Ramapo Indian Hills Regional High School District

CHEMICAL HYGIENE PLAN

2023-2024

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INTRODUCTION

Goal

The purpose of this Chemical Hygiene Plan is to define work practices and procedures to help ensure that laboratory workers at Ramapo Indian Hills Regional High School District are protected from health hazards associated with the hazardous chemicals with which they work. The Chemical Hygiene Plan is part of Ramapo Indian Hills Regional High School District compliance with the regulations by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) entitled "Occupational Exposures to Hazardous Chemicals in Laboratories" (Code of Federal Regulations, 29 CFR 1910.1450).

Who is covered by the Laboratory Standard?

The Chemical Hygiene Plan addresses laboratory employees that may be exposed to hazardous chemicals in the course of performing his/her assigned responsibilities.

Introduction

OSHA has defined a hazardous chemical, as "a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees." In addition, OSHA defines a laboratory as "a workplace where relatively small quantities of hazardous chemicals are used on a non-production basis." Finally, laboratory workers are defined in the OSHA Lab Standard under the definition of "employee" as "an individual employed in a laboratory workplace that may be exposed to hazardous chemicals in the course of his or her assignments." An example of a laboratory worker would be a faculty member instructing an academic lab; instructional aides and students in the academic laboratory would not be considered laboratory workers.

Requirements

At the July 24th, 2023 Board of Education meeting, the superintendent designated Angela Manzi, the District Science Suoervisor as the Chemical Hygiene Officer (CHO).

This Chemical Hygiene Plan shall be reviewed by all laboratory workers prior to the commencement of lab duties at Ramapo High School and Indian Hills High School.

Vector Solutions (Safe Schools) maintains an electronic record for each laboratory employee and staff member who has received training in the Ramapo Indian Hills Regional High School District Chemical Hygiene Plan and related health and safety policies. Guides shall be maintained in the District Facilities Office.

All district employees are required to complete annual Right to Know training via Safe Schools.

The Chemical Hygiene Officers and the Ramapo Indian Hills Regional High School District Safety Committee will review this Chemical Hygiene Plan annually.

TERMINOLOGY REFERENCE

The following terms and definitions are used throughout this document:

CHO: Chemical Hygiene Officer

Laboratories: Include all Science classrooms, storage and teacher preparation rooms, and small project rooms at Ramapo and Indian Hills High Schools(Appendix A)

SDS: Safety Data Sheet

OSHA: Occupational Safety and Health Administration

Plan: Chemical Hygiene Plan

Right To Know - Safety Data Sheets are located in the school main office

RIHRHSD: Ramapo Indian Hills Regional High School District

RIHRHSDSC: Ramapo Indian Hills Regional High School District Safety Committee

Schools: Both Ramapo and Indian Hills High Schools

SOP: Standard Operating Procedures

Science Teacher**:** All certified teachers who, as part of their work description, perform work with laboratory chemicals.

TLV: Threshold Limit Value

RESPONSIBILITIES

The division of responsibilities regarding general health and safety is outlined in the following. This part of the plan discusses responsibilities of the School Administration, Chemical Hygiene Officers, Science Department Supervisors and Science Teachers. Each responsible party shall review appropriate sections.

1) District Level School Administration:

Has the primary responsibility for the health and safety of their staff and students. Specific responsibilities regarding the implementation of the Chemical Hygiene Plan include:

a) Appoint Chemical Hygiene Officers who will routinely review the Chemical Hygiene Plan and suggest modifications as needed.

b) Ensure that the district, which uses hazardous substances, has reviewed and adopted the Plan.

c) Collaborate with CHOs and RIHRHSDSC to adapt the Plan to include lab-specific guidelines and to develop strategies to implement the plan.

d) Make budget arrangements for health and safety improvements.

e) Arrange for technical assistance and support for chemical storage, handling and disposal.

f) Arrange exposure assessments and laboratory inspections upon request or when indicated.

g) Arrange for routine as well as special health and risk appraisals along with chemical inventory audit and waste, as needed; routinely, every three years, or when needed.

h) Arrange technical assistance concerning personal protective equipment and Lab safety equipment routinely, every three years, or when needed.

i) Arrange annually scheduled ordinary Lab Safety Training and retain records for the training.

j) Maintain Safety Data Sheets as outlined in the school district Hazardous Communication Plan.

k) Arrange general Laboratory safety training through Safe Schools. Retain training records.

