

# Guidance for Science Safety at Home: Support for Science Teacher and Leaders

## Safe Science for Distance Learning

Engaging students in at-home science activities must be done while considering many factors. Science teachers and leaders must first consider the safety of the students and their home. Activities must be aligned to the Next Generation Science Standards. A priority of that alignment are activities that put student as the central investigator of a phenomenon that can be used as a springboard for developing conceptual understanding. Lastly, activities must support culturally responsive and sustaining student learning.

## Why It's Important

Science and engineering investigations are a crucial aspect to engaging students and building scientific understanding, but must be exercised by a reasonable and responsible adult who is supervising such activities outside of school. In school, this is the teacher's responsibility.

## Communication

- School leaders need to formally communicate Science Safety Guidance to all staff responsible for science instruction.
- School Leaders and science department heads should develop a communication plan to families when hands-on science is part of a remote learning activity.
- Teachers should also communicate remote safety guidance at the beginning of the year along with in school safety lessons and student agreements.

## Science Learning Considerations

- If a hybrid model of instruction is used, laboratory experiments should occur during face to face instruction, particularly when these laboratory exercises and activities require the use of personal protective equipment. Then use distance learning to focus on sense-making that builds on the laboratory experiences and in-person activities.
- When teacher demonstration videos are used, explicitly communicate that these demonstrations should not be conducted outside of a formal laboratory setting with personal protective equipment or that they are not appropriate to conduct at all.



- When considering activities to be conducted at a home setting, determine the level of teacher support needed to facilitate learning.
- Equitable learning opportunities are essential. Supplies to support activities should be readily available. Opportunities to distribute support materials needed to implement activities should be considered before requiring an activity to be completed at home.
- If supplies cannot be provided, alternative activities should be available such as simulations or video demonstrations.

## Science Safety Considerations

- All home-based science investigations and engineering solutions must be approved by both a teacher and parent before engaging in the investigation or building the prototype.
- A responsible adult is required to supervise all activities, if recommended by the teacher.
- Teachers should include safety considerations at the beginning of all parent guidance documents for every science activity.
  - Safety guidance is to be provided in the use of: sharp objects; heated objects; flame; breakable items; outdoor safety (e.g., bee stings, allergies, poison ivy); potential reactions to kitchen supplies (inhalation or eye irritation).
  - No chemicals should be required for an activity outside of common household items.
- The use of household chemicals or kitchen supplies should be limited to those that have a safety classification as 1 on the Safety Data Sheet (SDS). Safety hazard information can be found at <https://www.era-environmental.com/blog/ghs-hazard-classification>.
- Personal Protective Equipment (PPE) is to be provided by the schools or guardians before the completion of any lab with safety considerations.
- Eye protection should be worn with any activity or experiment that includes the use of chemicals (including common household substances), sharp objects, and projectile objects (common with springs, rubber bands, and levers during engineering challenges). If proper PPE is not available, and an adult can't be present, the laboratory exercise or activity should not be conducted outside of the classroom setting.
- Teachers should consider using simulations when school-based laboratory investigations are not an option for middle and high school students.

## Resources and References

- Know which household items are chemicals:
  - <https://www.era-environmental.com/blog/ghs-hazard-classification>
- Science Lab Safety Resources:
  - <https://www.labsafety.org/safe-science-at-home>
  - <https://www.nsta.org/topics/safety>

