

Chemistry 141 Laboratory Lecture
Bottle Experiment
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Q: What's today's experiment about?

The goal of today's experiment is to discover the identity of a group of unknowns by studying their reactions with each other. You'll receive a set of 10 bottles, each containing an unknown substance. You'll also receive a list of the substances, although not which substance is in which bottle.

Q: How do we figure out what's in the bottles?

By making observations of the appearance and odor of each bottle's contents, and then by testing the reactions of the various contents with each other, you are to figure out the identity of each bottle's contents. You must make your conclusions by comparison with your observations from the chemical reactions experiment last week.

Q: Doesn't sound too bad, especially since we studied all the possible solutions last week.

Actually, some of the unknown sets contain solutions that you did not test last week, but that should react in similar ways to solutions you did test last week. The challenge for you is to predict the behavior by analogy to your observations, since the new solutions will be at least similar to ones you've studied already. We will have copies of the CRC handbook available to you to help you in this.

Q: Any tips?

Sure. First, make sure that you write down the number of your unknown set. Different groups will have different sets. Also, don't remove the plastic covered lists of possible compounds. Before you start, copy them into your notebook.

Finally, when you're trying to figure out what's what, don't rely on only one observation if you have more than one to work with.

Q: What's the word on safety this week?

Safety precautions are the same as for last week: smell by wafting toward your nose; no direct contact with chemicals, work in the hoods and wear safety glasses at all times.

Q: What do we turn in for a lab report?

Today you'll turn in your prelab, the carbon copies of your notebook pages, and the lab report from last week. Next week your lab report will consist of the completed Unknown

Identities Report Sheet (page 33 in your manual), and a ½-1 page discussion explaining the reasoning you used in identifying each bottle. In this discussion you should refer to the specific observations that led to your conclusions, and include the equations for the reactions that helped you identify the solutions. It is important for you to understand that even if you get the identity of all your unknowns correct, you won't get a good grade on the lab report, unless your reasoning in support of your assignment is sound, complete and clearly expressed.

Q: How much are we allowed to work together this week?

You can collaborate with your lab partner (and only your lab partner) on all aspects of the experiment this week, including the identification of the unknowns and your rationale for the identification. However, each person still has to hand in their own report.