

Crawford County School-To-Work Partnership
2003 Educator-in-the-Workplace Program
Act 48 Lesson Plan

Name: Margaret Jacobs
School: Conneaut Lake Middle School
Subject Area: Science
Lesson: Drinking Water Treatment Process
Date: 8/2/03
Business/Agency Visited: PA Dept. Of Environmental Protection

A. Academic Standards Addressed:

PSSA Environment and Ecology Standards

4.8.7 D 1-3 Explain the importance of maintaining natural resources at local, state and national levels.

4.9.7 A 1, 2 Explain the role of environmental laws & regulations.

B. Objectives:

Students will be able to:

- 1) Recognize & explain the steps of a drinking water treatment process.
- 2) Relate steps of treatment process to the Safe Drinking Water Act (1986) & the Clean Water Act (1987).
- 3) Name the sector of DEP responsible for monitoring Water Treatment Plants.
- 4) List 5 ways one can prevent surface/ground water contamination.
- 5) Determine whether the treatment plant's water is obtained from a ground water or surface water source.

C. Introduction/Motivation:

- 1) Students will have just completed Creek Connections' Water Treatment lab earlier in the week.
- 2) Remind students that they will now see an actual water treatment plant and to try to relate the lab to the field trip today.
- 3) Pass out "Cambridge Springs Water Treatment Facility" chart & explain how to fill it out.

D. Activity/Procedure:

- 1) Go to Cambridge Springs Treatment Facility & introduce Ken Dine, the treatment facility operator.
- 2) Remind students to learn objectives 1-5 (above), to ask questions and fill in their charts as Mr. Dine gives them a tour and explains the process.
- 3) Check charts for completion at the end of the tour.
- 4) Ask wrap up questions:

- a. How do the parts of the drinking water treatment process relate to the Safe Drinking Water Act?--- solids which may contain contaminants are taking out of water via addition of alum & other chemicals, other contaminants are filtered.
- b. What sector of DEP is responsible for overseeing drinking water treatment plants?--- Water Supply & Management.
- c. What are 5 ways one can prevent surface water contamination?---Cut down on erosion/sedimentation, dispose of VOCs properly, ensure septic system is working properly, dispose of other wastes/chemicals (pesticides/fertilizers) properly, monitor livestock/farm runoff, have settlement/wetland areas for urban runoff, etc.
- d. Is this treatment facility's source water surface or ground water?--- surface (French Creek).

E. Materials:

- 1) Creek Connections's Water Treatment Lab (from Water Module available on loan from Allegheny College)
- 2) "Cambridge Springs Water Treatment Facility" chart
- 3) Glencoe "Earth Science" (1999) text Ch. 8—Water Erosion & Deposition, Ch. 20.3—Water Pollution.

F. Assessment:

- 1) Grade "Cambridge Springs Water Treatment Facility" chart.
- 2) Check for understanding by asking wrap-up questions.
- 3) Written Test/Essay at end of unit.