3) School Chemical Hygiene Officers:

Have the following responsibility for implementing the Plan:

a) Work with administrators and the science faculty to develop and implement appropriate laboratory standard operating procedures and hygiene policies and practices.
b) Facilitate the purchase of chemicals used in the laboratory.
c) Coordinate with the Facilities Department for chemical waste disposal.

d) Inform and support district provided training for employees concerning chemical safety as required by this Plan. Inform staff that SDS information can be located in the schools' main office.

e) Implement and enforce rules and standards concerning health and safety for Labs under Science Supervisor's jurisdiction.

f) Ensure the availability and enforce the use of:

- Appropriate personal protective equipment
- Safety Data Sheets (SDS)
- Relevant reference materials

g) Remain cognizant of chemicals stored and used in Labs and their associated hazards.

h) The responsibility for approval of the acquisition and use of toxic chemical agents rests with the Science Supervisor. Certain materials including radioactive materials, recombinant DNA and certain biohazards require prior approval. If there are questions concerning the need for approvals, the School Administration should be consulted.

i) Facilitate internal inspections of Labs for health and safety concerns including assistance with eyewash and safety shower inspections biannually; and eyeglasses/ goggles in goggle cabinets on a monthly basis.

j) Notify administration of emergent facility needs to help develop precautions and adequate facility updates.

k) Request assistance from the School Administration as needed.

l) Request additional allocation of funds from administration for health and safety improvements for CHP compliance, as needed.

4) Teacher:

Has the following responsibility for implementing the Plan:

a) Follow all health and safety standards and SOP's.

b) Report all hazardous conditions to the Science Supervisor, and report urgent concerns to the main office administration.

c) Wear or use prescribed protective equipment.

d) Seek treatment immediately and report any job-related injuries or illnesses to the School Nurse, Science Supervisor and or School Administration.

e) Refrain from the operation of any equipment or instrumentation without proper instruction and authorization.

f) Remain aware of the hazards of the chemicals in the Lab and how to handle hazardous chemicals safely.

g) Ask for information and training when unsure how to handle a hazardous chemical or procedure.

h) Ensure compliance and training of students in Lab safety procedures; ensure all students read, understand and digitally sign the Lab Safety Contracts as part of the digital signature collected via student handbooks.

i) Maintain an environmentally friendly Lab.

j) Assist the CHO and other teachers in following the SOP's.

k) Teacher's shall know proper use of safety equipment in each room where they supervise or provide laboratory based instruction.

CHEMICAL PROCUREMENT, STORAGE and HANDLING

Procurement

It is the policy of the RIH Safety Committee that procurement of chemicals is done on a minimum quantity basis. No chemical shall be accepted without adequate identifying labels. SDS shall be obtained for all chemicals. Safety Data Sheets will be maintained in the school's main office.

Right To Know and other Program Document Links: **Health Safety And Environmental Programs / Right To Know**

The Right To Know information shall be readily accessible to all staff members, visitors, and vendors and located in the schools main office.

Storage

All chemicals shall be stored in an approved and appropriately labeled cabinet. Chemicals shall be appropriately segregated by type, classification, etc. Chemicals shall be purchased from appropriate vendors with prior Science Supervisor approval. Chemicals (household chemicals or others) purchased by teachers from vendors that do not ordinarily provide SDS shall not be obtained, until the teacher has first confirmed a SDS for the chemical has been included in the school's central file/binders. It shall be the teacher's responsibility to ensure that chemicals are stored in accordance with the Plan and SDS.

Handling

It is the responsibility of the teacher to ensure chemicals are handled, stored and disposed of in accordance with the Plan and SDS. If a chemical needs to be relocated to a different school, the CHO must contact the Facilities Department to make arrangements with a licensed and insured vendor to move the chemicals.

STANDARD OPERATING PROCEDURES

The Plan represents a minimum set of guidelines for the handling of toxic chemicals in the Schools. The Chemical Hygiene Officers and the RIH District Safety Committee will review the Plan annually and implement changes when deemed necessary. Acceptable Lab safety references such as those listed in Appendix 1 of this document may be utilized or useful in developing additional procedures. Individual faculty or staff will be responsible for enforcing and/or complying with appropriate safety and hygiene measures in the Lab they supervise.

