicated cabinets)  <b>ACID</b>
<b>Inorganic #2</b>  Halides, Sulfates, Sulfites, Thosulfates, Phosphates, Halogens Acetates	<b>Inorganic #5</b>  Sulfides, Selenides, Phosphides, Carbides, Nitrides	
<b>Inorganic #3</b>  Amides, Nitrates (Not Ammonium Nitrate) Nitrites, Azides (Store Ammodium Nitrate away from all other substances - Isolate it)	<b>Inorganic #8</b>  Borates, Chlorates, Manganates, Permanganates	
<b>Inorganic #1</b>  Metals and Hydrides (Store away from any water)  (Store flammable solids in	<b>Inorganic #6</b>  Chlorates, Perchlorates, Chlorites, Perchloric Acid, Peroxides, Hypochlorites, Hydrogen Peroxide	

flammables cabinet)		
<b>Inorganic #4</b> Hydroxides, Oxides, Silicates, Carbonates, Carbon	<b>MISCELLANEOUS</b>	

## EXHIBIT 1A

### Suggested Shelf Storage Pattern - Organic

<b>Organic #2</b> Alcohols, Glycols, Amines, Amides, Imines, Inides  (Store flammables in a dedicated cabinet)	<b>Organic #8</b> Phenol, Cresols	<b>POISONS</b>  <b>STORE SEVERE POISONS IN POISONS CABINET</b>
<b>Organic #3</b> Hydrocarbons, Esters, Aldehydes (Store flammables in a dedicated cabinet)	<b>Organic #6</b> Peroxides, Azides, Hydroperoxides	<b>Organic #2</b> Alcohols, Glycols, Etc.
<b>Organic #4</b> Ethers, Ketones, Ketenes, Halogenated Hydrocarbons,  Ethylene Oxide (Store in a dedicated cabinet)	<b>Organic #1</b> Acids, Anhydrides, Peracids (Store certain organic acids in acid cabinet)	<b>Organic #3</b> Hydrocarbons, Esters, Etc.  <b>Organic #4</b> Ethers, Ketones, Etc.
<b>Organic #5</b> Epoxy Compounds, Isocyanides	<b>MISCELLANEOUS</b>	<b>STORE FLAMMABLES IN A DEDICATED CABINET</b>
<b>Organic #7</b> Sulfides, Polysulfide's, Etc.	<b>MISCELLANEOUS</b>	<b>FLAMMABLES</b>

**EXHIBIT 2**

Suggested Chemical Storage Pattern for Color Code

The alphabetical method of storing chemicals presents hazards because chemicals which react violently with each other may be stored in close proximity. The J.T. Baker Chemical Company has devised a simple color coding scheme to address this problem. The code includes both solid and striped colors which are used to designate specific hazards as follows. Other chemical companies suggest similar systems, using changing one of the indicator colors.

Red - Flammability hazard: Store in a flammable chemical storage area.

Red Stripe - Flammability hazard: Do not store in the same area as other flammable substances.

Yellow - Reactivity hazard: Store separately from other chemicals.

White - Contact hazard: Store separately in a corrosion-proof location.

White Stripe - Contact hazard: Not compatible with chemicals in solid white category.

Blue - Health hazard: Store in a secure poison area.

Orange - Not suitably characterized by any of the foregoing categories.

**EXHIBIT 3**

Inorganic Chemicals

Inorganic chemicals, which are not RCRA regulated, may be disposed of in a sanitary landfill and if soluble, with approval of the local treatment facility through the sanitary sewer system. The following list of inorganic chemicals were non-regulated as of January 1, 1994. Be sure to check current regulations before disposal.

