

Investigating Mixtures Activity: Gannon Sugimura

Teacher's Guide

Goals

- To learn from liquid mixtures about what happens in a chemical reaction
- To investigate a phenomenon and suggest chemically based explanations for it

The Laboratory

In this laboratory, the students investigate the mixing of several pairs of different liquids. They predict what they think will happen and then relate that to the results of mixing: what is the total volume after mixing and what additional phenomena they observe in the process.

Materials for Each Group

- 150 ml water in three 50 ml portions
- 50 ml ethanol
- 50 ml 1M HCl
- 50 ml 1M NaOH
- 4 50 ml volumetric flasks
- 2 100 ml volumetric flasks

It is advisable to have a little extra of the liquids, so an exact volume can be measured.

SAFETY

Wear goggles at all times in the laboratory.

HCl and NaOH are harmful. Do not spill them on your hands. Be careful when you mix them.

References: Links

<http://dbweb.liv.ac.uk/ltsnpssc/workshop/reports/pblchem.htm>
Resource on problem-based learning in chemistry.

<http://www.phys.virginia.edu/education/outreach/8thgradesol/MixSoln.htm>
Teacher background and lab activities on properties of solutions.

References: Readings

Oliver-Hoyo, M., Allen, D.D., Solomon, S., Brook, B., Ciraolo, J., Daly, S., and Jackson, L. (2001) "Qualitative Analysis of Fourteen White Solids and Two Mixtures Using Household Chemicals," *Journal of Chemical Education*, Vol. 78, No. 11, pp: 1475-1479.