# Science Fair Projects

3rd Grade to 5th Grade

## Title: Physical Science

"Keep Cool"

### Stating the Problem – The Big Question

There are many kinds of materials that can be used for insulation. Some of these materials are better than others. When making your "mini-icehouse," you will try to find the best insulator. Write a question that asks what you want to find out from your scientific investigation.

### Forming a Hypothesis – A Smart Guess

What do you think you will learn about the effectiveness of various kinds of insulators from your scientific investigation? Make a smart guess. Write a prediction, or hypothesis, that tells what you think will be the answer to the Big Question.

### Planning the Procedure

Begin your project by reading some books, magazines and articles about insulation. This information is helpful when planning the procedure for the experiment. Can you name some of the places where insulation is used in houses? Why do people use insulation? What kinds of materials are used for insulation? Different insulating materials each have a separate *R-value*. What is R-value? How does insulation work? The answers to these and other questions about insulation can be found in your library.

Design your experiment. You can plan many kinds of experiments to test for the best insulation. Here is one example:

- Fill three identical quart jars with ice water.
- Place the jars in three identical containers such as boxes, plastic pails or coffee cans.
- Fill the space between each jar and its container with a different type of insulation such as sawdust, newspaper, Styrofoam, etc.
- Record the change in temperature over a period of time. Which type of insulation best retained the cold?

You can also try this experiment with hot water. Find out which kind of insulation will keep the water hot the longest. Write a step-by-step description of your experiment. Make a detailed list of materials.

This project is from Daryl Vriesenga's book, *Science Fair Projects, Grades 4-6*, Michigan, Schaffer Publications, 1990. The Guide is available on line at: SchooDoodle.com

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"Keep Cool" (continued)

Make a chart, to record the results of your experiment. You might use something like this:

### Chart

| Insulator | Starting Temp. | Temp. After 15 min. | Temp. After 45 min. | Temp. After 1 hr. 15 min. | Temp. After 2 hrs. |
|---|---|---|---|---|---|
| Sawdust | | | | | |
| Newspaper | | | | | |
| Styrofoam | | | | | |

### Recording Results

While you are performing your experiments, remember to be scientific. Make sure all of the controlled variables stay the same. Only the type of insulation should change. Record your results carefully on the chart that you have prepared.

### Drawing a Conclusion

Did you predict the bet insulating material? Was it good at keeping things cold? Write a report explaining what you learned about insulation. Your report should include the steps of the scientific method: ask your Big Question, state your hypothesis, describe your experiment, state the results, and give your conclusion.

### Display

One of the best ways to share the results of your experiment is to make a display that shows others what your project was all about. A display should have a title that catches the viewers' attention and also explains what the project is about. Include in your display a description of the other steps of the scientific method. Exhibit the materials you have tested, along with the equipment that you used in your experiment.

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