***No Water Off  A Duck’s Back***

***Background Information:***

Oil may provide the ingredients for thousands of products we use every day but it carries with it some potential problems.  While oil is a product of the Earth, it can be harmful to the environment if not handled properly.  Oil spills on land, rivers, bays and the ocean are mostly caused by accidents involving tankers, barges, pipelines, refineries, and storage facilities.  These accidents can be caused by human mistakes, carelessness or sometimes by natural disasters such as hurricanes or earthquakes.

            A spot of oil no bigger than a quarter may be enough to kill a seabird.  More than 300,000 seabirds are killed by oil spills annually off the coast of Newfoundland/Labrador.  In ocean saltwater, oil floats.  It usually floats when spilled in fresh water (rivers or lakes), too.  Rarely, very heavy oil will sink in fresh water, but generally, it spreads out rapidly across the water’s surface and forms a thin layer called an oil slick.  As the spreading process continues, the oil layer becomes thinner and starts to look like a rainbow.  This fine layer is called sheen.  Sometimes after a rain, the same type of sheen is seen on roads or parking lots.

            Oil spills are often harmful to marine birds, mammals, and sometimes, fish and shellfish.  Birds are protected from the elements by their feathers, which overlap like tiles on a roof.  The separate strands on each feather are bound together by rows of tiny hooks, creating a tight weave.  The bird’s skin stays warm and dry underneath.  However, the oil can clog the feather’s strands and hooks and allow water to penetrate to the bird’s skin.  Oil can also damage the insulating ability of fur-bearing mammals such as sea otters.  Many animals try to clean themselves but are poisoned after swallowing the oil.

            Common ways through which household and community oil products get into the environment include the improper disposal of used motor oil from the family car and commercial cooking oils from restaurants.  Both forms of oil have been known to cause problems with urban wildlife populations.

***Materials:***

\*\*Feathers                                          \*\*Water

\*\*Magnifying glasses                         \*\*Toothbrushes

\*\*Vegetable Oil                                   \*\*Liquid Soap

\*\*Paper Towels

***Procedure:***

1. Examine the feather with you hand lens. Sketch the feather in the data table below and record your observations.
2. Dip the feather in water for about 1 minute. Sketch the feather in the data table and record your observations.
3. Place the feather in oil for about 1 minute. Sketch the feather in the data table and record your observations.
4. Dip the toothbrush in the soap and clean the oil off the feather. Record your observations in the data table.

Data Table:

|  |  |  |  |
| --- | --- | --- | --- |
| Initial drawing of feather (before water) | Drawing of feather after water | Drawing of feather after oil | Drawing of feather after soap |
|  |  |  |  |
| Observations: | Observations: | Observations: | Observations: |
|  |  |  |  |

Analysis Questions

Directions: Answer the following questions in **COMPLETE SENTENCES** on a separate sheet of paper. You may work with group members to brainstorm answers.

1. How did the appearance of the feather change after it was soaked in oil?
2. What effect could these changes have on normal bird activity?
3. Besides massive oil spills, how else can oil end up in the ocean?

4) Describe some possible negative effects of **three** other human-caused pollutants on people, wildlife, and the environment. Be specific!!! (Hint: you may have to look back at notes in past units)