



# Kitchen Defectives

## Activity

### EQUIPMENT

Jam jars or test-tubes, pink and blue litmus paper, teaspoons; some or all of the following: flour, icing sugar, bread soda (bicarbonate of soda), citric acid.



### SUGGESTED CLASS LEVEL

5th – 6th

### PREPARATION

Put some of each ingredient into a jam jar (or empty spice jar) and label them A, B, C and D (make sure to note which is which!).



### BACKGROUND INFORMATION

The chef has forgotten to label the four ingredients in his kitchen, and the aim is to identify them. The children are given the names of the four ingredients and are asked to carry out tests to find out which is which.

This activity is based on the fact that some of these ingredients dissolve in water and some do not; and they can be acidic, alkaline or neutral. Testing A,B,C and D and combining these results with their results from previous classes should enable the children to say which is which.

The following clues could be given as reminders:

*Sugar, citric acid and bread soda dissolve in water. Citric acid (as its name implies!) is acid. Sugar and flour are neutral. Bread soda is alkaline.*



### TRIGGER QUESTIONS

Questions on what the above ingredients might be used for in the kitchen would be useful for setting the scene (e.g. citric acid is used for making homemade lemonade – gives it a ‘tang’)

### CONTENT STRAND

Materials - properties

### SKILLS

Predicting, Analysing, Experimenting, Observing and Recording

### CROSS-CURRICULAR LINKS

Geography: caves in limestone areas caused by dissolving  
Environment: acid rain and pollution of lakes, rivers etc.  
Living Things: Acid – digestion and indigestion



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### ACTIVITY

The chef has got his ingredients muddled - can you help him to sort out which is which?

1. Look at all the different substances through a hand lens. Can you predict which might be which?
2. Make a chart, for filling in your results, like this:

TEST	A	B	C	D
Does it Dissolve?				
Blue Litmus				
Pink litmus				
Acid or Alkali or Neutral?				

3. With a dry teaspoon put a little of each substance in separate jam jars or test tubes, add some water and stir. What happens? Did the substance dissolve? Fill in your results in the first row of the chart.

4. a) Put a piece of blue litmus paper to each of the substances in water, i.e. from stage 3. What do you notice? Fill in the second row of the chart.

b) Repeat with a piece of pink litmus paper. Fill in the third row of the chart.

From these results can you say whether the substance is an acid, alkali or neutral? Fill in the fourth column.

5. Can you piece together your results with the information you gathered from previous classes about dissolving and acids and alkalis (or from clues in the background information which teacher will give you) to sort out which ingredient was which?

### SAFETY

Even though these items are all from the kitchen do not taste things when you are doing science experiments, because the materials you are using could be dangerous.

The acids and alkalis you are using for this activity are very mild; but some others can be very strong and burn your skin badly.

### FOLLOW-UP ACTIVITY

Take some table salt (ordinary salt) and do the same tests on it, and record what happens. Does it behave like any of the other things that were tested?

*(Table salt is really neutral but it usually has a substance added to keep it from 'caking' which is slightly alkaline and so may turn the pink litmus blue very slowly).*

The following chart may help teacher:

TEST	Icing sugar	Citric Acid	Flour	Bread soda
Dissolving	✓	✓	x	✓
Blue Litmus	x	→ pink (Acid)	x	x
Pink litmus	x	x	x	→ blue immediately (Alkali)