

Name: _____ Date: _____ Hr: _____

Groundwater Contamination Webquest

In this webquest you will discover what groundwater contamination is and why we need to know about it. You will also learn about various sources of contamination, how to investigate groundwater contamination, and ways to prevent it.

Go to the following website: <http://techalive.mtu.edu/meec/module04/title.htm>

Please read each page and participate in any 'activities' that it directs you to do. Use the pages and activities to answer the following questions.

Why is Groundwater important?

1. What percent of people in the U.S. use groundwater? _____
2. What percent of water used for farming is groundwater? _____
3. List 5 things that the groundwater is used for. _____

Where is Groundwater located?

4. Groundwater is part of the _____ Cycle. (More commonly known as the _____ Cycle.)
5. How does water get into the soil? _____
6. Aquifer are sections of _____ that _____

7. How do we get the groundwater out of the ground? _____

Types of Aquifers

8. List and explain the two types of aquifers.

Type of aquifer	How it is formed

9. Which type is more likely to get contaminated and why? _____

10. Which type would be best of drilling a drinking water well into and why? _____

How does groundwater move?

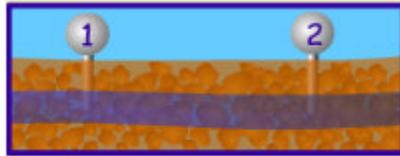
11. Groundwater moves through aquifers because of _____ and _____.

12. Answer the three questions for **Groundwater Direction in an Unconfined Aquifer**:

a)



b)



c)



Groundwater Speed

13. How fast does water in the following move?

- a. Rivers _____ b. Lakes _____ c. Aquifers _____

Contamination Basics: Contaminants

14. Contaminants are grouped in three main categories:

- a. _____ or (_____ - _____)
 b. _____ c. _____

Some Specific Contaminants

15. List the six contaminants on this page and a brief description of each.

Contamination Basics: Concentration

16. What two things do you need to know about a contaminant to determine if it is a problem for an aquifer?

_____ and _____

17. What do ppm and ppb stand for and give an example of each?

	Stands for:	Example:
ppm		
ppb		

18. Which is a larger concentration, ppm, or ppb? _____

19. What did you notice about the *pptr* square after you click on the red dot? _____

Effects of Contamination

20. Why do we need to worry about 1 ppb of a contaminant of water; that is such a small amount?

21. Which chemical needs to exist in the least concentration in the groundwater in order to avoid hurting someone? _____

Sources of Contamination

22. List at least five sources of contaminants from this page.

23. From which sources can you find nitrates? _____ and _____

24. From which can you find gasoline products? _____ and _____

Contamination Movement

25. Contaminants move with what? _____

26. What happens as a contaminant moves? Explain. _____

27. What is a visual representation of concentration of contamination called? _____

28. There are two main categories of contamination sources, fill in the chart below:

Source type	Color picture

29. How the plume looks depends on what four things? _____

Area of Contamination

30. Why is it important to discuss the area affected by the **SPREADING** of the contaminant? _____

Real Plume Example

31. Answer the following questions about the “real” plume problem.

Where is the source of the contamination?	
Is the source continuous or a one-time event?	
Based on the direction of the plume, which way is the groundwater moving?	
How far does the contamination travel in 16 years?	
What important areas of the city are affected by the contamination?	

Testing for Contamination

32. Since the contamination plume is underground it is not visible to scientists, what must they do in order to determine where the contamination plume is? _____

Plume Source Game

33. Play the game at least two times and fill in the chart below.

	Source of Plume	Money Left	Picture of Plume
1			
2			

Cleaning up Contamination

34. When an area is contaminated why might the soil need to be cleaned along with the water? _____

35. List the three specific cleaning methods discussed on this page and give a brief description of them.

Cleaning Method	Description

Prevention of Contamination

36. Prevention is BEST!!! What are three ways people can help to prevent contamination? _____