Additional resources for support can be found at:

- Flinn Chemical https://www.flinnsci.com/
- Carolina Biological https://www.carolina.com/

Some rules or SOP's, which apply to all Labs, include the following:

1) General

Respect and understand the safety and health hazards associated with the chemicals and equipment in your Lab, and practice the following general safety guidelines at ALL times:

- Use equipment only for its designated purpose.
- Use proper equipment that is in good condition. For example, never use chipped or cracked glassware.
- Know the location and how to use all safety equipment in the laboratory.
- Do not allow students to work unsupervised.
- Always perform an experiment or demonstration prior to allowing students to replicate the activity. Look for possible hazards. Alert students to potential dangers.
- No students shall be allowed in the chemical storage / preparation area without supervision.
- Preparation of all chemical solutions should be limited to the chemical storage area.
- Check the integrity of containers. Observe compatibility, for example, hydrofluoric acid must not be stored in glass and some oxidizers should not be stored in plastic containers.
- Equipment including glassware shall be returned clean to original location within 48 hours. Clean means:
    - Washed by a Science Teacher or student and inspected by a Science Teacher;
    - All labels, tape and writing ink must be removed.
    - The dishwasher designated for glassware shall be used only for laboratory glassware, and label as for laboratory use only.
- Hazardous waste containers shall be clearly marked as to content type, e.g., solvents, to prevent incompatible chemical mixtures. Leaving hazardous systems unattended is forbidden.
- Working alone: When working with hazardous materials, it is advisable to have a second person present, or at a minimum, maintain surveillance via telephone contact.
- Use the fume hood when working with chemicals or processes with potential for emitting harmful vapors or particulates.
- Use the explosion shield/splash guard for any reaction in which debris may be ejected.
- Shield pressurized or vacuum apparatus and safeguard against bumping or overheating.
- **Mouth pipetting is forbidden.**
- Wash hands before and after work with chemicals.
- Access to electrical equipment, shut-offs e.g. plugs, switches and electrical panels must be maintained free from obstructions to allow immediate access in an

emergency. Report all accidents and injuries to the CHO as soon as possible.

- Maintain a list of supplies to be purchased. As supplies are used up, add them to the list.
- To ensure engineering controls are functioning properly, the teacher should check protective equipment periodically. Equipment may include fume hoods, working disinfectant lamps in goggle/eyewear cabinet, demonstration shields, gloves, aprons, etc.
- Teachers shall notify the CHO of all equipment deficiencies and enter maintenance requests through the district's work order system.

2) Student Training

- Students must sign a safety contract prior to performing work involving chemicals. The teacher of record is responsible for ensuring compliance and maintaining records. Students must adhere to all practices within the Safety Contract.
- The Dissection Letter shall be posted to Schoology and students/parents notified for all courses in which dissections are performed.
- Lab procedures/directions include pertinent safety protocols and are reviewed with students prior to conducting all laboratory work.
- All work surfaces and equipment in the chemical or biological laboratory should be thoroughly cleaned after each use. Sinks should be cleared of debris. Gas jets should be fully closed.
- Teachers must set good safety examples when conducting demonstrations and experiments. They should model good lab safety techniques such as wearing aprons and goggles to develop positive student attitudes toward safety.
- All laboratory animals should be protected and treated humanely.
- Students should understand that many plants, both domestic and wild, have poisonous parts and should be handled with care.

3) Hazard Identification

- Labels on incoming containers of hazardous chemicals must not be removed.
- Chemicals dispensed from one container to another are intended for prompt use. Label the new container with the chemical name, concentration (if solution), and appropriate hazards.
- Make sure all labels are legible.
- In the case of very small dropper size bottles, numbers and corresponding index shall be kept.

4) Refrigerated Storage

Food and drink intended for human consumption shall not be stored in any refrigerator located in a laboratory or laboratory prep room. Refrigerators for chemical storage will be labeled. Label should read, For Laboratory Purposes Only Do Not Use For Food Or Beverages. This Refrigerator is not to be used to store products for human consumption.

5) Personal Protective Equipment/Hygiene

Personal protection and personal hygiene are basic aspects of laboratory safety. Wearing appropriate personal protection and practicing good personal hygiene as described below will minimize exposures to hazardous chemicals during routine use and in the event of an accident.

- **Attire:** Wear a Lab coat or apron, cover legs and feet as appropriate, and confine loose clothing and long hair. Chemical resistant aprons must be available for student use when appropriate.
- **Eye protection:** All personnel, including students, staff and visitors in Labs must wear safety glasses, goggles, or face shields at all times where eye hazards are a possibility. Goggles are required to be worn when chemicals are being used. The wearing of contact lenses in Labs is a controversial issue. If contact lenses must be worn, it is necessary to wear goggles at all times when in the Lab.
- **Face shields:** Full-face shields must be worn when conducting a procedure, which may result in a violent reaction. Full-face shields with bottom caps to protect under the chin are preferred due to the tendency to raise the chin when a splash occurs.
- **Gloves:** Gloves are essential when working with hazardous substances. The proper gloves will prevent skin absorption, infection or burns. All glove materials are not equally effective in protecting skin from chemical hazards. Non-latex gloves should be used for general purposes.
- **Heat Safety:** Use heat-safety items such as safety tongs, mittens, aprons, and rubber gloves for both cryogenic and very hot materials.
- **Personal hygiene:** Hands should be washed frequently throughout the day, before leaving the Lab, after contact with any hazardous material, and before eating, etc.

