

DIGITAL DISCOVERY WORKSHOPS

Teacher Toolkit: Radical Reactions | Grades K–8



PROGRAM OVERVIEW

Get familiar with the program content.

Program Description

Observe the explosive ways chemicals unite and react in this high energy show! Discover the signs of chemical reactions through experimentation and learn how this creates the world around us.



Program Objectives

Understand that chemistry is the study of matter and the way it interacts, combines and changes.

Understand that combustion is a chemical reaction that requires fuel, heat and oxygen.

Visualize how atoms are the smallest bits of matter, and connect to other atoms to form molecules.

Recognize and make observations of four signs of a chemical reaction: light, heat, color change and gas.

Recognize and identify how chemistry is used in our everyday lives.

Program Key Words (English/Spanish)

Chemistry/ la química

Chemical Reaction/ la reacción química

Combustion/ combustión

Matter/ la materia OR la materia química

Atoms/ los átomos

Molecules/ las moléculas



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Program Outline

Subject to change.

- Introduction of program, expectations and safety.
- Combustion demonstrations and observations.
- Fire triangle discussion- fuel, heat, oxygen.
- Atoms and molecules analogy.
- Additional combustion demonstrations and observations.
- Discuss and share examples of signs of chemical reactions – heat, light, color change, gas.
- Rainbow tube demonstration to explore indicators, acids and bases.
- Elephant toothpaste demonstration.
- Program conclusion.

[View Supported NGSS](#)



BEFORE THE PROGRAM

DISCUSSION PROMPTS

Use these prompts to lead an optional pre-program discussion and reflection in your class.

- What do you think of when you hear the word chemistry? What do you already know about chemistry?
- In our program we'll be making observations of chemistry demonstrations. What is an observation? Can you practice making some observations in your classroom?
- Pick an object in your classroom. What is that object made of? Is it made of one thing or many things? How can you tell?
- A chemical reaction is when multiple substances interact to create something new. What comes to mind when you think of chemical reactions? What are some clues you might be able to see, hear or feel to help you know if a chemical reaction is taking place? (3rd grade +)
- What do you know about atoms? Can you think of anything that is not made of atoms? How might we know atoms exist and understand them if they are too small to see? (6th grade+)



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DURING THE PROGRAM

Print the optional worksheet for your students to follow along with during the live presentation. The back of the worksheet includes additional prompts for after the program.

PRINTABLE WORKSHEET

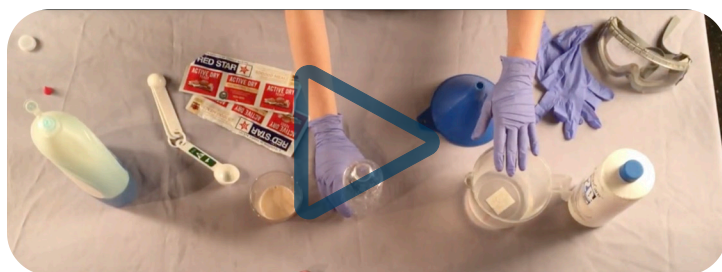
- Radical Reactions Printout: [Click to download](#), then print.

AFTER THE PROGRAM

These optional extension resources can be used within the learning space, or shared with students to do at home with their families.

ACTIVITY GUIDES

- **Purple Produce pH Indicator** | **Indicador Púrpura del pH de los Productos**: Experiment with more acids and bases by making your own pH indicator with simple ingredients. Use the six-minute [follow along activity video](#) to explain the activity steps. Activity time: up to an hour.
- **Material World** | **Mundo Material**: Materials scientists use chemistry when designing new materials. Create a new mystery substance and perform tests on it to learn about its properties. Activity time: up to an hour.



STEAM VIDEO

- **Elephant Toothpaste**: Make your own version of Elephant toothpaste with simple, safe ingredients in this follow-along video. How is it similar or different than the elephant toothpaste we demonstrated during the Digital Discovery Workshop? Activity time: up to 30 minutes.

READING LIST

- Check out the [Radical Reactions reading list](#) for STEAM books related to the program themes.

For more activities with simple materials, check out the [Curiosity at Home / Curiosidad en Casa web page](#). Explore activity sheets by age group and topic in both English and Spanish.



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