

Environmental Chemistry

Unit C

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Topic 1 - A Hair Raising Dilemma

Describe 2 examples of plants from the environment that are used for **medicine**.

Explain the difference between **organic** and **inorganic compounds**.

Complete the table

Organic Compounds	Nutritional role
Carbohydrates	<hr/>
Lipids	<hr/>
Proteins and Amino Acids	<hr/>
Nucleic Acids	<hr/>

Identify the **9 essential elements** that are referred to as macronutrients, essential for plant growth.

Elements needed, but in only small amounts, are called _____.

Explain **hydrolysis**.

Identify the macronutrient

<i>Nutrient</i>	<i>Importance in Plants</i>	<i>Importance in Humans</i>
_____	- disease resistance	- muscle contraction
_____	- production of fruits and grains	- enzyme activation
_____	- growth and repair of tissue	- leaf and stem growth
_____	- cell wall structure	- blood clotting
_____	- root and flower growth	- metabolic reactions

Identify the Micronutrient/trace element

- _____ - component of antioxidant enzyme that helps decay of cell function
- _____ - crucial part of red blood cells, regulating oxygen transport
- _____ - component of vitamin B₁₂, which helps regulate red blood cells
- _____ - major component in thyroid hormones which regulate metabolism
- _____ - key component of 3 enzymes that regulate metabolism
- _____ - activates vitamin B₃ to control use of blood sugar in energy production
- _____ - part of the hydrochloric acid in stomach that helps digest foods

Illustrate examples of foods suggested in each category of **Canada's Food Guide**

Grain Products 5-12 servings		
Vegetables & Fruit 5-10 servings		
Milk Products 3-4 Servings (depend on age)		Other Foods
Meat & Alternatives 2-3 servings		

Explain what **optimum amount** is.

Explain the process of **diffusion** (include a labeled diagram)

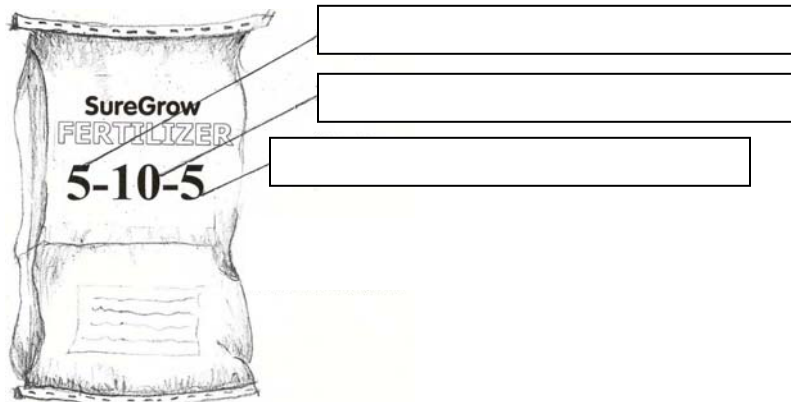


Explain the process of **osmosis** (include a labeled diagram)



Explain the process of **active transfer**

Identify what each **number** on the fertilizer bag stands for



What does the other 80% include? _____

What are the advantages and disadvantages of using **artificial fertilizers**?

Advantages : _____

Disadvantages: _____

What is a **monoculture**?

Topic 2 - A Growing Concern

Why was **DDT** developed?

Explain the process of **bioaccumulation** (also referred to as **biomagnification**)

What are the harmful effects of using **DDT**?

Topic 3 - How Do You Spell Relief

Identify the properties and give 3 examples of acids, bases and neutral substances

	Acids	Neutral Substances	Bases
Properties	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Examples	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

What is **pH** a measure of?

How does an **indicator** work?

Write a **neutralization** word equation

Identify **5 negative effects of acid precipitation**

What is **acid shock**?

Calculate in **ppm** (parts per million) the amount of 1 milligram of mercury that was found in a barrel containing 30 Litres of water.

Why is it not necessary to add lime to **neutralize** lakes and rivers in Alberta that have been exposed to acid precipitation?

Explain the difference between **dispersion** and **dilution**.

What are **catalytic converters** used for and how effective are they?

What is a **scrubber** and why is it used?

Explain the **COBRA system** and its added advantage over 'scrubbers'.

Topic 4 - How Much Is Too Much?

What is a **pollutant**?

What is a **toxin**?

Explain the difference between **acute** and **chronic toxicity**.

What does **LD 50** stand for?

Where does most of the **Human LD50** information we currently have come from?

What was **thalidomide** developed for and what effect does it have if pregnant women take it?

What does **LD50** dose depend on?

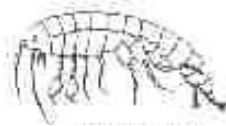
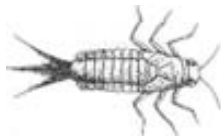
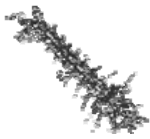
Topic 5 - Getting Away From It All

Explain what **environmental monitoring** is intended to do.

How is **water quality** determined?

What types of aquatic organisms would you likely be able to find in polluted water?

Identify the following **aquatic invertebrates**



Explain the difference between **point** and **non-point sources** of pollution.

Topic 6 - N.I.M.B.Y. There Is No Away In Throwing

What does **N.I.M.B.Y.** stand for?

What are the **three stages of transport** with regards to substances in the environment?

Stage 1 _____

Stage 2 _____

Stage 3 _____

Airborne chemicals will travel certain distances and in certain directions depending on what?

What **wind patterns** travel through each of the following locations

Canada _____

Panama _____

Antarctica _____

What are some **natural sources** of airborne particles?

What is the **'thinning of the ozone layer'** above the Earth caused by, and why is it a concern?

How is sewage treated on a farm in Alberta?

Explain the **3 stage sewage treatment process** in Calgary or Edmonton?

Describe the difference between **permeable** and **impermeable** soil zones.

What is an **aquifer**?

Describe 3 substances that can **contaminate** groundwater – identify its possible source and what effect it has on humans.

What processes are used to **biodegrade toxins** in the environment?

What is a **hazardous waste**?

What does WHMIS stand for?

W _____

H _____

M _____

I _____

S _____

What does MSDS stand for?

M _____

S _____

D _____

S _____

Different labels are used for different purposes. Illustrate a **label** used for each of the following reasons:

Transporting

Supplying

Eco-Label

Disposal

What information, about a **new product**, must a manufacturer include in their application to allow the new product to be sold, or used by consumers?

Identify the **4Rs** and give an example of how you can practice each one.

R _____

R _____

R _____

R _____

What problems can occur at sanitary landfill sites?

How are sanitary landfills **secured**?
