

# CHEMICAL HYGIENE PLAN

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## **I. DISTRICT ORGANIZATION AND RESPONSIBILITY**

The Occupational Exposure to Hazardous Chemicals in Laboratories Standard was,

- made federal law May 1, 1990 as part of OSH Act (Occupational Safety and Health Act)
- published in rules and regulations of New Jersey Register (by adopting federal law) on June 21, 1993
- as part of the state's PEOSH Act (Public Employees Occupational Safety and Health Act)

Under the PEOSH Act,

- the final standard is effective June 21, 1993 and
- an appropriate Chemical Hygiene Plan must be implemented by March 21, 1994.

Responsibility for chemical hygiene rests at all levels as defined in the federal register, the Occupational Exposure to Hazardous Chemicals in Laboratories Standard 1910.1450. The following hierarchy of personnel is adapted from the regulation for our district as follows:

Superintendent of Schools  
District Chemical Hygiene Officer  
Site Chemical Hygiene Officer

### **A. Superintendent of Schools**

1. Ultimately responsible for chemical hygiene.
2. Provide with others, (the District Chemical Hygiene Officer and Site Chemical Hygiene Officer), continuing support for institutional chemical hygiene.

### **B. District Chemical Hygiene Officer**

1. Work with administrators, other employees, and students to develop and implement the chemical hygiene policies and practices.
2. Monitor procurements, usage and disposal of chemicals used in the laboratories (Chemical, Biological, and Physical) utilizing Hazard Communications, and Right to Know activities.
3. See that appropriate audits are maintained through the Right to Know and Science Department activities.
4. Assist the Science Department Personnel to develop precautions and adequate facilities.
5. Know the current legal requirements concerning regulated substances, and disseminate to Site Chemical Hygiene Officer and faculty.

6. Seek ways to improve the chemical hygiene program.
7. Develop, implement, and continue updating the chemical hygiene training program.
8. Coordinate disposal of hazardous waste that cannot be eliminated through regular means (see section on Waste Disposal) including use of district and county resources.

C. Site Chemical Hygiene Officer

1. Work with other administrators, the District Chemical Hygiene Officer and the Science faculty to develop and implement appropriate hygiene policies and practices.
2. Monitor use and disposal of chemicals used in the laboratory.
3. Keep appropriate files and records to site implementation of the Chemical Hygiene Plan, and New Jersey's Right to Know requirements.
4. Work with the Science faculty to provide Chemical Hygiene Plan and New Jersey Right to Know training.
5. Monitor and collect documentation for activities required in the Chemical Hygiene Plan.
6. Help to develop precautions and adequate facilities.

## **II. THE LABORATORY FACILITIES**

### **A. The laboratory design should include:**

1. An appropriate general ventilation system with air intakes and exhausts located in Science Labs to avoid intake of contaminated air. Exhausts will be located so that contaminated air is not drawn into non-chemistry areas.
2. Chemical storerooms will be well ventilated to allow for appropriate air exchanges and to prevent a buildup of fumes.
3. Laboratory hoods will be vented and the exhaust will be located in such a position to not contaminate air being drawn into the general ventilation system.
4. Other standard safety equipment found in or near the laboratory area will include: emergency eye wash station (in all Science laboratories), fire extinguishers (in all Science laboratories), fire blankets (in all Science laboratories), emergency shower stations (in all chemistry laboratories); sanitized goggle cabinet - check with supervisor.
5. Laboratory chemical disposal will be arranged through the District Chemical Hygiene Officer.

### **III. MAINTENANCE, USAGE, HOUSEKEEPING, AND INSPECTION**

#### **A. Maintenance**

Chemical hygiene related equipment (hoods, drench showers, eye washes, fire extinguishers, eye wear sterilization cabinets) will undergo continuing appraisal and be repaired or modified, if necessary, by the Science Department and the Buildings and Grounds Department.

#### **B. Usage**

Work conducted in the Science Department laboratories will be appropriate for laboratories used.

#### **C. Ventilation**

##### **1. General Ventilation System in Chemistry labs**

- a. The general laboratory ventilation system shall provide a source of air for breathing and for input local ventilation devices.
  1. It will not be relied on for protection from toxic substances released into the laboratory.
  2. The Chemistry laboratory ventilation system will ensure that laboratory air is continually exchanged, preventing a dangerous concentration of toxic substances from building up during a working day.
  3. The general laboratory ventilation system will direct air flow into the laboratory area from non-laboratory areas and out to the exterior of the building.

##### **2. Laboratory Fume Hoods**

- a. Laboratory fume hoods will be vented and the exhaust will be located in such a position to not contaminate air being drawn into the general ventilation system.
- b. Each laboratory fume hood will be monitored every month by the Site Chemical Hygiene Officer to test the fume hoods ventilation performance.
- c. Maintenance of the fume hoods and general ventilation system will be the responsibilities of the Site Chemical Hygiene Officers and the Department of Buildings and Grounds.
- d. Records of all inspections and maintenance performed on the fume hoods and the general ventilation system will be maintained by the Department of Buildings and Grounds with copies given to the Site Chemical Hygiene Officer.

##### **3. Local Ventilation Systems**

- a. Portable laboratory fume hoods may be used at individual laboratory stations.
- b. Dilutions of high concentration stock inventory will be done in the laboratory fume hood,

after which the dilute solutions may be used in a temporary lab fume hood.

4. Changes, modifications and/or repair will occur in a timely fashion when appropriate testing of the ventilation equipment confirms a problem.
5. The normal performance rates of the room ventilation system will range from 4 to 12 room exchanges during a one hour period, continuously, during room occupation.