6) Use of Glass tubing: When inserting tubing into stoppers, lubricate tubing and protect hands from being cut in the event of the tubing slipping and breaking.

7) Horseplay and Unauthorized persons: Unauthorized persons are not to be in Labs where hazardous substances or operations are present. Practical jokes or other behavior, which might confuse, startle, or distract another worker, is forbidden.

8) Use of a chemical fume hood

- A fume hood must be used for processes that may release hazardous chemical vapors, fumes, or dust. Use the hood when working with any volatile liquid or fine powders.
- Chemical storage in fume hoods is limited to materials in use and should be removed and stored appropriately within one day of the active use.
- Do not block the flow of air while chemicals occupy the fume hood.
- Do not use fume hood as a storage bin/area. Do not store anything in the fume hood.
- Keep the ventilation system running while chemicals are stored in it.
- Keep the fume hood clean at all times before and after use.

9) Accident response:

Level 1 – can be handled in class/lab without any further assistance. No other action required.

Level 2 – can be handled in the class/lab but should be considered an escalated incident. Any incident that requires the use of the acid spill kit, fire extinguisher, or a student being sent to the nurse for assessment or care must be immediately reported to the Chemical Hygiene Officer and administration. If needed, the Facilities Department should be notified as soon as possible.

Level 3 – cannot be handled by staff in the class/lab. This type of incident may require evacuation and/or has resulted in serious injury. 911 should be called and Share911 activated. Administration and the facilities department shall be notified as soon as practical. A written record of the incident must be submitted to the Chemical Hygiene Officer.

- The most important consideration is the safety of the staff and students in the area. Evacuation and immediate application of first aid, when needed are of the highest priority.
- If an individual has been injured, do not move the person unless the individual is in further danger by not being moved.

A) Chemical spills.

- Prompt response to chemical spills is critical to protect personnel and students. Familiarize, update and follow the following protocol.
- Spill preparedness: Before working with chemicals, assess potential hazards. Each Lab worker should be familiar with general spill response procedures. Have readily available all necessary personal protective equipment and spill cleanup materials. Such items include: gloves, ventless goggles, absorbent material, poly scoop, poly dustpan, and plastic bags (Spill Kit)
- **For skin contact:** If a toxic/hazardous chemical has made contact with the skin, start

flushing the area immediately.

- **For small spills**, 50 ml of hazardous chemicals or less, the teacher shall clean up if the perceived risk is low.
    - Eliminate all sources of ignition and turn off equipment if it is possible to do so safely.
    - If volatile materials are involved a custodian/maintenance person shall be notified to go to 100% outside air or turn off the HVAC to prevent contamination of recycled air.
    - Review the SDS for the spilled material, or use your knowledge of the hazards of the material to determine the appropriate level of protection.
    - Wear gloves and protective eyewear. Do not attempt cleanup if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory operations. Cover spill with sodium carbonate or bicarbonate, or appropriate material from the spill kit. When the reaction stops, pickup a damp sponge or paper towels and put the contaminated absorbent in a labeled hazardous waste container.
- **For spills greater than 50mL or if it will take longer than 15 minutes to clean up**:
    - Evacuate students and turn off equipment.
    - Once personnel and students have been brought to safety, the chemical spill should be confined and neutralized.
    - Contact the CHO to report the chemical spill.
    - Safety Data Sheets should be consulted following the containment of the material.
    - Appropriate waste disposal techniques must be followed.
- **For extremely toxic releases**, call 911 for the Fire Department and evacuate the area. (Call the NJDEP Hotline 1-877- 927-6337 for any reportable Spills). Written record submitted to the CHO as soon as possible.

B) Eye Contact

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

C) Ingestion

- Check SDS and label if ingestion occurs.
- Call for the School Nurse to attend.

D) Glass Breakage

- Wear protective gloves when picking up broken glass. Sweep up small pieces with a brush and dustpan and dispose of glass in the Sharps Container.
- Follow protocols in Bloodborne Pathogen Training if there is an associated injury.

E) Fires

- **For a bench top fire confined to an open container** that can be extinguished easily by smothering and there is minimal personal risk, smother the fire with a nonflammable material such as an inverted beaker or use a fire extinguisher..
- **For a fire not contained to an open container** that is more serious in nature, the area shall be evacuated and the school fire alarm shall be activated.

