

Chemical Hygiene Plan for Science Labs Rock Hill Schools (York 03)



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Each school must update its individual Science **Lab Safety Plan Addendum** (Appendix F) annually, by September 1. A hardcopy, with all signatures, should be sent to the District's Science Instructional Specialist / Chemical Hygiene Officer by September 1 each year.

This document lists the Lab Safety procedures to be followed by all Science labs in Rock Hill Schools. Individual schools must indicate particular variations in their separate Lab Safety Plan Addendum.

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OSHA's Occupational Exposure to Hazardous Chemical in Laboratories standard (29 CFR 1910.1450), referred to as the Laboratory Standard, specifies the mandatory requirements of a Chemical Hygiene Plan (CHP) to protect laboratory workers from harm due to hazardous chemicals. THE CHP is a written program stating the policies, procedures and responsibilities that protect workers from the health hazards associated with the hazardous chemicals used in that particular workplace.

I. Standard Operating Procedures

The safety of our staff and students in Rock Hill Schools is of the highest importance. We encourage our teachers to conduct labs with students on a regular basis. At the same time, we strongly encourage teachers to consider the safety of the labs they conduct. Below are guidelines that are followed by ALL middle and high school students.

- Annually, each of our teachers will watch two lab safety videos, and successfully complete the quiz through Safe Schools.
 - 1) Science Lab Safety
 - 2) Science Laboratory Chemical Spills
- Each student enrolled in Middle or High School Science will be shown the Rock Hill Schools Student Lab Safety video by their teacher. The video will be discussed and the students will each sign a lab safety pledge.
- When conducting labs, teachers and students will wear appropriate personal protective equipment (PPE) including aprons and goggles. Gloves may also be worn depending on the nature of the experiment.
- Each semester, in August and January, Science teachers must complete and submit a Lab Safety Inventory (Appendix A) to submit to their school's Chemical Hygiene Officer.
- To determine and implement proper control measures, to reduce exposure to hazardous materials, teachers will review the SDS of any chemicals used for laboratory purposes.

- Any chemicals are found to be mutagenic, teratogenic, or carcinogenic, will not be used in Rock Hill Schools.
- In Rock Hill Schools, no labs will be conducted that involve an open flame that is not fueled by a Bunsen burner, or larger than the flame of a tea candle. Teachers take special care to ensure that students maintain a proper distance, wear flame retardant aprons, and have flame distinguishing materials nearby.
- The door to each chemical storage area will bear a sign, Lab Safety Summary, (Appendix E) stating a summary of our Lab Safety procedures. Behind the sign will be the list of chemicals stored in that storage area.
- All chemicals ordered for use in Rock Hill Schools, will be ordered from **Flinn Scientific**.
- All preserved specimens for use in Rock Hill Schools, will be ordered from either **Flinn** (Appendix B) or **Carolina Biologicals** (Appendix C).
- Rock Hill Schools will adhere to the **NSTA Minimum Safety Practices and Regulations for Demonstrations, Experiments, and Workshops** (Appendix H)
- Any past and future **NSTA Safety Alerts** will be added to this Chemical Hygiene Plan to be adhered to by teachers in Rock Hill Schools.

II. Chemical Storage:

1. If possible, the number of locations in which chemicals are stored should be minimized. We also should minimize the need for teachers to travel with chemicals. If there are two science storage areas on the same floor of a building, consider storing all chemicals in one storage area instead of both. We do not, however, want teachers traveling between buildings or up and down stairwells with chemicals.
2. Any microwaves, refrigerators, coffee makers, etc. in the lab storage areas may only be used for lab use, not personal use. No food may be stored in the lab storage areas.
3. If the science storage area contains chemicals, no excess furnishings may also be stored there. Extra furnishings (tables, desks, etc.) may be moved to Operations through the submission of a work order.

4. A container for broken glass must be in each chemical storage area. The container must be labeled. At the end of each semester, a work order must be submitted for the removal of the broken glass. The lid should be snapped onto the container in order for the container to be emptied. The container will be returned.
5. Any gas cylinders stored in the lab storage area should be chained to the wall to prevent them from accidentally toppling over.
6. If equipped, a UV Safety Goggle Cleaner should be used to sanitize safety goggles following each use.
7. All chemicals, including “kitchen” chemicals that seem to pose no danger, must be stored in the lab storage area. SDS sheets exist even for kitchen chemicals, and they must be stored properly.
8. The Safety Data Sheet (SDS) for each chemical should be examined for proper storage. Our district will use Flinn as our primary source of SDS sheets. Please go to www.flinnsci.com and log in, then click the SDS tab. You will receive your school’s login credentials from your CHO—Do not create a new account—an account for each MS and HS school has been created. For each SDS you pull, please click **Save to Your Library** (orange). You will also need to **Download PDF** to determine proper storage (outlined in green). See screenshot below.
9. If no SDS exists in the Flinn database, there are 2 other sources of SDS we may use. If you use a non-Flinn SDS you must print the SDS. You may have difficulty determining the category in which to store the material as we are using the Flinn storage system. If you have a question, please see your school’s CHO.
OSHA: <https://www.osha.gov/chemicaldata/>
MSDS: <http://www.msds.com/>
10. Chemical Inventory: Each school that has a science laboratory program must maintain a complete inventory of ALL chemicals used in the science program. It is recommended that the chemicals be dated as they are received. This inventory must be kept maintained and posted on the exterior of the storage closet.

