Poop to Power (Scenario B: Learning Experience #2)
Student Procedures

Essential Question: In what ways can farmers manage the manure produced by their chickens in a way that maintains good water quality?

Note: You will work in a project team of three or four students. Each team member will have a task: researcher (may have two of these), recorder, communicator. Team answers to the questions below should be recorded in your individual journal. Each team should be ready to contribute to a class discussion on each topic.

Procedures

1. Your teacher will review with you the quantities of chickens that must be raised in the Chesapeake Bay Watershed in order to meet the population's demands. List in your journal everything that is needed to raise a chicken from fertilized egg to adult size and combine your ideas with those of the rest of the class.

2. Complete the questions in *Nutrient Overload* (Student Sheet#1) with your team. If your math is correct they will have a good picture of the amount of manure that must be managed by chicken farmers in the Bay watershed. Add your answers to a class chart.

3. Contribute to a class discussion around team answers to questions #3 and #4 above. Think of your answers in terms of cost to the farmer. Are you as consumers willing to pay a bit extra for the chicken that you eat in order to improve manure disposal methods?

4. *Anaerobic Digester* (Student Sheet #2), explains the basic workings of an anaerobic digester similar to the one that is described in the news article at the beginning of this scenario. Review the graphic organizer with members of your team, and answer the questions. Write a sentence or two in your journal about the connection between the need to dispose of chicken manure and the economics of chicken farming.

5. The lab in *What to Do with the DooDoo* (Student Sheet #3), asks you to play the part of a chicken farmer who must make decisions about disposing of tons and tons of chicken manure from his or her farm warehouses. You will practice your understanding of a controlled experiment and management of multiple variables as you design and carry out a study that will determine how a variety of environmental conditions affect the action of chicken manure fertilizer on farm fields. Follow your teacher's instructions.

6. Someone on your team will explain to the class your experimental design and your results if you carried out the experiment. Ask questions and critique the designs of your group, in addition to the others, remembering that the goal is to become better scientists.