Science Lab & Materials Safety

GUIDANCE FOR IN-PERSON LEARNING

Engagement in science and engineering practices is a key component for three-dimensional science instruction and for students to actively participate in sensemaking.

As planning takes place for any model of instruction, Duty of Care should be included in all plans. Everyone is expected to model and display good safety habits at all times and set appropriate safety expectations. By being familiar with investigations and classroom activities and considering all safety procedures that need to be addressed and followed, most accidents can be prevented. Science investigations and activities should be designed with safety in mind, and teachers may need to modify many normal instructional practices to prevent the spread of COVID-19, other viruses, and bacteria. For the most up-to-date guidance, check with the New Mexico Department of Health, Centers for Disease Control (CDC), and follow your district's emergency or crisis safety plan, as these are not an exhaustive list of health and safety guidelines.

In preparation for the 2020–2021 school year, science teachers will need to modify normal instructional practices to prevent the spread of COVID-19. A consideration for planning is to ask yourself the question: "Do students have to complete the hands-on activity to master the NM STEM Ready! Science Standards?" If not, consider alternative methods for investigations, such as safely performing the physical aspects of the investigation as a demonstration or choosing a video recording, which would then be used by students for analysis and explanations. Computer simulations are also an alternative method for investigations.

COVID-19 Considerations for Remote Learning

Safety is paramount. Plan for anything that could go wrong, especially if you are asking students to perform any investigation or activity at home, considering students may not have adult support or supervision.

- Document safety expectations in all student materials and communicate to parents/guardians as guidance. Consider sending home a safety agreement for students and parents/guardians to sign. The National Science Teachers Association (NSTA) and Flinn Scientific have examples for all grade levels.
- Obtain permission from a parent/guardian before sending any materials home. Do not assume there will be adult supervision.
- Consider the guidance needed for students handling chemicals and living organisms such as plants and animals. Students may need eye protection, gloves, hand washing, and proper disposal. Keep in mind safety expectations for sharp objects, heated objects, and breakable items, student allergies, or sensitivities to items.
- It is not generally recommended to engage students in investigations remotely that require laboratory equipment, chemicals, or any materials that could cause students harm.
- The use of household chemicals should be limited to those that have a safety classification as non-hazardous according to Globally Harmonized System (GHS) classifications on Safety Data Sheets (SDS). To locate SDS, utilize Flinn Scientific's free database or search the Internet for "SDS <chemical name>." For detailed information about reading a Safety Data Sheet, visit the following websites:
  - Occupational Safety and Health Administration (OSHA) Hazard Communication Safety Data Sheets
  - American Chemical Society (ACS) Safety Data Sheets

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- Using the Safety Data Sheets (SDS) to include disposal directions for all investigations that are sent home.
- Personal Protective Equipment (PPE) is to be provided by the school or parent before the completion of any investigation with safety considerations.
- Eye protection (goggles) should be worn with any investigation or activity that includes the use of chemicals (including common household chemicals), sharp objects, and projectile objects.
- If proper PPE is not available, the activity or investigation should not be conducted.

COVID-19 Considerations for Video Use During Instruction

When creating a video recording of investigations or demonstrations:

- Practice proper safety by having appropriate PPE for the experiment and practice safety practices, such as having another person present whenever you are conducting an investigation or reading SDS for any chemicals being used. Keep in mind that once an item has been used in an investigation, it should not be used for another purpose.
- All videos should be recorded from the student's perspective as if the student were doing the investigation.
- Narrative descriptions of the investigation could provide extra support for students.
- Consider how students will collect and analyze and then discuss data, both synchronously and asynchronously.
- When identifying Youtube or other videos of experiments, please ensure the videos:
- Include using the proper PPE for the experiment.
- Practice all safety guidelines.

Disclaimers of "Don't try this at home" are not adequate protection from injury or liability.

COVID-19 Considerations for Hands-On Activities & Materials

- Build in time to sanitize high touch surfaces, lab equipment, materials, and PPE before and after use with students.
- Goggles should be cleaned before and after each use. There are currently conflicting opinions of whether ultraviolet light, such as goggle sanitizer cabinets, are effective in the disinfecting for viruses. Please visit these sites for the latest information:
  - CDC's Strategies for Optimizing the Supply of Eye Protection
  - https://multimedia.3m.com/mws/media/1827799O/covid-19-cleaning-and-disinfecting-safety-eyewear.pdf
- If there is a possibility for an adverse reaction between the sanitation chemicals and chemicals used in hands-on investigations, chemicals for the hands-on investigation should be avoided, and an alternative needs to be utilized.
- Remove any unnecessary items that could need sterilizing, such as excess glassware or students' personal materials.
- Reduce the sharing of materials by encouraging students to bring their own items when feasible, such as calculators, rulers, hand lenses, gloves, and goggles.
- Consider the use of disposable materials to reduce sanitation needs. Follow all disposal guidelines according to the SDS for safety when removing chemicals, supplies, materials, and personal items.
- Provide adequate spacing of students and staff.
- Include in instructions and routine safety practices. Consider traffic flow when distributing materials or other movements. Minimize the number of students who need to move.
- Modify grouping practices. For example, one student could perform the investigation and share the observations with other students who remain at the currently recommended distance of six feet.

RESOURCES:

Safety and Health for return to school science investigations and labs

- CDC Guidance for General Laboratory Safety Practices during the COVID-19 Pandemic – focused on research and academic labs
- NSTA Safety Resources – position statements and safety issue papers
- Safety Recommendations for Opening the New School Year – NSTA blog by Ken Roy