Dear Educator,

Thank you for taking part in The Pillowcase Project, an American Red Cross initiative that aims to bring emergency preparedness education to every community in the United States. The Pillowcase Project started in New Orleans, where the Red Cross chapter leader learned about some students who had used pillowcases to carry their belongings during an emergency. The chapter began using pillowcases to teach children about preparedness, and The Pillowcase Project soon spread to Red Cross chapters in other states. Now, the Red Cross is distributing pillowcases to children across the country and the world, and teaching them to share what they have learned about emergency preparedness with everyone in their homes. 

With this teaching kit, The Science of Safety, you can bring The Pillowcase Project into your classroom as well. The teaching kit includes three classroom activities that provide students with a scientific perspective on four natural hazards represented on the Hazards Map poster included in your packet — hurricanes, tornadoes, earthquakes, and volcanoes. These activities support the Next Generation Science Standards’ conceptual shift toward having science education reflect the interconnected nature of science as it is practiced and experienced in the real world. You can also download these lesson plans and additional hazard worksheets at redcross.org/pillowcase. We hope that you will share The Science of Safety with other teachers in your school. Although the materials are copyrighted, you may reproduce them for educational purposes. We are interested in your feedback. Please let us know your thoughts about the presentation, these tools, and what improvements could be made in the future by completing a survey at redcross.org/pillowcase.

The American Red Cross

Target Audience
This teaching kit is designed for use with students in grades 3-5 as a supplement to the science curriculum.

Standards Alignment
This program supports Next Generation Science Standards for Grades 3-5.

For details, visit redcross.org/pillowcase.

Program Objectives
• Introduce key terms and science concepts for common meteorological and geological hazards
• Help students understand what to expect and how to stay safe during extreme weather and other emergency situations
• Familiarize students and their families with the emergency preparedness information available from the American Red Cross at redcross.org
• Promote science learning through collaborative research, conceptual modeling, and engineering design

Program Components
• This one-page teacher’s guide
• Three reproducible student activity sheets
• The Hazards Map poster included in your packet
• A survey form accessible online at redcross.org/pillowcase.

Using the Program Components
• Make copies of the activity sheets for all of your students. Provide master copies of the program to other teachers in your school.
• Use the Hazards Map poster to introduce your students to some of the natural hazards that occur in the United States. Point out the hazards common to your region and talk about hazards that occur where students have relatives and friends. Explain that students will be learning about four natural hazards — hurricanes, tornadoes, earthquakes, and volcanoes — and how to stay safe when these hazards cause emergency situations.

Activity 1: Storm Watch
This small-group activity guides students through a collaborative research project using a variety of online resources (websites, maps, animations, and videos). Assign some groups to research hurricanes and others to research tornadoes. When they have completed their research, have each group present its findings in a class discussion. Use a chalkboard, whiteboard, or butcher paper to create a chart comparing the location, causes, and safety facts for these two types of violent storms. (Note: You can download a larger map for the location part of this activity at nationalmap.gov, small_scale_printable_images/pdf/outlines/states.pdf.)

Activity 2: On the Edge
This activity introduces students to the science of plate tectonics and explains how the movement of tectonic plates creates the conditions for earthquakes and volcanoes. Students then conceptualize a very basic model that shows these geologic forces at work and collaborate in small groups to create a working model to share with the class. For modeling ideas, see https://sites.google.com/a/redcross.org/tote/?page=earthquake+machine and http://volcano.oregonstate.edu/volcano-models.

Activity 3: Designed for Safety
This activity challenges students to come up with engineering ideas that could reduce the damage to homes and cities caused by hurricanes, tornadoes, and earthquakes. The activity sheet briefly reviews some design concepts that engineers have explored already. For added inspiration, take your students to the science of safety with other teachers in your school. Provide master copies of the program to other teachers in your school. Conclude the program by reviewing the science of safety with other teachers in your school.

Resources
• CDC, cdc.gov/learning
• FEMA, ready.gov/kids
• NFPA, firewise.org
• NOAA, www.noaa.gov/education
• USGS Education, education.usgs.gov
• American Red Cross, redcross.org/prepared/disaster
• Monster Guard: Prepare for Emergencies, redcross.org/monsterguard

After you have finished your design, share it with your whole class. Ask your classmates for ideas to make your design even better.

Be Prepared
Until everyone lives in a home that’s built to protect them from natural hazards, it’s important to learn how to stay safe when a natural hazard happens. You can find out how to be prepared for all kinds of hazards at the American Red Cross website. Visit redcross.org/prepared/disaster to learn about hazards that can happen in your state and how everyone in your home can stay safe if one occurs.
Can you tell the difference between a hurricane and a tornado? Both are storms that spin around in a circle — what weather forecasters call cyclones. And both can destroy whole communities with their strong winds. So what makes them different? Get together with a small group of classmates to answer that question. Your teacher will have your group gather information about hurricanes or tornadoes. Use the research guide below to organize what you discover. Then present your findings in a class discussion. By working together, you’ll learn the difference between hurricanes and tornadoes, and how to stay safe when these two different kinds of storms happen.

Our Research Topic:  □ Hurricanes  □ Tornadoes

Where the storm happens
Use the Hazards Map poster to find out where your type of storm is most likely to happen in the United States. You can also use the online maps at maps.redcross.org/website/maps/ARC_Map_Links.html. Mark the locations on this map.

How the storm happens

How to stay safe
What should you do if a hurricane or tornado is headed your way? Are there different safety precautions for these two kinds of storms? Visit the American Red Cross website to find out how to stay safe during an earthquake or when a volcano is ready to erupt. Go to redcross.org/prepare/disaster and click on Hurricane or Tornado. Use this space or a separate sheet of paper to write down the safety facts you plan to share with your classmates.

After you have designed your model, get together with some classmates who have come up with their own ideas for a model like yours — one that shows how an earthquake or a volcano happens. Compare ideas and decide on the best way to make your model. Then work together as a team to create a model that you can share with the whole class.

Plan how your group will present what you have learned to the class. You might want to use pictures or videos that you have found on the Internet, or create your own diagrams and charts to explain your kind of cyclone and how to stay safe when one happens.