10) Waste minimization

- Chemical disposal must follow SDS guidelines and procedures.
- Chemical waste should be minimized.
- The hazardous nature of wastes should be mitigated, e.g., neutralize corrosive wastes that do not contain heavy metals.
- Use of hazardous materials such as heavy metals and halogenated solvents should be eliminated or reduced.
- Wastes that cannot be disposed of by ordinary means must be clearly labeled with the substance and amount and stored appropriately for hazardous waste removal at the end of the school year.
- Empty containers should be triple rinsed and thrown away.

11) Electrical Equipment

- All electrical extension cords used shall be visible and inspected on a periodic basis for damage and/or defects. Cords may not be run through doors, walls or partitions, under rugs or above dropped ceilings. They may not be wrapped around fixtures, tied in knots, or draped over pipes, lights, or ventilation ductwork. Cords may not run in aisles or corridors where it could reasonably be expected they will be damaged or create a tripping hazard.
- Electrical extension cords may not be used for temporary power or to supply equipment that is frequently moved. Extension cords may not be used as substitution for fixed receptacle outlets. Cords used for 110-120 volt service shall be UL listed standard heavy-duty three wire equipped with a polarized three prong plug. One of the wires shall be an equipment-grounding conductor. In no case shall a two-wire type extension be used or an adapter. Surge Protectors are not to be daisy-chained together to make a longer cord.

12) Use of Liquid Nitrogen (cryogenics)

- Liquid nitrogen must be stored in a Dewar's tank.
- Only small quantities may be used at a time for demonstration purposes only.
- Use appropriate PPE.

LABORATORY FACILITY REQUIREMENTS

The square footage per pupil must meet state regulations. Space may also be based on building and safety codes, appropriate supervision, and the special needs of students. Student and teacher workstations should have access to natural gas, water, and electricity.

Electrical outlets built into the frame of the workstation must be equipped with a ground-fault circuit interrupter (GFCI), and any receptacle within 6 feet of a water need to be (GFCI) receptacles and be able to accommodate computers and technology equipment. As per New Jersey Electrical Code.

The need for proper ventilation in the laboratory is of utmost importance. OSHA Laboratory Standard 1910 states: “Four–12 room air exchanges per hour is adequate general ventilation if local exhaust systems such as hoods are used as the primary method of control.” Air that is exhausted from the lab must be vented to the outdoors and not recirculated (OSHA 2012).

Smoke, carbon monoxide, and heat detectors are recommended in every laboratory. Units should be placed in the laboratory and related areas (storerooms, preparation rooms, closets, and offices).

Laboratories include:

A) Emergency eyewash stations and safety showers

- Safety showers and emergency eyewashes are properly maintained by facilities personnel. Eye washes and safety showers should be flushed on a regular basis to verify that the units are working and to clear the lines of sitting water and debris.
- Safety showers should be located in areas, which will be immediately accessible (10 seconds away and at a distance no greater than 30 meters) and will not create additional hazards.
- Eyewash and Safety shower stations should be tested monthly by facilities personnel. Records will be maintained in each building through inspection tags and on the district's work order system.
- Eye goggle and goggle cabinets shall be inspected monthly by facilities personnel. An equipment maintenance log shall be maintained which should include an entry line for the equipment to be tested, date of inspection and custodian performing the inspection. Records shall be maintained by the building facilities personnel through inspection tags and the district's work order system.

B) Emergency natural gas shut-off stations

- Each Lab natural gas emergency shut-off station shall be tested bi-annually by facilities personnel. Records will be maintained in each building through the district's work order system, and inspection tags.

C) Fire protection

- Fire extinguishers must be available, charged, and hung in a location and per code requirements, which is immediately (10 seconds and within 15 meters) accessible, and the handle of the fire extinguisher needs to be 46-48 inches off the ground level. Facilities personnel will make sure all extinguishers are inspected monthly. Records will be maintained in each building through inspection tags on each extinguisher, and by the fire extinguisher vendor annually.
- Fire blankets must be available and hung in a location which is immediately accessible. Facilities personnel will make sure all fire blankets are inspected biannually. Records will be maintained in each building through inspection tags on each blank and by a vendor annually.
- Fire extinguisher signage needs to be put in place above all fire extinguishers.

D) Chemical Spill Kits

- A chemical spill kit must be available in a location which is immediately accessible in each laboratory classroom.

E) Goggle Sanitation Cabinet

- Functioning sanitation cabinets must be available in each laboratory classroom.

F) Sharps Containers

- Sharps containers must be available in each laboratory classroom.

G) Fume Hoods and other Engineering Controls

- Fume hoods and other engineering controls such as active or passive vented gas cabinets shall be assessed monthly by staff members from the facilities department. Records will be maintained in each building through the district's work order system.

