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| Science 9 | Unit C |
| Monitoring Water Quality | 84 mins |

Student Objective:

* Describe and illustrate biological monitoring
* Identify chemical factors
* Apply and interpret measures of chemical concentration (ppm, ppb, ppt)

Teacher Objective:

* Monitor Students working on Review. Note Students that are “getting” it.

**Pre-Lesson**

Take Attendance

**Celery Lab**

What happened to the celery? Changed Colour

What kind of Transport was used? Diffusion

**Review**

Pg. 211 Questions 1-3, 5-11

**Monitoring Water Quality**

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| **5 Categories of Use**  **How do we know if water is safe?**  **1) Biological Indicators**  **Microbiological Indicators**  Microscopic organisms can cause illnesses in high enough qualities  **Aquatic Invertebrates**  Different Animals require different environments to survive  **2) Chemical Factors**  **Measuring Chemicals in the Environment**  We use ‘ppm’ – parts per million  ‘ppb’ ‘ppt’  **Dissolved Oxygen**  Amount of Oxygen in the water  **P and N Content**  **Acidity**  pH of the water  **Pesticides**  **Heavy Metals**  Densities more than 5g/cm3  **Measuring Toxicity**  **LD50**  Lethal Dose for 50% test subjects to die  **3) Physical Factors**  Suspended solids | Human Drinking Water (Potable)  Recreation, such as swimming  Livestock drinking water  Irrigation  Protection of Aquatic Life  E-Coli Bacteria  Many different Invertebrates means “healthier”  Food Colouring Example  1 drop (colouring) in half-full bathtub (ppm)  1 drop in a full swimming pool (ppb)  1 drop in 1000 swimming pools (ppt)  Increased by plants, turbulence,  Decreased by organisms breathing  8ppm – lots of different living things  5ppm – most organisms need to survive  2ppm – midge larvae and some worms left  More P and N = More Algae and Weeds  Plant-life dies = More food for bacteria  Bacteria use up the oxygen = Larger life dies  Anything below pH of 5.6 can be dangerous.  Acid Shock = Spring acid snow melts  As pesticides build up in the environment, bigger organisms can get harmed  Especially toxic to children, cause abnormal development  Table salt LD50 3000mg/kg  Caffine LD50 192mg/kg  DDT LD50 87mg/kg  Turbidity (secchi disk)  Blocks sunlight  Decrease oxygen |

**Practice**

**Pg. 224, Questions 1-10**