D. Housekeeping Maintenance and Inspections

1. During the school year floors in the lab areas will be cleaned nightly by the custodial staff.
2. Formal housekeeping and chemical hygiene inspections will be made semiannually by the Site Chemical Hygiene Officer. Informal inspections will be done on a continual basis.
3. Eye wash stations will be inspected monthly by the Site Chemical Hygiene Officer.
  - a. Eye wash stations are designed to be activated by hand pressure on a control lever. The water flow will continue as long as the lever is depressed.
4. Safety showers will be tested monthly for water flow and general performance by the Buildings and Grounds Department.
5. Fire extinguishers will have an annual maintenance inspection and a monthly visual inspection by the Buildings and Grounds Department. After usage, the Buildings and Grounds Department will send out the fire extinguishers to be refilled.
  - a. There will be two fire extinguishers in all the Science laboratories.
6. Stairways and hallways will not be used as storage areas. Access to exits, emergency equipment, and utility controls shall never be blocked.
7. General air flow should not be turbulent and should be relatively uniform throughout the laboratory, with no high velocity or static areas; air flow into and within the hood should not be excessively turbulent; hood face velocity should be adequate (80.1090 linear feet per minute.)
8. The quality and quantity of ventilation will be evaluated upon installation of all new ventilation equipment and will be regularly monitored at least every month by the Department of Buildings and Grounds and be re-evaluated whenever changes in the local ventilation devices are made.

## **IV. BASIC RULES AND PROCEDURES FOR WORKING WITH CHEMICALS**

### **A. Accidents and Spills**

#### **1. Laboratory Preparation**

- a. As part of all laboratory preparation, safety literature will be reviewed by the laboratory teacher to prepare for any accident or spill that might occur.
- b. The safety literature will consist of:
  - i) Material Safety Data Sheets (MSDSs) or Safety Data Sheets (SDSs);
  - ii) Laboratory manual safety suggestions;
  - iii) The Chemical Hygiene Plan; and
  - iv) Other safety literature considered pertinent to reduce chemical and chemical and physical exposure hazards to those participating in the laboratory.

#### **2. Eye Contact**

- a. In the case of eye contact, eyes must be flushed with copious amounts of water for a minimum of 15 minutes and then medical help sought.

#### **3. Ingestion**

- a. Check the MSDS or SDS and label when ingestion has occurred.
- b. When indicated, direct the victim to drink large amounts of water
- c. Where indicated and the victim is conscious and not convulsive, induce vomiting. Under the supervision of the School Nurse induce vomiting by immediately giving 2 to 4 glasses of water followed by touching a finger to the back of the throat. Seek medical help.

#### **4. Skin Contact**

- a. In the event of skin contact, the area must promptly be flushed with water and contaminated clothes should be removed. If symptoms arise and persist seek medical attention.

(NOTE: If skin contact with a chemical covers a large area of the body and soaks the clothing, remember that modesty must not preempt safety. All effected clothing must be removed to effectively rinse the skin under the garments.)

#### **5. Small Spills**

- a. Small spills should be expeditiously cleaned up using appropriate protective apparel, effective equipment, and proper disposal techniques.

## 6. Large Spills

- a. If a large spill occurs, evacuate the immediate area and immediately contact the District Chemical Hygiene Officer, Site Chemical Hygiene Officer and the Department of Buildings and Grounds. These persons will place into effect the Hazardous Materials Response Plan.

### B. Avoidance of Routine Exposure

1. Teachers working in laboratory situations should develop and encourage safe habits and strive to avoid unnecessary exposure to chemical substances by any route of entry into the body.
2. Teachers and students should not smell, taste, or feel chemical substances.
3. Safety equipment such as gloves, goggles, and aprons must be inspected for damage or defects before use.

### C. Choice of Chemicals

1. Do not use carcinogens!
2. Use only those chemicals for which the quality of the ventilation system is appropriate.
3. Limit laboratory chemicals to the amount needed to effectively conduct an experiment. However, when chemical substitutes need to be used due to a shortage of recommended chemicals, safety literature for the replacement chemicals, must be consulted before the laboratory is prepared.

### D. Eating, Smoking, etc.

1. Do not eat, drink, smoke, chew gum, or apply cosmetics in areas where chemical substances are present.
2. Do not use laboratory operation storage area refrigerators, glassware or utensils to store, handle, or consume food or beverages.

### E. Equipment and Glassware

1. Handle and store laboratory glassware with care to avoid damage. Damaged glassware should not be used in the laboratory and should be disposed of properly.

### F. Horseplay

1. Avoid practical jokes or other behavior that might confuse, startle, or distract another staff member or a student.

### G. Mouth Suction

1. DO NOT under any circumstances use your mouth in place of a suction device for pipetting



or to start a siphon.

#### H. Personal Apparel and Behaviors

1. Long hair exceeding shoulder length must be tied back during laboratory activities.
2. Loose fitting clothing must be avoided during laboratory activities.
3. Proper shoes must be worn during all laboratory activities. Sandals, perforated, and open toed-shoes shall not be worn.
4. To reduce potential damage to the eyes, goggles shall be worn during laboratory activities where hazardous chemicals or moving objects which might break loose and fly through the air are used.
5. To further reduce the risk of damage to the eye tissue, become familiar with the location of the emergency eye wash station.
6. Never rub your eyes with your hands during an experiment. If you must rub your eyes you should wash your hands with soap and water first.

#### I. Personal Housekeeping

1. The work area shall be kept clean and uncluttered. Chemicals and equipment shall be properly labeled and stored.
  - a. Upon completion of an operation, the work area shall be cleaned to prevent exposure to any chemical substance by students in the next group using the lab facilities.
2. When there is a potential danger of contact with hazardous materials appropriate gloves shall be worn.
3. After working with chemical substances, staff and students shall wash areas of exposed skin, particularly hands and arms.

#### J. Planning

1. Staff members shall seek information concerning the potential hazards of the chemical substances to be used in the laboratory.
  - a. These sources include Material Safety Data Sheets or Safety Data Sheets, Laboratory Manuals, as well as other chemical indexes which contain toxicological information given about the chemical substances in question.
2. Plans shall then be made to include the appropriate protective procedures and equipment. Through this procedure the laboratory teacher will become familiar with positions of the safety stations (eye wash, drench shower, fire blanket, fire extinguisher) and the chemical spill stations (sodium bicarbonate for acid spills, vermiculite for other chemical spills.)

#### K. Use of Fume Hoods

1. The fume hood shall be used for all experimental operations that might result in the release of toxic chemical vapors or dust.

