



## How Can We Clean Up Dirty Water?

This Experiment is Provided as a Free Service to Home Educators

By

Jane Hoffman

The Backyard Scientist

The following experiment from the Backyard Scientist was developed expressly for use in newsletters serving home educators. This experiment is NOT contained in the award-winning *Backyard Scientist* books and science kits. As in the *Backyard Scientist* books, it is designed to be simple, fun, and of course to teach an important scientific concept.

### **Gather the following supplies:**

2 jars (peanut butter jars are great)

a tablespoon

8 ounces purple grape juice

measuring cup

8 ounces tap water

activated charcoal (used in aquariums) available at pet stores, some Wal-Marts, etc

marking pen or pencil and 2 labels

### **Begin experimenting.**

1. Using the marking pen or labels, mark the first jar: "water, grape juice and charcoal."
2. Mark the second jar: "water and grape juice."
3. Use the measuring cup to measure and fill the two jars with:  $\frac{3}{4}$  cup water and  $\frac{1}{4}$  grape juice.
4. Stir well until the liquid is a pale purple color.
5. To the first jar only, add 2 tablespoons of activated charcoal.
6. Tighten the lids.
7. Place the jars somewhere where they can be easily observed each day, but left undisturbed.
8. After your experiment is complete, pour the contents of the jars outside in a place recommended by Mom or Dad.

**Can you answer the following questions based on your observations?**

1. What happened to the color of the diluted grape juice in each jar?
2. Did the color of the juice change in both jars, or in only one jar?
3. In which jar did the juice change color?
4. Was there one day where the color change was greatest?
5. Which day was that?

**Backyard Scientist explanation to the experiment.**

The grape juice in the jar containing the activated charcoal became lighter each day. It appears that the grape juice is leaving the water. This is caused by the grape coloring settling in the small openings in the activated charcoal.

The color of the grape juice in the jar without the activated charcoal remained close to its original color.

In this experiment we simulate how we might clean up the dirty water left after we finish using water in our homes.

**Other experimenting ideas.**

1. Repeat the experiment using 8 drops of food coloring instead of grape juice. Does the color of the food coloring affect the outcome? Repeat the experiment using different colors.
2. Lets now see if temperature affect the results? Place one jar in the refrigerator and another somewhere else in the house. For this activity, be sure to place grape juice and activated charcoal in both jars.
3. Does the amount of activated charcoal affect color change? Vary the amounts of the activated charcoal but always the same amount of grape juice in each container and see.

©2007 Backyard Scientist, Inc. All rights reserved. May not be reproduced in any form or by any means without the express written permission of the Backyard Scientist, Inc.

**About the author.** Jane Hoffman, the Backyard Scientist, is the internationally known author of the award-winning *Backyard Scientist* hands on science books and science kits. The nine science books and three kits will excite, motivate and instruct any student. Also available from the Backyard Scientist is the "Parent Guide to Teaching Science." This work covering grades K –12 helps parents insure they are teaching the science subjects and materials their students should be learning by grade level. Her newest book, *A Science Wonderland for the Very Young* targets children ages 2-7 years. In addition to writing and developing these exciting materials, Jane is a sought-after speaker at Home School and other educational conferences nationwide where she makes science come alive. Everyone leaves her sessions better informed as well as motivated and enthused to apply the concepts they learned. Hoffman's teacher inservice workshops for teachers are rated the best available by teachers and administrators. She has been serving the homeschool and educational markets with quality materials nearly 25 years. For a free brochure, send a self-addressed, stamped (\$.60) envelope to: Backyard Scientist, PO Box 16966, Irvine, CA 92623 or visit her on the Worldwide Web at: [www.backyardscientist.com](http://www.backyardscientist.com)