

Introduction & Availability and Distribution of Water on Earth Presentation Script

Slide 1: Welcome to our WASH and DRY program! WASH & DRY stands for Water, Sanitation, and Hygiene and Disaster Recovery program.

Slide 2: What will we learn in this program?

This program will address: the availability and distribution of water on Earth, importance of access to clean freshwater, identifying sources of freshwater in The Bahamas, land uses and water pollution, measuring water quality and contamination, utilizing the water around us. We will explore water availability, specifically in The Bahamas, and understanding the challenges that we face here.

Slide 3: Today's lesson is Where in the world is water? We will be talking about the availability and distribution of water on Earth. Do you think the Earth has more land than water?

Slide 4: The Earth's surface is comprised of water and land. 71% of that surface is water with the remaining 29% being land. However, only 2.5% of that water is suitable for human consumption. Unfortunately, due to how water is distributed on Earth, less than 1% of that freshwater is accessible to us.

Slide 5: So, depicted in this diagram we can see that approximately 97% of all the water on Earth's surface can be found in the oceans with the remaining 3% being freshwater. However, 79% of that freshwater is frozen in ice caps and glaciers in the North and South poles and only 20% being groundwater and 1% being accessible fresh surface water. The surface water is found in lakes, rivers, soil moisture, within living things and water vapor. Do we have any freshwater lakes/ rivers here in The Bahamas? NO! We will talk further about Bahamian sources of freshwater in the upcoming

lessons. So we can summarize that freshwater is a limited resource; especially in comparison to saltwater.

Slide 6: Is all the water on Earth fresh? No! As we discussed earlier there is more saltwater than freshwater. The majority of the water, found on Earth is saltwater from the oceans. What's the difference between saltwater and freshwater? Freshwater is water that is not salty and has little or no taste, color, or odor. Salt water is water that contains dissolved salts and other minerals. Freshwater can be found in rivers, many lakes, underground in aquifers, and in the form of ice as glaciers. To be considered freshwater, the body of water must contain less than 1% salt. The salt lends itself to other differences between freshwater and saltwater. For example, because of the salt dissolved in saltwater, saltwater is also more dense than freshwater. This means the volume of the water is heavier than that of freshwater. What is interesting about this difference is that it means saltwater is also more buoyant than freshwater. This means in bodies of water with a high concentration of salt, you are able to float easier! The salt in saltwater also alters the freezing point. Saltwater has a lower freezing point than freshwater because of the salt in it.

Slide 7: H₂O is the only substance that can be found in nature in all of its various states. A state of matter is the form in which something can be found. The three states of matter are: solid, liquid and Gas. H₂O: as a solid is called ice, as a liquid it is called water and as a gas it is called water vapor.

Slide 8: Earth's water is always in movement, and the natural water cycle, also known as the hydrologic cycle, describes the continuous movement of water on, above, and below the surface of the Earth. Water is always changing states between liquid, vapor, and ice, with these processes happening in the blink of an eye and over millions of years.

The water cycle has no starting point. But, we'll begin in the oceans, since that is where most of Earth's water exists. The sun, which drives the water cycle, heats water in the oceans. Some of it evaporates as vapor into the air. Ice and snow can sublime directly into water vapor. Rising air currents take the vapor up into the

atmosphere, along with water from evapotranspiration, which is water transpired from plants and evaporated from the soil. The vapor rises into the air where cooler temperatures cause it to condense into clouds.

Air currents move clouds around the globe, cloud particles collide, grow, and fall out of the sky as precipitation. Some precipitation falls as snow and can accumulate as ice caps and glaciers, which can store frozen water for thousands of years. Snowpacks in warmer climates often thaw and melt when spring arrives, and the melted water flows overland as snowmelt.

Most precipitation falls back into the oceans or onto land, where, due to gravity, the precipitation flows over the ground as surface runoff. A portion of runoff enters rivers in valleys in the landscape, with streamflow moving water towards the oceans. Runoff, and groundwater seepage, accumulate and are stored as freshwater in lakes. Not all runoff flows into rivers, though. Much of it soaks into the ground as infiltration. Some water infiltrates deep into the ground and replenishes aquifers (saturated subsurface rock), which store huge amounts of freshwater for long periods of time.

Some infiltration stays close to the land surface and can seep back into surface-water bodies (and the ocean) as groundwater discharge, and some groundwater finds openings in the land surface and emerges as freshwater springs. Over time, though, all of this water keeps moving, some to reenter the ocean, where the water cycle "ends". Nope, the cycle never ends it just continues.

Slide 9: We would like to thank all of the organizations that came together to make this Wash and Dry Program possible.