2. The fume hood or other local exhaust ventilation shall be used when working with any appreciably volatile substances with a Threshold Limit Value (TLV) of less than 50 parts per million (ppm). Check Material Safety Data Sheets or Safety Data Sheets for TLV data.
3. Proper fume hood performance should be confirmed before use. If the fume hood performance is determined not to be satisfactory, experimental operation will be discontinued.
4. Materials stored in the fume hood shall be kept to a minimum and they shall not block vents or air flow.
5. If toxic materials are stored in the fume hood, the hood shall be left on.
6. The fume hood shall also be left on, if it is uncertain whether adequate general ventilation will be maintained when it is off.

L. Vigilance

The staff should be alert to unsafe conditions and see that they are corrected when detected to avoid a potentially hazardous condition from becoming a hazardous incident.

M. Waste Disposal

In planning for each laboratory activity, plans for disposal of chemical waste shall be made.

1. Chemical Waste: (See section XVI for specifics on waste disposal).
  - a. Chemical waste shall be deposited in appropriately labeled receptacles.
  - b. All waste disposal procedures shall be followed as stated in the Chemical Hygiene Plan.
  - c. Do not discharge concentrated acids or bases, highly toxic, malodorous, and lachrymatory substances or any substance that might interfere with the biological activity of waste water treatment plants, create fire or explosion hazards, cause structural damage or obstruct flow.
2. Biological Waste:
  - a. Following dissection procedures, preserved specimens will be disposed of in accordance with the procedures recommended in the technical information provided by the vendor of the specimens (i.e., material safety data sheets or safety data sheets and direct contact with the vendor) and in an appropriately labeled receptacle.
  - b. All disposable instruments used to perform the dissection will be disposed of following the same procedures used for preserved specimens.

N. Working Alone

Staff should avoid working alone in laboratory operations in a building.

## V. WORKING WITH ALLERGENS AND EMBRYOTOXINS AND HIGHLY TOXIC MATERIALS

Since the department is not equipped to handle highly toxic materials and proper safeguards cannot be provided in a laboratory situation, staff should not work with allergens, embryotoxins or with chemicals of moderate chronic or high acute toxicity.

Some specific recommendations:

1. The following chemicals are listed as known or probable **carcinogens** or mutagens and are not to be used in the Science Department.

Acetamide	CAS 60-35-5	2-Acetylaminofluorine	CAS 53-96-3
Acridine Orange	CAS 494-38-2	Acrylonitrile	CAS 107-13-1
Alpha-Naphthylamine	CAS 134-32-7	4-Aminodiphenyl	CAS 92-67-1
Ammonium Chromate	CAS 7788-98-9	Ammonium Dichromate	CAS 7789-09-5
Ammonium Bichromate	CAS 7789-09-5	Aniline (or any of its salts)	CAS 142-04-1
Anthracene	CAS 120-12-7	Antimony Oxide	CAS 4327-33-9
Arsenic Powder	CAS 7440-28-2	Arsenic Pentoxide	CAS 1303-28-2
Arsenic Trichloride	CAS 7784-34-1	Arsenic Trioxide	CAS 1327-53-3
Asbestos	CAS 1332-21-4	Benzene	CAS 71-43-2
Benzidine	CAS 92-87-5	Beryllium Carbonate	CAS 66104-24-3
Beta-Naphthylamine	CAS 91-59-8	Beta-Propiolactone	CAS 57-57-8
Bis-chloromethyl Ether	CAS 542-88-1	Cadmium Powder	CAS 7440-43-9
Cadmium Chloride	CAS 10108-64-2	Cadmium Sulfate	CAS 10124-36-4
Carbon Tetrachloride	CAS 56-23-5	Chloroform	CAS 67-66-3
Chromium Powder	CAS 7440-47-3	Chromium (VI) Oxide	CAS 1333-82-0
Cobalt Powder	CAS 7740-48-4	Colchicine	CAS 64-86-8
3,3'-Dichlorobenzidine	CAS 91-94-1	1,2-Dichloroethane	CAS 107-06-2
(Ethylene Dichloride)	CAS 107-06-2	4-Dimethylaminoazobenzene	CAS 60-11-7
1,4 Dioxane (p. Dioxane)	CAS 123-91-1	Ethyleneimine	CAS 151-56-4
Ethylene Oxide	CAS 75-21-8	Formaldehyde	CAS 50-00-0
Hydroquinone	CAS 123-31-9	Indigo Carmine	CAS 860-22-0
Lead Arsenate	CAS 7784-40-9	Lead Diacetate	CAS 301-04-2

Methyl Chloromethyl Ether	CAS 107-30-2	4,4-Methylenebia (2-dichloroaniline)	CAS 101-14-4
Nickel (II) Acetate	CAS 373-02-4	Nickel Powder	CAS 7440-02-0
4-Nitrophenyl	CAS 92-3-3	N-Nitrosodimethylamine	CAS 62-75-9
Osmium Tetraoxide	CAS 20816-12-0	o-Toluidine	CAS 95-53-4
Potassium Chromate	CAS 7789-00-6	Potassium Permanganate	CAS 7722-64-7
Pyrogallic Acid	CAS 87-66-1	Silver (1) Nitrate	CAS 7761-88-8
Sodium Arssenate	CAS 7631-89-2	Sodium Arsenite	CAS 7784-46-5
Sodium Azide	CAS 26628-22-8	Sodium Dichromate Dihydrate	CAS 7789-12-0
Sodium Nitrate	CAS 7631-99-4	Sodium Nitrite	CAS 7632-88-3
Thioacetamide	CAS 62-55-5	Toluene	CAS 108-88-3
Urethane (Ethyl Carbamate)	CAS 51-79-6	Vinyl Chloride	CAS 75-10-4

2. The following chemicals are **explosive** and are **not** to be used in the science laboratories.

Benzoyl Peroxide	CAS 94-36-0	Carbon Disulfide	CAS 75-15-0
Di-isopropyl Ether	CAS 108-20-3	Ethyl Ether	CAS 60-29-7
Picric Acid	CAS 88-87-1	Perchloric Acid	CAS 7601-90-3
Potassium Metal	CAS 7440-09-7		

3. The following chemicals are **highly toxic** as defined by the Federal Hazardous Substance Act (FHSA). These chemicals are not to be used in the science laboratories.