H) Electrical Power

- Emergency shut off for electrical power must be clearly marked.
- All receptacle outlets in Lab spaces shall be the polarized grounding type. Ground Fault Circuit Interrupters (GFCI's) should be used in those locations involving wet processes or outdoor work. All electrical hand tools used inside Labs shall be grounded or double insulated.

I) Housekeeping.

- Exits, aisles and safety equipment must NOT be obstructed in any way with equipment, furniture, etc.
- Aisles within the laboratory should be 36 inches in clear width.
- Doors which are not in use but which are accessible from a corridor or adjacent room should be appropriately labeled if they are blocked on the interior of the room.
- Hallways are not to be used as storage areas. Work areas and floors are not to be used for excessive storage. No unauthorized items shall be stored in the corridors.
- Shelves, cabinets, and all storeage needs to be neat, maintained, labeled and organized.

J) Chemical Storage / Preparation Area

- Signage: Labs where hazardous materials or operations are present must follow signage guidelines. An annually updated emergency contact card must be posted.
- Highly corrosive, volatile, unstable, and/or flammable chemicals must be stored in vented cabinets.

Chemical Handling and Storage

Hazards associated with various chemicals and gases vary widely. Understanding the hazards associated with a compound and minimizing the quantity used and stored in the Laboratory will decrease the chance of injury.

a) Chemical handling.

- Transport chemical using a laboratory cart which provides sufficient secondary containment capacity to control potential spills.
- The use of poly-coated bottles or use of bottle carriers for transporting chemicals which are in regular glass containers is encouraged.
- Caps should be closed securely and chemical containers should not be stored in hard to reach areas.
- Pour chemicals carefully, and never add water to concentrated acid.
- Metal containers and non-conductive containers (e.g., glass or plastic) holding more than five gallons must be grounded when transferring flammable liquids.

b) Chemical storage.

Chemicals should be segregated by hazard classification, and incompatible

chemicals should not be stored in close proximity. Once segregated by hazard classification, chemicals may be stored alphabetically. Basic segregations may be:

- Oxidizers away from organic compounds and flammable materials
- Air/water reactive away from air and water
- Caustics away from acids
- Cyanides away from acids
- Labs with large numbers of hazard classifications may choose to further segregate mineral/organic acids, unstable compounds, heat sensitive compounds, gases, etc.
- Volatile toxic substances shall be stored in volatile storage cabinets adequate for the purpose, or in hoods when cabinets are unavailable.
- Flammable materials must be stored in appropriate, labeled containers, in safety cans and Department of Transportation (DOT) approved containers.
- Waste halogenated solvents may not be stored in metal safety cans due to corrosion.
- If volatile substances are stored in a hood, other uses of the hood shall be restricted to activities compatible with the chemical and physical properties of the stored or used chemicals.
- When volatiles must be stored in a cooled atmosphere, explosion-proof refrigerators or cold rooms designed for this purpose must be used.
- Specific segregation of chemicals include:
    - Bleach away from ammonia
    - Concentrated sulfuric acid on separate shelf in acid cabinet away from concentrated hydrochloric acid

Maintenance of Facilities:

a) Teachers shall make requests for repairs through *the district's work order system* to maintain a safe laboratory.

b) The district will conduct an annual inspection of laboratories prior to the start of each school year to assure that all safety and laboratory equipment, e.g., goggle sanitation cabinets, gas valves, fume hoods, fire blankets, eye wash stations, shower stations, etc. are functioning properly. The Facilities Department representative or designee, and the CHO or designee will be present for the inspection. Facilities personnel will ensure inspection records are maintained on inspection tags and on the district's work order system.

c) Testing of the eyewash and shower stations in laboratory preparation spaces and classrooms shall be performed monthly and cooperatively with a Facilities Department representative or designee and the CHO or designee. Facilities personnel will ensure inspection records are maintained on the district's work order system and inspection tags.

CONTROLLING CHEMICAL EXPOSURES

There are three major routes of entry for a chemical to enter the body: inhalation, skin and eye contact, and ingestion. Types of controls for prevention of these various routes of entry include: good work practices, engineering controls, personal protective equipment and administrative controls. Personal protective equipment must be used in conjunction with, not as a substitute for such controls and/or good work practices. All areas using personal protective equipment shall adhere to the Occupational Safety and Health Administration (OSHA) 1910.132, Personal Protective Equipment Standard.

Each route of entry a chemical can take to enter the body can be controlled by a number of varying controls, as explained below:

1) Inhalation hazards

Inhalation of chemicals is the most common route of entry a chemical can take to enter the body.

