LESSON PLAN

Kelly Varnes – Suwannee Middle School, Live Oak, FL

Title: Evaluating Agricultural Sites

Grade Level: Intermediate / Secondary -may be scaled up or down to meet your needs in the class

Topic: Selecting safe sites for agricultural chemical use

Time Required: 1-2 class periods

Materials:
News article of agricultural water contamination
Soil texts which discuss soil characteristics
Aquifer model (can be borrowed from water management district)
Site selection exercise
Soil survey map for your county -can be borrowed from county soil conservation service office
Chalk board
Outdoor area or land laboratory

Background: Students will have previously discussed chemical use in agriculture and have studied soils.

Objectives:

1. Identify local pollutants of the ground water.
2. Identify and explain the characteristics which influence the movement of contaminants into groundwater sources.
3. Select a site for an agricultural operation that will be least likely to allow contamination of the groundwater.
4. Identify and utilize "Best Management Practices" used in conjunction with agricultural chemicals.

Procedure:

1. Read an article to the students that identifies or blames an agricultural operation for groundwater contaminants.
2. Generate discussion in class about ways that agriculture has or might contribute to groundwater contamination.
3. Split students into groups and allow them to brainstorm the characteristics of the land/soil that influence the movement of contaminants through the soil. Present these ideas to the class.
4. Identify those factors that are most important including slope, soil texture, soil depth, depth to the water table, texture of the unsaturated zone, type of aquifer material, and distance between potential contamination sources and points of water use.

5. Have each group research one of the characteristics and then present a mini-lesson on how it can influence contamination of the groundwater.
6. Assign students the attached "Site Selection Exercise". Discuss the results.
7. Use an aquifer model to demonstrate the characteristics in #4.
8. Study land laboratory soil to determine the characteristics that influence contaminant movement to the groundwater. Investigate what can be done to further protect the groundwater in areas that contribute to contamination.
9. Identify best management practices that will help prevent groundwater contamination (i.e. crop rotation, conservation tillage, etc.)

Extension: Use a county soil survey map to identify local area where groundwater contamination is likely to occur based on soil formation/characteristics. Compare elevation, soil texture, water tables, etc... Create a list of the "safest" areas for water supplies, and those areas that pose the greatest threat to ground water supplies.

Questions: On the "Site Selection Exercise"

Reference: NVATA Groundwater Project - Groundwater: A Hidden Treasure