Adrenaline	CAS 51-43-4	Barium Hydroxide	CAS 17194-00-2
Chlorine	CAS 64-86-8	Colchicine	CAS 64-86-8
Mercury	CAS 7439-97-6	Mercuric Chloride	CAS 7487-94-7
Mercuric Iodine	CAS 7774-29-0	Formaldehyde	CAS 50-00-0

Any solvent with a flash point below 140 degrees Fahrenheit (60 degrees Celsius).

This list is not all inclusive. For a specific chemical not listed above, check the references available in the science office. Contact the District Chemical Hygiene Officer for final determination.

## **VI. THE GLOBALLY HARMONIZED SYSTEM**










The Globally Harmonized System (GHS) of Classification and Labeling of Chemicals is a worldwide initiative developed by the United Nations to promote standard criteria for classifying chemicals according to their health, physical and environmental hazards. It uses pictograms, hazard statements, and the signal words “Danger” and “Warning” to communicate hazard information on product labels and safety data sheets in a logical and comprehensive way. The primary goal of GHS is better protection of human health and the environment by providing chemical users and handlers with enhanced and consistent information on chemical hazards.

The new 2012 changes to OSHA's Hazard Communication Standard (29 CFR 1910.1200) are bringing the U.S. into alignment with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), improving safety and health protections for America's workers. These new revisions to OSHA's current Hazard Communication Standard, the GHS is expected to prevent injuries and illnesses, save lives and improve trade conditions for chemical manufacturers. The Hazard Communication Standard in 1983 gave the workers the 'right to know,' but the new Globally Harmonized System gives workers the 'right to understand'.

To facilitate understanding of the new system, the new standard requires that workers be trained by December 1, 2013 on the new label elements and safety data sheet format, in addition to the current training requirements. By June 1, 2015 chemical manufacturers, importers, distributors and employers must update all product and safety literature. Safety Data Sheets will replace Material Safety Data Sheets.

The use of pictograms on product labels and Safety Data Sheets will be a major initiative under the Standard. The following page previews these symbols and their meaning.

# HCS PICTOGRAMS & HAZARDS

<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases under pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/ burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull &amp; Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

## **VII. CHEMICAL PROCUREMENT, DISTRIBUTION AND STORAGE**

### **A. Procurement**

1. Chemical reagents should be purchased in the smallest quantities possible consistent with the manner in which they are used.
2. In the Science Department, a year's supply of most chemical reagents constitutes a satisfactory supply for most situations.
3. Some chemicals that have a relatively long shelf life and are relatively non-reactive may be purchased in larger quantities.
4. On new orders, quantities should not exceed a 2 year need.
  - a. Neither caustic nor flammable liquids shall be ordered in quantities of greater than 500 ml.
5. Before a substance is received information on proper handling, storage, and disposal will be known to those who will be involved such as: Chemical Hygiene Officer, Science Department Supervisor/Chairperson, Teacher(s), Aide(s), Student(s), and Receiving Clerk.
6. No container will be accepted without an adequate identifying label and MSDS or SDS.
7. All substances will be received at the Receiving Department and delivered to the main Science Department storage area.
8. Handling safety and awareness training will be given to all who handle hazardous chemical substances by the Safety Officer or person designated by the Chemical Hygiene Officer.

### **B. Stockrooms/Storerooms**

1. Toxic substances will be segregated in a well-ventilated area with local exhaust ventilation.
2. Chemicals that are highly toxic or other chemicals whose containers have been opened will be in unbreakable secondary containers.
  - a. These containers will confine the movement of a spill and enhance our mitigation plan. Examples of these containers include (however are not confined to): acid storage cabinets, oxidizer storage cabinets, laboratory storage cabinets (floor and wall anchored, and box storage with vermiculite).
3. Chemicals will be examined at least once a year by the Chemical Hygiene Officer for replacement, disposal potential, and container integrity.
4. Stockrooms/storerooms will not be used as preparation and/or a repacking area.
5. Solution preparation will be done in a designated laboratory area.
6. The Chemistry Work Laboratory will be the only location where low concentration, incompatible substances will be allowed to be stored together temporarily, awaiting and during the laboratory use.

7. The stockroom/storeroom will be kept locked at all times and only authorized school personnel will be allowed to enter the storage area.
8. At no time are students allowed to enter the storage area without supervision. (Storage Area is defined as follows: an enclosed area where one or more chemical substances are stored permanently or temporarily.
  - a. At those times when students must work in a storage area, written permission must be obtained through the Science Supervisor/Chairperson and they must be supervised by a trained member of the staff.
9. All students must receive a written hazard communication training program concerning potential hazards to which they will be exposed.
  - a. This training will take place in conjunction with their safety training laboratory in the beginning of the school year and subsequent safety training as part of other laboratories during the school year.

#### C. Distribution

1. For all caustic chemicals which are hand carried, the chemical container will be placed in a secondary outside container.

#### D. Laboratory Storage

1. Amounts of substances stored will be kept as small as practical and possible.
2. Chemical substances will be stored so they are not exposed to heat and direct sunlight.
3. The use of laboratory carts will also be allowed for the duration of the laboratory activity. When laboratory activities are completed, the chemicals will be returned to the storage area or will be prepared for disposal.

#### E. Specific Storage Safety Regulations

1. Dangerous chemicals such as corrosive acids will be stored as close to the floor as possible and preferably at floor level.
2. Any chemicals that are stored at floor level will not be in the walking area.
3. Chemicals that react violently with each other shall not be stored in proximity. Dangerous combinations are: glycerin and nitric acid; cyanides and acids, peroxides, chlorates, nitrates, permanganates (oxidizing agents), and wood, paper, and many organic compounds that can be easily oxidized.
4. Reagent bottles shall be prominently and accurately labeled.
5. All chemicals shall be dated upon receipt. When the shelf life date is critical, a removal date will be affixed to a prominent place on the label.



6. Compressed gas cylinders shall be stored and capped in fire resistant, ventilated, dry, and cool areas. Medical size cylinders shall be securely strapped to a frame or a cart built for this purpose and always stored with a cap securely in place.