Alka-seltzer	Ferric:	acetate ammonium acetate ammonium citrate ammonium sulfate citrate oxide phosphate sulfate	Sand	
			Silica gel	
			Silicic acid	
			Silicon	
Alum	Ferrous:	ammonium sulfate oxide sulfate	Sodium:	acetate
				aluminum sulfate ammonium phosphate bicarbonate bismuthate carbonate

Ammonium:	acetate bicarbonate bromide chloride citrate iodide molybdate oxalate phosphate sulfate sulfite tartrate	Fuller's Earth		chloride citrate iodide metaphosphate molybdate silicate sulfate tartrate tungstate
Baking powder		Magnesium:	acetate bromide carbonate carbonate hydroxide hydroxide oxide sulfate	Stannic oxide
Baking soda				Sulfur
Bismuth trichloride				Talc
Boiling chips		Marble chips		Titanium dioxide
Calamine lotion		Physiological saline		The following gases can be vented into the atmosphere:
Calcium:	acetate bromide carbonate chloride fluoride phosphate sulfate	Potassium:	acetate bicarbonate biphthalate bisulfite bitartrate carbonate chloride ferricyanide ferrocyanide iodate iodide phosphate sodium tartrate sulfate	Helium Hydrogen Nitrogen Oxygen
Carbon (if not pwd.)				
Carbon dioxide				
Carborundum				
Cesium chloride				
Charcoal				
Diatomaceous earth				
Drierite				
Epsom salt				



#### EXHIBIT 4

Organic chemicals, which are not RCRA regulated, may be disposed of in a sanitary landfill and if soluble, with approval of the local treatment facility, through the sanitary sewer system. The following list of organic chemicals were non-regulated as of January 1, 1994. Be sure to check current regulations before disposal.

#### THE CHEMICAL MUST BE MENTIONED IN THE FOLLOWING LIST:

Acacia	Dimethylglyoxime	Lycopodium
Acetylsalicylic acid	Dodecyl alcohol	Maleic acid
Adenine	EDTA	Maltose
Adenosine Triphosphate	EDTA, disodium salt	Mannitol
Adipic acid	Eosin	Methyl cellulose
Adipoyl chloride	Eosin Y	Methyl cellulose
Agar	Epinephrine	Molasses
Alanine	Erythrosine	Niacin amide
Albumin	Erythrosine B	Nitrobenzeneazoresorcinol
Alizarin red	Ethylenediaminetetraacetic acid	Nucleic acid
Alizarin yellow	Fluorescein	Nutrient broth
Aluminon	Fructose	Oleic acid
Arabic gum	Fuchsine	Olive oil
Arabinose	Fuchsine, acid	Orcein
Ascorbic acid	Fumaric acid	Orcinol
Asparagine	Galactose	Pancreatin
Aspartic acid	Gelatin	Paraffin
Aspirin	Gentian violet	Peanut oil
Balsam	Gibberellic acid	Pepsin
Beef extract	Glucose-1-phosphate, potassium	Petrolatum
Beeswax	Glucose-1-phosphate, sodium	Phenolphthalein
Benzoic acid	Glucose	Phthalic acid
Bile salts	Glycerin	Polyvinyl alcohol
Biuret	Glycerin jelly	Quinine sulfate
Bromophenol blue	Glycerol	Rennin
Carmine	Glycine	Rosin
Carnoy's solution	Glycogen	Rosin oil
Casein	Guano sine	Sesame oil
Catalase	Gum arabic	Sodium desoxycholate
Cellulase	Gum tragacanth	Sodium lauryl sulfate
Cetyl alcohol	Histamine diphosphate	Starch
Cholesterol	Indigo	Stearic acid
Chorionic gonadotrophin	Indigo carmine	Succinic acid
Citric acid	Indoleacetic acid	Sucrose
Cocanut oil	Indolebutyric acid	Sugar
Congo red		Sulfanilic acid
Corn starch		Tartaric acid
Corn syrup		Thymidilic acid

Cretin	Ion exchange resin	Thyroxin
Crystal violet	L-cytosine Hcl	Triphenyl tetrazolium chloride
Cytidylic acid	L-triiodothyronine	Turmeric powder
Decanoic acid	Lactic acid	Urease
Deoxyribonucleic acid	Lactose	Vegetable oil
Dextrin	Lampblack	Vinegar
Dextrose	Lanolin	Yeast
Diastase of malt	Lauric acid	
Digitonin	Lemon juice	
	Laevulose	
	Lipase	
	Litmus	

**REFERENCE: Chemical Health and Environmental Management in Schools Manual**  
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