

### Topic 3: How Do You Spell Relief

Define ACID (what pH does it have?):

A substance that has a pH less than 7

Define BASE (what pH does it have?):

A substance that has a pH greater than 7

What is an acid/base indicator? This is a qualitative measurement.

A substance that tells us whether the solution we are working with is an acid or a base. Litmus paper is an example.

What does a pH scale do? This is a quantitative measurement.

A scale that tells us how acidic or how basic a substance is.

pH stands for power of HYDROGEN.

On a pH scale, an acid ranges from 0 to below 7, a base ranges from above 7 to 14, and a neutral substance has a pH of 7.

Acidic lakes are sometimes treated with LIMESTONE, also known as calcium hydroxide. This neutralizes the lake. This is also known as LIMING.

An acid - base neutralization reaction always produces WATER and a SALT.

Carbon, sulfur, and nitrogen oxides from factories combine with water in the atmosphere to produce ACID PRECIPITATION.

What are the four types of acids we learned about? (page 204, the four formulas)

sulfurous acid

sulfuric acid

nitrous acid/nitric acid

carbonic acid

Why is acid snow considered more dangerous than acid rain?

Stays around longer (accumulates) and because of this there is an influx of acid introduced into the environment.

What is a catalytic converter? What is the purpose of a converter? (page 209)

Aids the formation of CO<sub>2</sub> and H<sub>2</sub>O from hydrocarbons, reducing the amount of CO<sub>2</sub> and nitrogen oxides in the environment.

What is a scrubber? What is a sorbent? How is a COBRA scrubber different? (page 210)

Scrubbers absorb or capture oxides using a sorbent.

COBRA has certain components that can be reused, and the trapped material can be treated and sold.

### Topic 4: How Much is Too Much?

Define POLLUTION:

An alteration of the environment producing a condition harmful to living things.

Define POLLUTANT:

Any material, or form of energy, that will cause harm to a living thing.

Define LD50:

The dose of a chemical that will kill 50% of the population to which it is applied.

Define ACUTE TOXICITY:

The ability of a chemical to cause harm to an organism with only one exposure.

Define CHRONIC TOXICITY:

The ability of a chemical to cause harm to an organism only after the chemical accumulates to a specific level after many exposures over time.

1 part per million (ppm) = 1 mg/L

## Topic 5: Getting Away from it All

Define PERSISTENT:

When a substance accumulates in the environment and breaks down very slowly, or not at all.

After completing some tests, how do you know if your water sample contains phosphate? (page 226)

A precipitate formed (solid suspended within a liquid).

After completing some tests, how do you know if your water sample contains nitrates? (page 227)

The solution turned pink. The pinker the solution, the more nitrates the sample contained.

The level of dissolved oxygen in water depends on four things:

turbulence (the mixing of water and air)

pH

temperature (colder = more O<sub>2</sub>)

the amount of photosynthesis that occurs

At what ppm concentration can most organisms survive at?

approx. 5 (8 is great, 5 can survive, 4 is poor and 2 is terrible)

What are MACROINVERTEBRATES? How are they used to monitor water?

Organisms visible with an unaided eye that do not have a backbone (shrimp, larvae, molluscs).

We can use them as biological indicators (tell us if the water is good or bad).

Define POINT SOURCE:

A specific location where pollution originates.

Define NON – POINT:

A source of pollution in which pollutants are diffused or originate from no specific location.

Explain how phosphates and nitrates create low – oxygen conditions within a body of water? What do they promote the growth of?

Promote the growth of algae which is referred to as an algal bloom. In the end creates low O<sub>2</sub> levels in the water which makes it hard for organisms to survive.