## **VIII. ENVIRONMENTAL MONITORING**

- A. When justified or practical, instrumental monitoring of airborne concentrations of chemical substances will be performed.
  - 1. Instrumental monitoring would normally be done:
    - a. During routine testing;
    - b. Following redesigning or installation of new fume hoods or other local ventilation system;
    - c. Following redesigning or installation of general ventilation devices;
    - d. When the concentration of a highly toxic substance is in question.
  - 2. Since the Science Department does not permit the use of allergens, embryotoxins, and chemicals of moderate or high acute toxicity, regularly scheduled monitoring will not be necessary. Such monitoring will only be done upon the recommendation of the Chemical Hygiene Officer.
- B. Records of all inspections and maintenance performed on the fume hoods and the general ventilation system will be maintained in the Office of the Department of Buildings and Grounds.

## **IX. MEDICAL PROGRAM**

### **A. Practices and Procedures**

1. The school district shall provide all employees who work with hazardous chemicals an opportunity to receive medical attention.
2. If an employee develops signs or symptoms of exposure to a hazardous chemical, the employee shall be given an opportunity to receive an appropriate medical examination.
3. If the PEL levels in a given laboratory exceed OSHA standards, a medical surveillance shall be established for the affected employee.
4. Whenever an event occurs in the laboratory area such as a spill, a leak, an explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee shall be provided an opportunity for a medical consultation by the school physician. The District Chemical Hygiene Officer will represent the district as follows:
  - a. The district shall provide the physician with information as to the identity of the hazardous chemical(s) used by an exposed employee.
  - b. The district shall provide the physician with a description of the conditions which existed during the time of an exposure episode.
  - c. The district shall provide the physician with a description of the signs and symptoms of the exposure that the employee is experiencing.
  - d. The physician shall provide recommendations concerning further medical follow-ups for exposed employee to the district in writing.
  - e. The physician shall provide the district with written results of the medical examination of the exposed employee.
  - f. The physician shall provide a written report to the district on any medical condition which may be revealed in the course of the examination which may place the exposed employee at increased risk.
  - g. The physician shall provide to the district a written statement specifying that the exposed employee has been informed by the physician of the results of the consultation or medical examination.

(Copies of all reports will be filed on site with the Site Chemical Hygiene Officer and the School Nurse, and will be sent to the District Chemical Hygiene Officer.)
5. The district shall establish and maintain an accurate record of any measurements taken to monitor employee exposures and any medical consultation and examinations including tests written opinions that are required.

## **X. PERSONAL PROTECTIVE APPAREL AND EQUIPMENT**

- A. Each Science laboratory will be equipped with the following
  - 1. Goggles (vented and non-vented as required on MSDS or SDS forms);
  - 2. Disinfecting goggle cabinet;
  - 3. 2 fire extinguishers;
  - 4. Fire blanket;
  - 5. Eye wash fountain;
  - 6. Gas master valve with key reset and emergency push button cut-off. (in rooms with gas jets)
  
- B. Each Chemistry laboratory shall, in addition to above, be equipped with the following:
  - 1. A drench type safety shower,
  - 2. A fume hood
  
- C. Fire alarms are easily accessible in the halls.
  
- D. Teachers have access to telephone and extensions in each classroom and in offices located near the science laboratories.

## **XI. RECORDS**

### **A. The following records will be maintained.**

1. Records of accidents and records of employee medical consultations should be written and maintained by the Site Chemical Hygiene Officer and the School Nurse.
2. The Chemical Hygiene Plan shall be reviewed for potential updating each year by a standing committee consisting of the District Chemical Hygiene Officer and the Site Chemical Hygiene Officer. Input from the Science teachers will be solicited.
3. An inventory of hazardous chemicals, by site, shall be maintained and updated annually. (this will be done in conjunction with the Right to Know and Hazard Communication requirements.)
4. Employee medical records shall be retained by the district in accordance with the requirements of New Jersey State and Federal regulations (29 CFR 1910.20).
5. The Site Chemical Hygiene Officer shall maintain all records mandated by:
  - a. the Worker and Community Right to Know Law;
  - b. the Public Employees Occupational, Safety, and Health Act (PEOSH) Lab Standard.
6. The Site Chemical Hygiene Officer will maintain inspection and repair records on all safety Equipment in the Science Department.
7. A file of Material Safety Data Sheets or Safety Data Sheets and Hazardous Substance Fact Sheets relative to the Science Department should be kept on file in the Science Department, and located for accessibility to all Science teachers. The Site Chemical Hygiene Officer maintains a building file on these reference materials.

## **XII. SIGNS AND LABELS**

- A. Prominent signs and labels of the following types shall be posted in the laboratories and/or science offices:
1. Identifying labels showing contents of containers containing hazardous substances;
  2. Location signs for safety showers, safety blankets, and eye wash fountains;
  3. Directions for exiting the facilities in emergencies.

### **XIII. SPILLS AND ACCIDENTS**

#### **A. Hazardous Materials Spills**

1. The most important consideration is the safety of the personnel and students in the area. Evacuation and immediate application of first aid when needed take priority.
2. Once the personnel have been brought to safety, than the chemical should be confined and neutralized.
3. Material Safety Data Sheets or Safety Data Sheets and Hazardous Substance Fact Sheets should be consulted following the containment of the material.
4. While working with the containment of the spill, all available ventilation systems should be put into operation to minimize toxic vapors and reduce the exposure risk.
5. Appropriate waste disposal techniques must be followed.
6. The easiest method for disposal of strong acids and bases is to neutralize the material and adjust the pH to 6-10 and flush down the drain.

#### **B. Accidents**

1. The most important consideration is the safety of the personnel and students in the area. Evacuation and immediate application of first aid when needed take priority.
2. If an individual has been injured do not move the person unless the individual is in further danger by not being moved.
  - a. follow the recommended procedures for chemical and heat burns.
  - b. If there is severe bleeding, have the injured person control the bleeding by compressing the wound with a cloth or whatever is available.
  - c. Notify the School Nurse immediately, either by using the intercom, sending students or by contacting fellow teachers in the area.
3. Once personnel have been safely evacuated, the District Chemical Officer and the Site Chemical Hygiene Officer shall be alerted and efforts will be made to minimize physical damage to the facility.

