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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 swimmingLivestock drinking waterIrrigationProtection of Aquatic LifeE-Coli BacteriaMany different Invertebrates means “healthier”Food Colouring Example1 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 breathing8ppm – lots of different living things5ppm – most organisms need to survive2ppm – midge larvae and some worms leftMore P and N = More Algae and WeedsPlant-life dies = More food for bacteriaBacteria use up the oxygen = Larger life diesAnything below pH of 5.6 can be dangerous. Acid Shock = Spring acid snow meltsAs pesticides build up in the environment, bigger organisms can get harmedEspecially toxic to children, cause abnormal developmentTable salt LD50 3000mg/kgCaffine LD50 192mg/kgDDT LD50 87mg/kgTurbidity (secchi disk)Blocks sunlightDecrease oxygen |

**Practice**

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