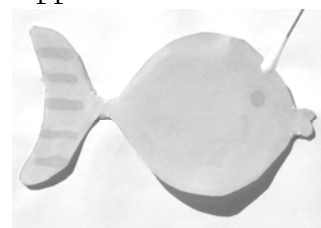


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## *Celebrating Chemistry and Art*

### Tips for Presenters—Universal Indicator Rainbow Trout

1. The trout pattern does not have to be exactly like the one in the NCW publication. A close approximation of that one, or your own version of a fish is fine. It would be possible to simplify the pattern for smaller children to cut out.
2. If the group of children is large, they should be instructed to write their names in pencil on the fish before doing anything else.
3. To reduce necessary time, the trout pattern could be traced 6 times on one sheet of paper in a bold marker. This page could be photocopied onto cardstock, and the fish separated by cutting apart on a paper cutter. Children would not have to trace the fish, and could cut the fish out at home if there is not enough time, or the number of scissors is limited.
4. Other sizes of fish could be created, but if fish are made too large, the likelihood of the paper curling as it dries increases, as does the amount of universal indicator that each child will use.
5. Children may be instructed to try holding the cotton swab that had been dipped in acidic or basic solution just above the fish without touching it and watching to see what happens.
6. Other non-toxic solutions may be used in place of the suggested solutions. Children might find it interesting to use soda and learn that it is acidic. Baking soda solution or window washing solution might be used as well.
7. Be sure to stress that the children are not to taste any of the solutions.
8. If you are conducting this activity several times in one day with groups of children, have antibacterial wipes on hand to sanitize the goggles that you will be using. You will probably need paper towels to then clean off the part of the goggles that the children look through.
9. Test your solutions first. Some universal indicator solutions come with a color chart. You may select solutions of different enough pH to give a wider range of color results.
10. Children may be subsequently led through a discussion of what happened to make the color changes on their fish. Acids and bases may be described and discussed.



11. Fish may be painted with cotton swabs, but the size of the paintbrush may allow for more rapid covering of the surface of the fish.
12. If getting large numbers of children to complete the activity is the goal, the fish could be prepared and painted with the universal indicator ahead of time and cups of solution labeled in advance, so that the children begin with step 5.
13. Fish could be lightly secured to the table with small pieces of masking tape if necessary.
14. Demonstrations could be conducted in conjunction with this activity, such as showing other acid/base indicators like phenolphthalein or red cabbage indicator solution.
15. Be sure to have trash cans available for children to toss the disposable items (cotton swabs, plastic cups, scraps of paper).
16. Names may be written on the fish in pencil to avoid confusion as to ownership of finished fish!