#### **C. Fires**

1. The most important consideration is the safety of the personnel and students in the area. Evacuation and immediate application of first aid when needed take priority.
2. If the fire is a small bench top fire confined to an open container that can be extinguished easily either by smothering or the use of a fire extinguisher, and there is minimal personal risk, smother the fire with a nonflammable material such as an inverted beaker or a watch

glass or use a fire extinguisher.

3. Whenever there is a fire in a lab situation, students and staff shall be instructed to immediately press the emergency gas cut-off valve, close all gas jets and turn off all electrical equipment.
4. If the fire is not confined to an open container but is more serious in nature, the area shall be evacuated and the school fire alarm shall be activated.



#### **XIV. REPORTS**

- A. In the event of a spill, accident or fire, a written report of the event shall be filed by the teacher in charge and shall be submitted to the Site Chemical Hygiene Officer.
- B. Forms for such reports will be available from the Site Chemical Hygiene Officer. Accident reports where an injury occurs can be obtained in the Nurse's office, and is to be completed by the Nurse.
- C. These reports will be reviewed on an annual basis by the Superintendent of Schools and the District Chemical Hygiene Officer to determine whether improved laboratory techniques can be developed to prevent similar incidents from occurring in future laboratory activities.

## **XV. TRAINING AND INFORMATION**

A. All members of the Science Department shall receive formal safety training. This training shall be the responsibility of the Site Chemical Hygiene Officer.

1. The goal of this training is to inform all Science Department staff members in laboratory situations of the hazards that are present. The training will review the details of the Chemical Hygiene Plan, including:
  - a. Chemical hazards present;
    - i) Risks of exposure
    - ii) How to reduce the exposure to the hazard present;
  - b. Contingency (accident) planning;
  - c. The location and proper use of protective equipment;
  - d. The proper handling of equipment;
  - e. Personal protective apparel and equipment; and
  - f. Relevant regulation.

B. All new science staff shall be trained at the time of their initial assignment.

1. This training shall include a-f above. In addition the following information will be included.
  - a. The contents of the Occupational Exposure to Hazardous Chemicals in Laboratories Standard and its appendices.
  - b. The location of the Chemical Hygiene Plan.
  - c. Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs);
  - d. Signs and symptoms associated with exposure to hazardous chemicals.
  - e. The available reference materials (books, MSDSs/SDSs, HSFs, etc.) about hazardous chemicals in the laboratory and where they are found in the school.
  - f. Methods to detect exposures or releases; and
  - g. Applicable details of this Chemical Hygiene Plan.

C. Additional Training

1. Current staff will receive the same training as new staff upon the initial implementation of the "Lab Standard."

2. When a hazardous substance is introduced in any laboratory, training on that substance will be provided.
  3. Additional training will be provided on a regular and continued basis at the discretion of the of the Site Chemical Hygiene Officer.
  4. A library of safety related materials will be maintained in the Science Department and will be updated on a regular basis.
  5. The staff will be provided with a listing of available safety materials that will be used during laboratory activities.
- D. All training activities in the Science Department will be done in conjunction with PEOSH Hazard Communications Standard compliance training.
1. The PEOSH Hazard Communications and Chemical Hygiene training will be coordinated by the Site Chemical Hygiene Officer and the Science teachers to avoid duplication. The PEOSH Hazard Communications Standard compliance training will include:
    - a. A general overview of occupational health;
    - b. An explanation of the nature and potential health and safety risks;
    - c. The use of Material Safety Data Sheets or Safety Data Sheets;
    - d. Information regarding the provisions of the PEOSH;
    - e. Update of changes in the workplace including a walk through of the facilities housing hazardous chemicals, if necessary, and the procedures for use;
    - f. Hands-on training of protective equipment;
    - g. concepts and practicalities of Globalization Harmonization and its implications in public schools
    - h. Emergency procedures.

## **XVI. WASTE DISPOSAL**

### **A. General Concerns**

1. In waste disposal a basic rule is "less is better." Consequently, laboratory teachers are encouraged to micro-scale or mini-scale experiments when they have the same pedagogical impact as the more common macro-scale experiments. Laboratory teachers are also encouraged to consider "cooperative learning strategies" that would lessen the number of laboratory groups or would allow groups to work on different segments of one laboratory activity.

### **B. Acceptable Laboratory Disposal Practices**

1. Under no circumstances should chemicals be disposed of in the regular garbage or washed down a drain. Both solid and liquid chemical waste including but not limited to organic solvents, bacterial waste and dissection materials shall be disposed of in the receptacles labeled for such materials. These receptacles shall be emptied on a regular basis in accordance with the district's waste management procedures. All disposal must be done in accordance with E.P.A. regulations. Chemical disposal will be coordinated by the district's outside waste disposal company.

### **C. Disposal of Chemicals or Chemical Waste not disposed of in the Laboratory**

1. The District Chemical Hygiene Officer will be responsible for coordinating the disposal of chemicals and/or chemical wastes. The Department of Buildings and Grounds will work with the Chemical Hygiene Officer in the pickup and transporting of chemicals for disposal. E.P.A. disposal registration numbers are required. Collection of all chemicals being set up for disposal by district-authorized chemical remediation contractor must be placed in plastic or glass containers marked with chemical name and CAS number. Chemicals in original containers with proper labels and CASs numbers are also acceptable.

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DISPOSAL COMPANY'S LISTING OF CHEMICALS REMOVED

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DISPOSAL COMPANY'S LISTING OF CHEMICALS REMOVED

## **XVII. RECORDS**

### **SITE CHEMICAL HYGIENE OFFICER**

1. All Right to Know central files (including MSDS/SDS), inventories and annual surveys.
2. Documentation of training for PEOSH Hazard Communications Standard/Right to Know and PEOSH Lab Standard.
3. Accident reports and medical records (nurse).
4. Safety inspection reports.

### **DISTRICT CHEMICAL HYGIENE OFFICER**

1. All Right to Know surveys, inventories and training files.
2. Safety inspection reports.
3. Annual inspection of Chemical storage facilities.