11. EVERY chemical must be labeled. If more than 4 fluid ounces, (118mL) the chemical must bear a manufacturer's label. If **unknown materials** are found, they should be set to the side and your school's CHO must be notified.

12. Each chemical storage area should have a set of labels for solutions mixed by the teacher. EVERY chemical container must have a label. A smudge-proof pen must be used for each label. When more labels are needed, please see your school's CHO.

13. No chemicals may be stored on the floor. The floor space must remain clear of hazards.

13. No chemicals may be stored above eye-level.

14. Check to ensure that all of the shelves in your chemical storage area are securely mounted. If shelves are loose, a work order should be submitted for repair.

15. As you organize your chemical storage area, if chemicals are found to be leaking from their container, solids that appear to be old, have discolored labels, crystallization around the lid, or other signs of age, please set the material to the side to be discarded. If you find chemicals that are expired or have a purchase date of more than 5-years ago, please set it aside to be discarded. If this is a material you need, please see your department chair to order a replacement.

16. *For the current and future safety of students and staff, in Rock Hill Schools we will not use or store any chemicals that are mutagenic, teratogenic, or carcinogenic. If any such chemicals in your storage area, please notify your school's CHO.

*Carcinogenic chemicals are associated with causing or promoting the growth of cancer cells. Common carcinogens include: **benzene, vinyl chloride, formaldehyde, dioxane, and acrylamide.**

*Mutagenic chemicals have a tendency to cause changes to DNA. Common mutagens include: **ethidium bromide, formaldehyde, dioxane, and nicotine.**

*Teratogenic chemicals have a tendency to disrupt the separation of chromosomes, which can lead to birth defects. Common teratogenic chemicals include: **ethanol, mercury compounds, lead compounds, phenol, carbon disulfide, toluene and xylene.**

17. For the current and future safety of our students and teachers, we will not store any chemicals of a molarity greater than 6M. If any such chemicals are found in our labs, they should be diluted to 6M and stored in bottles no larger than 4 fluid ounces (118mL) and a new label made for the container. If teachers are uncomfortable performing this procedure, the school's Chemical Hygiene Officer should be contacted.

18. Chemical storage areas should be locked at all times. Students should only be allowed in chemical storage areas when accompanied by the teacher.

Disposal of Lab Materials

1. To properly dispose of laboratory chemicals, each material's SDS will be consulted. At the conclusion of each semester, teachers will send a list (Appendix D) containing the name, approximate amount, and approximate size of the container (in Liters) will be sent to the school's CHO to be compiled and sent to the District's CHO. A disposal company will be consulted for removal.

2. Any dissection materials purchased will be from Flinn or Carolina Biologicals. The teacher (not the students) will place the discarded specimens into an opaque plastic bag to be sealed and placed with the school's general waste. The fluid used to preserve the specimens will be poured into a sink and flushed with water. (Appendix B, Appendix C)

Eye Safety

1. During Science lab experiments, teachers and students must wear goggles to protect their eyes. Goggles are provided by the school.

2. In the event a chemical splashes into a student or teacher's eyes, the eyes must be flushed with water from either the eyewash sink or eyewash kit.

3. Both the school's nurse and CHO should be contacted in the event any chemical enters a student or teacher's eye(s).

Skin Safety

1. During Science lab experiments, teachers and students should wear shoes that enclose the entire foot.
2. During Science lab experiments, teachers and students must wear lab aprons to protect skin and clothing. Aprons are provided by the school. Fire retardant aprons are recommended.
3. In the event a chemical comes in contact with a teacher or student's skin, the individual must immediately rinse with cold water. The use of soap is not recommended.
4. Both the school's nurse and CHO should be contacted in the event of a skin irritation.

Spills

1. In the event of a chemical spill, the teacher should consult the material's SDS regarding any hazards. Most chemicals may be contained with a spill agent and swept into a pile to be discarded.
2. Teachers may use their discretion as to whether students should leave the room while a spill is being contained. If students must leave the room during the containment of a spill, the school's CHO should be contacted.

In Case of Fire

1. Each Science lab classroom is equipped with an ABC fire extinguisher, and teachers have each been trained on how to use it, if necessary. Teachers are required to verify the fire extinguisher is FULL at the start of each semester.
2. Each Science lab classroom is equipped with a fire retardant blanket, and teachers have each been trained on how to use it, if necessary.
3. Some of our Science lab classrooms are equipped with a shower. Teachers are required to test this device at the start of each semester to ensure it is working.