To avoid significant inhalation exposures, engineering controls are recommended such as:

- Substituting a less volatile or a less toxic chemical or substituting a liquid or solid chemical for a gaseous one are the best means of control.
- If substitution is not practical, ventilation should be used to lessen the chance of overexposure. The use of well-functioning local exhaust ventilation such as fume hoods and other local exhaust systems is often required to minimize exposure to hazardous substances.
- Dilution ventilation may be used to reduce exposure to non- hazardous nuisance odors.
- For extremely toxic chemicals such as those classified as poison gases by State or Federal Department of Transportation (e.g., arsine, phosgene) the use of closed systems, vented gas cabinets, fail-safe scrubbing, detection or other stricter controls may be required.

Administrative controls can be utilized to reduce the risk of overexposure to hazardous chemicals. Some examples of administrative controls include:

- Minimizing exposure time for individual employees
- Restricted access to an area where a hazardous chemical is used
- Allowing a process that emanates nuisance odors to be done only after typical office hours, when most of the staff in the building have gone home.

2) Skin/eye contact hazards

To reduce the risk of a chemical entering the body via skin and eye contact,

- engineering controls include substitution and appropriate ventilation as described above in Inhalation hazards.
- The more obvious means of preventing skin and eye contact is the wearing of personal protective equipment such as eye protection, face shields, gloves, appropriate shoes, Lab aprons, Lab coats, and other protective equipment as appropriate to the hazard.

Administrative controls to reduce skin/eye contact include:

- Enforcement of policies pertaining to skin and eye protection;
- Discarding or repairing cracked or broken glassware.

3) Ingestion hazards

Ingestion of chemicals is the least common route of entry into the body. However a Lab worker can easily ingest chemicals into the body via contaminated hands if they are not washed prior to eating, smoking or sticking part of the hand or a writing tool that has been in contaminated hands into the mouth. Some controls for preventing this route of exposure include personal protective equipment such as the wearing of gloves, and administrative controls such as forbidding mouth pipetting and encouraging good personal hygiene.

EMPLOYEE INFORMATION AND TRAINING

All individuals who work in Labs who may be exposed to hazardous chemicals must be apprised of the hazards of chemicals present in their work area. This information and training as outlined below must be provided before new exposure situations. Equipment necessary for the safe handling of hazardous substances must also be provided. General lab safety training is provided annually through Vector Solution (SafeSchools). Training records are maintained electronically. Special training may be provided as determined by the science department supervisor.

1) Information

Lab workers shall be informed of the location and availability of the following:

- Chemical Hygiene Plan
- 29 CFR Part 1910.1450 "Occupational Exposures to Hazardous Chemicals in Laboratories" (the Occupational Safety and Health Administration (OSHA) Lab Standard)
- Reference materials on chemical safety, including Safety Data Sheets; (SDS) must be immediately available.
- Permissible exposure limits (PEL) for OSHA regulated substances, or if there is no

applicable OSHA standard, the recommended exposure limits or threshold limit value (TLV) may be provided.
- Signs and symptoms associated with exposure to the hazardous chemicals found in the lab.

2) District provided training

Lab worker training shall include:

- Detection methods and observations that may be used to detect the presence or release of a hazardous chemical. Examples of detection methods include visual appearance, odor, and an understanding of chemical monitoring devices.
- Physical and health hazards of the chemicals, and; iii) The work practices, personal protective equipment, and emergency procedures to be used to ensure that the Science Teacher may protect himself/herself from overexposure to hazardous chemicals.
- The manufacturer's SDS will generally contain much of the above information needed to comply with the information and training requirements of the OSHA Lab Standard. Hence, Science Teachers should review and understand the relevant SDSs and/or other comparable literature on the hazardous chemicals, which are used or stored in their laboratory. Upon request from a teacher, the Science Supervisor must forward all requests for specialized training to the administration for their review and further action.
    - The OSHA Lab Standard, the RIH Safety Committee Chemical Hygiene Plan, a library of SDSs and other health and safety references are maintained in the central office files and are available to students, teachers or others upon request. A list of safety and industrial hygiene literature available is found in Appendix 1 of this document.
    - Copies of SDSs may be obtained from the chemical supplier.
    - SDS are maintained in the Right To Know Files and Binders which can be found in the schools main office
    - The district Right To Know File and Safety Data Sheet management procedures are outlined in the school district Hazard Communication Plan which is found here: https://www.rih.org/administration/facilities/health_safety_and_environmental_programs/hazard_communication

MEDICAL CONSULTATION

An opportunity to receive medical consultation shall be provided under the following circumstances:

- if an employee develops any symptoms thought to arise from chemical overexposure
- after an event such as a major spill, leak or explosion which may have resulted in an overexposure
- or, an overexposure is identified as the result of an evaluation by the CHO.