### **BUILDINGS AND GROUNDS DEPARTMENT**

1. Annual checklist record for
  - fire extinguishers
  - ventilation systems
  - safety showers
  - fume hoods

## **XVIII. INSPECTIONS**

### **SITE CHEMICAL HYGIENE OFFICER**

1. Monthly Inspections (September through June)
  - a. Chemistry labs
    - (1) ventilation system
    - (2) fume hoods
    - (3) eye wash station
    - (4) sanitized goggle cabinet
  - b. Other science labs
    - (1) eye wash station
    - (2) sanitized goggle cabinet
2. Monitor storage of chemicals

### **DISTRICT CHEMICAL HYGIENE OFFICER**

1. Chemical storage facilities – semi-annually

### **BUILDINGS AND GROUNDS**

1. Fire Extinguishers - monthly and annual maintenance
2. Ventilation systems - annual inspection
3. Safety showers - semi-annual inspection
4. Fume Hoods - annual inspection

### **INSTRUCTIONS TO TEACHERS**

Right To Know Surveys including Material Safety Data Sheets or Safety Data Sheets are found in the Main Office. All safety documents are burned onto a CD that is placed in an appropriately marked jewel case. The CD and the facility's Hazard Communications Standard Plan are filed in a clear plastic packet marked 2017 Right To Know Survey. The following must be closely monitored:

- No food for human consumption is allowed in lab preparatory rooms or any classrooms.
- All chemical products must be properly labeled including plastic trigger-spray reusable bottles in the custodial area.
- Labels must include the common English name and CAS number. All substances including water must be labeled.
- No chemicals are to be stored above five foot.
- No chemicals are to be stored on the floor, however, the bottom row of a storage shelf is acceptable.
- Chemicals must not block door(s) to lab.
- Microwaves are prohibited in labs and classrooms.
- Food containers must not be used for chemical storage.
- Emergency telephone numbers must be posted in all labs.
- Only flammable products may be stored in flammable cabinets.
- Non-flammable products must not be stored in flammable cabinets.
- Cardboard boxes, plastic wrap, and wooden materials are prohibited in flammable cabinets.
- All paint, stain, thinner and turpentine container labels must include CAS numbers.
- No paints, stains, thinners and turpentine can be over three years old.
- Chemicals must not be stored on top of flammable cabinets.
- All metal cylinders must be capped, chained to the wall and/or stored in storage facility provided by the manufacturer.
- All tanks (cylinders) must be labeled.
- All outside waste containers must be labeled.



## **XIX. STUDENTS SCIENCE LABORATORY SAFETY PROCEDURES**

1. Listen carefully and concentrate on all pre-lab instructions.
2. Do not hesitate to ask your instructor for aid or advice.
3. Unauthorized or unsupervised laboratory experiment are not allowed.
4. Never enter the chemical stockroom or remove anything from it.
5. Know the location and proper use of all safety equipment in the laboratory. These should include the emergency shower, eye wash, fire extinguisher, fire blanket, and fume hood.
6. All laboratory procedures should be taken seriously and work should be done in a calm and serious manner. Horseplay or practical jokes will not be tolerated!
7. Good housekeeping methods should be applied to all procedures. Tables should be cleaned at the end of each lab and proper disposal of chemicals, microbial, broken glass, and other wastes should be followed as directed by your instructor.
8. Wash hands thoroughly after each experiment.
9. Never taste anything produced in the laboratory. Do not eat or drink or apply cosmetics in the laboratory.
10. If any chemical (including alcohol) gets on you, notify your instructor and immediately wash it off with water.
11. Exercise great care in noting odors of fumes. Use a wafting motion with your hand.
12. Never use mouth suction in filling pipettes with chemical reagents. Use a suction bulb.
13. Never force glass tubing into rubber stoppers. Use a glass grip.
14. Choose the proper equipment for the experiment, as authorized by your instructor. Hint: read lab procedures.
15. Report any malfunctions of equipment (Bunsen Burners, etc.) to the teacher. Stop using such equipment at once.
16. In case of an emergency in the laboratory, stay calm, notify your teacher, and use the proper lab safety equipment.
17. Confine long hair and do not wear clothing with long, flowing sleeves, heavy, dangling jewelry, or open-toed shoes.
18. Wear safety goggles (over eyes) and a lab apron (tied) whenever dealing with chemicals, heat, or glassware.
19. Check each chemical label carefully to make sure you have the correct substance. Some chemical formulas and names differ by only a letter or number.
20. Do not return any excess material to its original container as this will contaminate the substance. Only use amount called for.
21. Dispose of any excess chemical or waste chemicals and materials as directed by your instructor.
22. Use electrical equipment only under the supervision of a teacher. Be sure the teacher checks electrical circuits before you activate them. Do not handle electric equipment with wet hands or when you are standing in damp areas.
23. Make sure microscope wires are not worn or frayed before use.
24. Never use broken or chipped glassware. It has a tendency to break and chip further.
25. Use correct sterile technique, as directed by instructor, when transferring bacteria or other microorganisms from one culture to another or to a microscope slide.
26. Do not open a petri dish to observe or to count bacterial colonies inside.
27. If a thermometer breaks, inform your teacher immediately. Do not touch either the mercury or the glass with your bare skin.
28. When working with electric circuits, be sure that the current is turned off before making adjustments in the circuit.
29. If you are connecting a voltmeter or ammeter to a circuit, have your teacher approve the connections before you turn on the current.
30. THINK SAFE, ACT SAFE, BE SAFE!

