

What you need to do:

Procedure:

Part 1: Calculating the Half-Life of Candium

WARNING: The candium has been contaminated by the handling of other scientists, and while this will not cause errors in the calculation of its half-life, it could cause severe stomachaches, if consumed.

- 1) Collect a large sample (50+ pieces) of candium from the front counter.
- 2) Accurately count the number of pieces in the candium sample and record it in your notebook.
- 3) Place all of the candium pieces in a brown paper bag.
- 4) You are now ready to start calculating the half-life of candium. Using a watch, shake the bag with the candium “gently” for exactly 10 seconds and then pour the candium out onto the counter.
- 5) Count the number of candium pieces that have decayed (with the S showing) and remove them from the sampling. Record the number of decayed candium pieces in your notebook.
- 6) Repeat steps 4) and 5) until all of the candium has decayed, recording the time that you start the next shaking of the bag containing the candium.
- 7) Calculate the half-life of candium.

Part 2: Extracting Uranium

- 1) Get a small test tube out of your desk. Make sure it is clean and dry.
- 2) Using a disposable pipet, collect $\sim 1/3$ of a tube of the liquid “uranium waste” in water from the front counter.
- 3) Make observations regarding the color and consistency of the waste in your lab notebook.
- 4) Using the light provided, observe the fluorescent properties of the solution. Record your observations in your lab notebook.
- 5) Take your tube of waste to the front counter and using a disposable pipet place $\sim 1/3$ of a tube of extraction solvent in the tube with the waste. Your test tube should now be no more than $2/3$ full.
- 6) Record your initial observations in your lab notebook.

- 7) Holding the tube gently but firmly between your thumb and forefinger, gently tap the bottom of the tube in order to mix the two layer of solvent and complete the extraction. Do this for several minutes.
- 8) When you believe the extraction is complete, verify it by using the light as before to observe the fluorescence. The fluorescence should now be in the organic layer.
- 9) If the extraction is not complete, continue to mix the two layers until all of the fluorescence is in the organic (top) layer.

Dispose of the waste in the appropriate waste jar in the hood.