These suspected or actual exposures requiring medical evaluation can and should be treated as a regular Workers Compensation claim. Under the direction of the school nurse and subject to the requirements of the district workman's compensation insurance carrier guidelines, the injured employee shall fill out an Accident Report and go to the designated medical facility for treatment. With life threatening events, the Accident Report can be completed following initial medical care.

Following notification of overexposure, arrangements for an appropriate medical examination must be completed before the exposed individual may return to work. Upon return to work, the employee shall submit to the school nurse a note from a doctor, granting permission to return to work. Any medical examination required by this Plan shall be provided without cost to the employee, without loss of pay and at a reasonable time and place. Records of any medical examination will be maintained at the medical testing facility.

SPECIAL PROVISIONS for REPRODUCTIVE TOXINS, ACUTELY TOXIC CHEMICALS, and CARCINOGENS

Provisions for additional employee protection for work with select reproductive toxins and substances that have a high degree of acute toxicity shall be made including but not limited to establishment of a designated work area, use of fume hood, and/or personal protective equipment.

The use of known carcinogens is prohibited.

APPENDIX 1

References:

NJDOH Hazardous Substance Fact Sheets Link:
http://web.doh.state.nj.us/rtkhsfs/indexfs.aspx?lan=english

NJDOH Hazardous Substance List link:
https://www.nj.gov/health/workplacehealthandsafety/right-to-know/qr.shtml

New Jersey Department of Health Right To Know Brochure link:
http://www.nj.gov/health/workplacehealthandsafety/documents/right-to-know/rtkbro.pdf

ACS Guidelines and Recommendations for the Teaching of High School Chemistry

For information about storage organization of chemicals
https://www.cdc.gov/niosh/docs/2007-107/pdfs/2007-107.pdf (beginning p 21)

For general guidelines on safety: https://cosss.wildapricot.org/Safety-Resources

For information about the EPA's Green Chemistry Program, which promotes the use of innovative technologies to reduce or eliminate the use or generation of hazardous substances:
https://www.epa.gov/greenchemistry

APPENDIX 2

Ramapo Indian Hills Regional High School District Employee Laboratory Safety Training Record

The Ramapo Indian Hills Regional High School District Chemical Hygiene Plan requires that Science supervisors support the district provided training of their employees through SafeSchools on the following topics:

• The location and availability of the Occupational Safety and Health Administration (OSHA) Lab Standard, RIHRHSD Chemical Hygiene Plan, chemical safety reference materials (including SDS Safety Data Sheets), and OSHA Permissible Exposure Limits (PELs) if available.

• Signs and symptoms associated with exposure to hazardous chemicals with which employees work.

• Detection methods and observations that may be used to detect the presence or release of a hazardous chemical in the lab, e.g., odor, monitoring equipment or visual appearance.

• The physical and health hazards of the chemicals with which employees work.

• Work practices, personal protective equipment and emergency procedures to be used to ensure protection from overexposure to the hazardous chemicals with which employees work.

In addition to the training given by the district provided training, science supervisor and/or designated trainer, it is the employee's responsibility to request information and training when unsure how to handle a hazardous chemical or procedure and to follow all health and safety rules while working in the lab.

_____ _____

Electronic signatures will be recorded in Vector Solutions - Safe Schools to indicate the receipt and review of this document on an annual basis.

Appendix 3: Designated Laboratory Rooms

	Indian Hills HS	Ramapo HS
Greenhouse Laboratory	852 GH	109
Biology Laboratory	804	110
Biology Laboratory	805	111
Biology Laboratory	807	113
Biology Laboratory	808	117
Biology Preparation & Storage	809 (old darkroom)-storage only	110 A
Biology Preparation & Storage	805 A	115
Biology Storage	806	
Chemistry Laboratory	221	706
Chemistry Laboratory	224	710
Chemistry Laboratory	225	712
Chemistry Laboratory & Storage	207 and back prep space	716
Chemistry Preparation & Storage	222	708
Chemistry Preparation & Storage	223	714
Small Project Room/Laboratory	220	708A
Small Project Room		714A
Physical Science Laboratory & Storage	201 and back prep space	705
Physical Science Laboratory & Storage	203 and back prep space	709

Physical Science Preparation & Storage		707*
Physical Science Laboratory & Storage	205 and back prep space	719
Physics Laboratory		723
Physical Science Preparation & Storage		721*
Small Project Room & Storage		717
Physical Science Storage	209	

*Teacher Desks included

Reviewed and Updated: January 18 , 2023, by Frank Primiani