# Water Quality Testing

Date \_\_\_\_\_

#### You will be running four different water quality tests on the provided samples.

Water Test	Information	Safe Levels for Living Organisms
pH	Scale of 1 to 14; pH=7=neutral; pH<7= acid;	6.5 to 9
_	pH>7= base	
Nitrate	Nitrogen and oxygen containing chemicals	<1mg/L for aquatic life; <10mg/L for drinking
Phosphate	Phosphorus containing chemicals	0.01-0.03mg/L
Chloride	Chlorine levels	<0.01mg/L for aquatic life; < 1.0mg/L for drinking

### Question Part 1: How does water quality vary in different water samples?

You will be testing tap water, bottled water, and outdoor water to find how they differ.

#### **Hypothesis: Prediction Chart**

Water Source	pH: Acid, Neutral, or Base	Nitrites: Safe or Unsafe	Phosphates: Safe or Unsafe	Chloride: Safe or Unsafe
Tap Water				
Bottle Water				
Distilled Water				
Outdoor Water ( )				

#### Materials:

Tap water		Bottle Water	Distilled water
Outdoor water(	)	Testing supplies	

#### **Procedures:**

Procedures will be at your lab stations. Follow all lab procedures carefully and clean your area as directed.

#### Data Table 1:

	pH (A)	Nitrites (B)	Phosphates (C)	Chloride (D)
Tap Water				
Bottled Water				
Distilled Water				
Outdoor Water ( )				

#### Use Data Table 1 to answer the following questions in complete sentences.

How does pH vary between tap, bottled, distilled, and outdoor water?

How do nitrate levels vary between these samples?

How do phosphate levels vary between these samples?

How do chloride levels vary between these samples?

Name \_\_\_\_\_



Period\_\_\_\_\_

## **Question Part 2: How do common chemicals affect water quality?**

You will be testing the effects of soaps, fertilizers, pesticides, and petroleum based products on water quality.

#### **Hypothesis: Prediction Chart**

	pH: Acid Neutral or Base	Nitrites: Safe or Unsafe	Phosphates: Safe or Unsafe	Chloride: Safe or Unsafe
	Acid, Mential, of Dase	Sale of Ulisale	Sale of Ofisale	Sale of Olisale
Soap				
Fertilizer				
Petroleum Product				
Pesticide				

#### Materials:

Soap water	Petroleum water	Testing supplies
Fertilizer water	Pesticide water	

#### **Procedures:**

Procedures will be at your lab stations. Follow all lab procedures carefully and clean your area as directed.

#### Data Table 2:

Chemical Type	pH (A)	Nitrites (B)	Phosphates (C)	Chloride (D)
Soap				
Fertilizer				
Gasoline				
Pesticide				

#### Use Data Table 2 to answer the following questions in complete sentences.

How does pH vary between these water samples?

How do nitrate levels vary between these samples?

How do phosphate levels vary between these samples?

How do chloride levels vary between these samples?

## Water Quality Testing

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Water Quality	Safe Levels	Sources	Effects of Unsafe Levels	
Indicator				
pH	Between 6.5 and 9	Decaying matter causes acidic	Too high or too low can kill organisms;	
		conditions;	NOT all organisms can live in 6.5 to 9	
			range	
Nitrate	<1mg/L for aquatic	Fertilizers, animal wastes,	Can cause excessive plant and algae	
	life;	decomposing matter	growth in a process called eutrophication;	
	<10mg/L for		this process harms or kills animals and can	
	drinking		kill plants due to overcrowding	
Phosphate	0.01 to 0.03mg/L	Phosphate containing rocks and	Can also cause excessive plant and algae	
		solids; animal waste, fertilizers,	growth in a process called eutrophication;	
		pesticides, cleaning products,	(see above);	
		and industrial processes		
Chloride	0.01mg/L for	Added to drinking water and	High levels can harm larger organisms;	
	aquatic life;	swimming pools to kill	Chlorine gas is toxic, can irritate eyes,	
	<1.0mg/L for	microorganisms that might cause	nasal passages, and lungs	
	drinking	disease		
Source: http://www.h2ou.com/h2wtrgual.htm				

## Water Quality Information

#### Part 1: Use your data from Question 1 to answer the following questions. Use complete sentences.

1. Which water source had the best water quality? Use your data to support your answer.

#### Part 2: Use your data from Question 2 to answer the following questions. Use complete sentences.

2. Which water quality tests were affected by the addition of soap?

3. Which water quality tests were affected by the addition of fertilizer?

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4. Which water quality tests were affected by the addition of gasoline?

5. Which water quality tests were affected by the addition of pesticides?

#### Use the data from Part 1 and the information from Part 2 to answer the following questions:

6. Is the soap water sample "safe"? Use data to support your answer.

7. Is the fertilizer water sample "safe"? Use data to support your answer.

8. Is the gasoline water sample "safe"? Use data to support your answer. \_\_\_\_\_

Name	Water Qualit	ty Testing Date	Period
9. Is the pesticide water sample "saf	fe"? Use data to support your	r answer	
10. Which of these chemicals had the experiment.	ne greatest impact on the wat	er? Explain your reasoning u	sing data from the
11. What is runoff?			
12. Track the path of soap water fro	om your household to a water	source?	
13. How might fertilizer make its w	ay to a water source?		
14. In what ways might petroleum b	based products enter a water	source either directly or indire	ectly?
15. How might pesticides enter a wa	ater source?		
16. Which sources of water do you	use in your house for drinkin	ng?	
17. Which sources of water does the	e school use for drinking?		
18. For each of the sources named i	n #16 and #17, explain why	it is safe or unsafe.	
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