Water quality indicators

Water quality indicators are used to tell the overall \_\_\_\_\_\_\_\_\_\_\_\_ of water.

**pH**

\_\_\_\_\_\_\_\_ is the measurement of how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or basic (alkaline) a substance is. pH is measured on a scale ranging from \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_. A substance with the pH of \_\_\_\_\_\_ is considered neutral, meaning its neither acidic or basic. Any substance pH less than 7 is \_\_\_\_\_\_\_\_\_\_\_\_ and substances that have a pH greater then 7 are considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Look at the pH scale and label the ranges of:

Strong acids: \_\_\_\_\_\_ weak acids: \_\_\_\_\_\_\_\_ neutral: \_\_\_\_\_\_\_\_\_\_ weak bases: \_\_\_\_\_\_\_\_ strong bases \_\_\_\_\_\_

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

**Turbidity**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of water. Water can become turbid if suspended pieces of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are in the water.

**Dissolved Oxygen (D.O.)**

All living animals need \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in order to survive. Photosynthesizing plants and the movement of water adds \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the waterway. The amount of oxygen within a body of water is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*Use the words healthier or unhealthier to complete the statements below:*

The higher the dissolved oxygen, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the water.

The lower the dissolved oxygen, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the water.

**Temperature**

The measure of how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a substance is.

The colder the water, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dissolved oxygen

The warmer the water, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dissolved oxygen.

\*\*\*\* Increased turbidity leads to \_\_\_\_\_\_\_\_\_\_\_\_ in temp. which causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_ DO

**Nitrates and phosphates**

Nitrates and phosphates enter a body of water from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pollution.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ come from things such as fertilizer, sewage, and leaking septic tanks. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ usually enter waterways from human and animal waste, laundry detergents, cleaning products and industrial waste.

High levels of nitrate and phosphate nutrients leads to \_\_\_\_\_\_\_\_\_\_ levels of algae plant blooms. As these algae blooms grow, they can potentially \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the surface of water, blocking the \_\_\_\_\_\_\_\_\_ from reaching other plants within the water. As a result of this, plants die and reduce the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the water. In addition to this, decomposing bacteria uses the remaining oxygen to break down the plant matter. The lack of oxygen in the water leads to all other animals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The process of algal blooms growing and depleting oxygen resources is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Salinity**

Salinity is the amount of dissolved \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in water. The solubility (ability to dissolve) of oxygen decreases as the temperature and salinity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (increases or decreases, select one).

**Bio-indicators**

Bio-indicators are living \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ found in or around a body of water. Bio-indictors help inform us on the health of a body water.

A \_\_\_\_\_\_\_\_\_\_\_\_ bio-indicator is an organism that is sensitive to change within the environment. These organisms cannot adapt to large changes in pH, DO, temperature, and pollution. If drastic changes happen within in the body of water, these organisms will start to disappear and \_\_\_\_\_\_\_\_\_\_\_\_.

A \_\_\_\_\_\_\_\_\_\_\_\_ bio-indicator is an organism that can adapt to a large range of changes within the environment. These organisms can easily adapt to different changes in pH, DO, temperature, and pollution.

According the information below which organism is the best bio-indicator? Why

Which is the worst bio-indicator? Why

The bar represents pH’s that the organism can tolerate living in

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| pH | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|  |  |  |  |  |  |  |  |  |
| Mathopod |  |  |  |  |  |  |  |  |
| artis |  |  |  |  |  |  |  |  |
| Ela bug |  |  |  |  |  |  |  |  |
| sci bee |  |  |  |  |  |  |  |  |
| hist |  |  |  |  |  |  |  |  |
| gym fly |  |  |  |  |  |  |  |  |