4. Each of our Science lab classrooms has a fire escape route posted on the wall next to each exit.
5. Each of our Science teachers is aware of the location of the fire alarm pull station nearest his/her Science lab classroom.
6. As a part of our Lab Safety training for students, procedures, in case of fire are explained.
7. In the event of fire, the teachers have the option of attempting to put out the fire or evacuating immediately. If the teacher chooses to attempt to extinguish the flames, the students will be dismissed according to the evacuation route posted next to the exit. One student may be asked to pull the nearest fire alarm. As the classroom is evacuated, the door(s) will be closed to contain and flames or smoke.
8. The school's CHO should be contacted in the event of any unintentional fire in a Science lab.

Reporting of Incidents

In the event of an unusual occurrence in a Science lab, that could affect the immediate or future health of any students or the teacher, the following procedures must be employed.

1. As soon as reasonably possible, the teacher should send an email to 1) the school's Department Chair, 2) Chemical Hygiene Officer, and the 3) District Chemical Hygiene Officer (kmassey).
2. The email should contain the following information
 - date and time of incident
 - names of affected students
 - explanation of the incident
 - teacher's response to the incident

Teachers are asked to err on the side of caution. If the teacher is unsure if an incident should be reported, he or she should report it, just in case. Teachers should always send students to the school nurse to be evaluated if he or she is unsure.



Science Lab Safety Plan Addendum

Date	
Name of School	
School Address	
School Phone Number	
Name of Principal	
Science Department Chair	
Chemical Hygiene Officer (school administrator)	
Addendum Items	
<p>After your review of the RHSD Lab Safety plan, please indicate any <u>additional</u> safety procedures, or <u>special considerations</u> for your school.</p>	
<input type="checkbox"/> Science teachers, room Type each teacher's name and room number below. Check the box if chemicals are stored in that classroom or a storage room connected to the classroom.	Signature: Each teacher signifies agreement with the Rock Hill Schools Lab Safety Plan AND the school addendum.
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	



Science Teacher Lab Inventory

School						
Teacher						
Room/Lab Number						
	August _____			January _____		
ALL of the fume hoods are working.	Yes	No	N/A	Yes	No	N/A
The safety shower is working.	Yes	No	N/A	Yes	No	N/A
The fire extinguisher is full.	Yes	No	N/A	Yes	No	N/A
The eye-wash sink is working.	Yes	No	N/A	Yes	No	N/A
The gas ports for ALL bunsen burners are working.	Yes	No	N/A	Yes	No	N/A
The exit(s) from your classroom/lab are unobstructed. They should always be unlocked.	Yes	No	N/A	Yes	No	N/A
The lock on the chemical storage area works. The chemical storage area is locked.	Yes	No	N/A	Yes	No	N/A
You have access to enough flame resistant aprons that ALL students are able to wear one during lab.	Yes	No	N/A	Yes	No	N/A
You have access to enough goggles that ALL students are able to wear one during lab.	Yes	No	N/A	Yes	No	N/A
Outside your chemical storage door, is an up-to-date chemical inventory.	Yes	No	N/A	Yes	No	N/A
ALL chemicals in your chemical storage area have an SDS saved in the Flinn system.	Yes	No	N/A	Yes	No	N/A

Anything marked **No**, above, should be reported to your school's Chemical Hygiene Officer immediately.

August: Teacher Signature: _____ Date _____

January: Teacher Signature: _____ Date _____

Store this page behind your Lab Safety Summary posted on the Chemical Storage closet.

Lab Safety Summary

Rock Hill Schools (York 03)



For Students

- Students must watch the RHSD Lab Safety video and sign a Lab Safety Agreement.
- Students must follow the directions given by the teacher.
 - Measure correctly.
 - Only combine the chemicals stated in the directions.
 - Clean up as directed by the teacher.
- Students must wear their apron and goggles appropriately.
- Students should tie back long hair and wear closed-toe shoes during lab experiments.
- Students must alert the teacher of any spills, broken glass, or unintentional fires.
- Students should know the location and proper use of the fire extinguisher, fire blanket, safety shower, and eyewash station.

For Teachers

- Teachers must watch the Safe Schools Lab Safety videos and complete the quizzes.
- Teachers must clearly explain directions and expectations to students prior to each lab experience.
- Teachers must maintain an inventory of all chemicals and the proper SDS for each chemical stored in the Science lab storage area.
- Teachers must give students clear directions for lab experiments and maintain a safe atmosphere during such experiments.
- Teachers must keep the chemical storage area locked at all times.
- In the event of a spill, fire, or injury, the teacher should send an email to 1) the school's Department Chair, 2) Chemical Hygiene Officer, and the 3) District Chemical Hygiene Officer (kmassey). The email should contain the following information
 - date and time of incident
 - names of affected students
 - explanation of the incident
 - teacher's response to the incident