## **XX. STUDENT SAFETY CONTRACT**

1. I have read the Laboratory Safety Procedures handout and I have it ATTACHED within my science notebook for easy reference.
2. I am aware of the location and proper use of the five pieces of laboratory safety equipment: fire extinguishers (2), fire blanket, fume hood, eye wash, and emergency shower.
3. I will never interfere with the laboratory safety equipment as they must be kept ready for instant use. I will use the laboratory safety equipment only if an emergency arises.
4. I will follow precisely the laboratory procedures for each specific experiment. Reading these procedures is a MUST for proper use of laboratory chemicals and equipment.
5. I WILL NEVER ENTER THE CHEMICAL STOCKROOM OR REMOVE ANYTHING FROM IT.
6. I will never remove chemicals or equipment from the student laboratory area unless specifically advised by my teacher and written permission obtained.
7. I will never sit on any of the laboratory tables or counters.
8. I will never eat, drink, chew gum, or bring food into the laboratory.
9. I recognize that all laboratory procedures should be taken seriously and I will work with the proper demeanor. There will be NO HORSEPLAY!
10. I will carry out good housekeeping practices regarding equipment and chemical use. I will be diligent in the disposal of chemicals, broken glass, and other wastes, as instructed by the teacher.
11. In case of an emergency in the laboratory, I will stay calm, immediately notify my teacher, and use the proper laboratory safety equipment.
12. I will wear safety goggles (OVER MY EYES) and apron (TIED), and tie up and confine long hair whenever dealing with chemicals OR heat OR glassware.

I, \_\_\_\_\_, have read and understand the Science Laboratory Safety Procedures. I recognize my responsibility and pledge to observe all safety procedures in the Science classroom at all times. Furthermore, I agree to abide by any additional printed or verbal safety instructions provided by my teacher or school district during the school year.

\_\_\_\_\_  
Signature of Student

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Parent

## **XXI. MEDICAL CONSULTATION AND MEDICAL EXAMINATION**

Provisions shall be made for, if there are any affected employees, medical attention including follow up examinations when necessary under the following circumstances:

1. Whenever an employee develops signs and symptoms associated with a hazardous chemical to which they may have been exposed, the employee shall be provided an opportunity to receive appropriate medical examination.
2. Where exposure monitoring reveals an exposure level routinely above the OSHA action level (AL) (or in the absence of an action level, exposure above the OSHA permissible exposure level (PEL) for OSHA regulated substances for which there are medical monitoring and medical surveillance requirements, medical monitoring and medical surveillance requirements, medical surveillance shall be established for that employee.
3. Hazardous chemicals used in the laboratory:  
  
Look at the end of the Plan for a list of Hazardous Chemicals and their Hazardous Substance Fact sheets used on location.
4. Whenever an event takes place in the work area, such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee shall be provided an opportunity for a medical consultation. This consultation is for the purpose of determining the need for a medical examination.
5. All medical examinations and consultations are provided by Dr. Thomas Francis, 2280 Springfield Avenue, Vauxhall, New Jersey, 07088 (908) 258-0458. All aspects of these examinations are provided by a licensed physician, or supervised by a licensed physician. These examinations are provided without cost to the employee, without loss of pay, and at a reasonable time and place.
6. Site Chemical Hygiene Officer, will provide the following information to the physician:
  - a. Identity of the hazardous chemical to which the employee may have been exposed.
  - b. A description of the conditions of the exposure including exposure date if available.
  - c. A description of signs and symptoms of exposure that the employee is experiencing (if any).
7. The written opinion the school district receives from the physician shall include:
  - a. Recommendations for future medical follow-up.
  - b. Results of examination and associated tests.
  - c. Any medical condition revealed which may place the employee at increased risk as the result of a chemical exposure.
  - d. A statement that the employee has been informed by the physician of the results of the examination/consultation and told of any medical conditions that may require additional examination or treatment.

## **XXII. DESIGNATION OF PERSONNEL AND STAFF**

Rullo & Juillet Associates, Inc. can play an advisory role as consultants. There still needs to be personnel who act as liaison and deal with emergencies. They should also be responsible for implementation of the hygiene plan, making sure procedures established are followed. The structure and functions are as follows.

I. Superintendent of Schools

Ultimately responsible for all hygiene involving all laboratories in the entire institution.

II. District Chemical Hygiene Officer

Responsible for lab hygiene district-wide.

III. Site Chemical Hygiene Officer

1. Monitor Procurement and disposal
2. Enforce Policies and procedures
3. Audits facility and equipment maintenance
4. Implementation of the Hygiene Plan in their laboratory
5. Monitors operations & procedures in their laboratory

Superintendent of Schools:

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Jennifer Montesano

District Chemical Hygiene Officer:

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Jerome Kaiser, PhD

Site Chemical Hygiene Officer:

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Jerome Kaiser, PhD

MIDDLE SCHOOL STAFF:

Ron Mroz

Danielle Roberto

Jeanette Rodriguez

Cory Roesing

Cathy Taylor

HIGH SCHOOL STAFF:

Brian Carson

Denise Edmunds

John Ennis

Debra Kalpodakis

Luis Martinez

Peter Newman

Raphael Pastor

**Name of School District: Secaucus School District**

**Building Name: Secaucus Middle/High School**

**Safety Equipment:**

**I. Eye Wash Station**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	Yes	Room# 243	Yes
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**II. Fire Blanket**

Room# 146	No	Room# 147	No
Room# 149	No	Room# 150	No
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**III. Fire Extinguisher**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	Yes	Room# 243	Yes
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**IV. Vent Hood**

Room# 146	No	Room# 147	No
Room# 149	No	Room# 150	No
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	No		

**V. Shower**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	Yes	Room# 243	Yes
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**VI. Shut Off Switch For Gas**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	Yes	Room# 243	Yes
Room# 247	Yes	Room# 249	Yes
Room# 250	No		

**VII. Shut Off Switch For Electricity**

Room# 146	No	Room# 147	No
Room# 149	No	Room# 150	No
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**VIII. Goggles**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		

**VIV. Power Exhaust Fan**

Room# 146	No	Room# 147	No
Room# 149	No	Room# 150	No
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	No		

**VV. Safety Aprons**

Room# 146	No	Room# 147	No
Room# 149	No	Room# 150	No
Room# 242	No	Room# 243	No
Room# 247	Yes	Room# 249	Yes
Room# 250	No		

**VVI. Carbon Monoxide Detector**

Room# 146	Yes	Room# 147	Yes
Room# 149	Yes	Room# 150	Yes
Room# 242	Yes	Room# 243	Yes
Room# 247	Yes	Room# 249	Yes
Room# 250	Yes		