

THE HYDROSPHERE

Adhesion – the tendency of water to stick to other substances

Buoyancy – the ability of a fluid to exert an upward force on an object that is immersed in the fluid

Capillary Action – the process that moves water through a narrow porous space

Cohesion – the attractive force between water molecules

Insoluble – not soluble; will not dissolve

Polarity – uneven distribution of charges across a molecule

Soluble – having the ability to be dissolved in another substance

Specific Heat – the amount of heat needed to raise the temperature of one gram of a substance by one degree Celsius; low specific heat means a substance will heat up quickly

Surface Tension – the force that acts on the particles at the surface of a material

Universal Solvent – the quality of water that makes it able to dissolve more substances than any other solvent can

Condensation – the process of warm air cooling as it rises and releasing moisture in the form of a liquid

Evaporation – the process by which a liquid is changed into a vapor from the surface by gaining energy

Groundwater - water located below Earth's surface in aquifers

Hydrosphere -the portion of the Earth that contains water; all the water on the earth

Impermeable - does not allow water to move through

Infiltration - water that seeps into rocks and between particles of soil; see percolation

Percolation - the downward movement of water through pores and other spaces in soil due to gravity

Permeable - having pores or openings that allow water(or other liquids) to flow through them

Precipitation - the rain, snow, sleet or hail that falls from clouds onto the Earth's land and oceans

Runoff - is precipitation that flows over land into streams and rivers. This water later enters oceans.

Surface Water - water found on the surface of the Earth

Transpiration - water vapor given off by plant photosynthesis via water vapor through the pores in the leaves (stomata)

Aquifer - an underground layer of rock or soil that holds water

Artesian Well - a well in which water rises because of pressure within aquifer from water above

Drought - a long period of scarce rainfall

Ecological Address - For Raleigh -the Neuse River Basin

Glaciers - a large mass of moving ice and snow on land

Hydrology - the study of water

Icecaps - a glacier forming on an extensive area of relatively level land and flowing outward from its center; ex. Greenland or Antarctica

Icebergs - a large floating mass of freshwater ice detached from a glacier

Reservoir - a man made lake that stores water for human use

River Basin - the region of land drained by a large river and its tributaries

Watershed - the land area that supplies water to a river system from smaller areas

Wetland - land area that is covered with a shallow layer of water during some or all of the year

Tides -the change in depth of the ocean due to the moon's and sun's gravitational pull of the water on earth

Ocean Wave - a disturbance in ocean water caused by wind

Tsunami - a seismic sea wave

Surface Current - a circulation or movement of water due to the winds; warm or cool

Deep Current - an underwater circulation or movement of water due to changes in the water's density (salinity; temperature);
cold

Longshore Current - the movement of water(a river of water and sand) parallel to the beach caused by waves striking the beach at an angle

Rip Current or Rip Tide - the quick movement of water offshore due to a break in an offshore sandbar; caused many swimmers to drown each year

Abiotic Factor the non-living factors of the environment that an organism lives in.

Abyssal Plain - mostly flat portion of ocean floor which provides a home to a variety of unique organisms that are adapted to the extreme conditions of this habitat.

Aphotic Zone or Deep Zone - lowest layer of the ocean, where light does not reach.

Benthos - organisms that live on or in the ocean floor.

Bioluminescence - the production of non-thermal light by creatures' converting chemical energy to light energy to lure prey, attract a mate, or assist in keeping like species together. An estimated 75 percent of benthic creatures glow

Consumer - feed on other organisms (plant or animal) because they cannot make their own food, a heterotroph

Continental Shelf - extends from the edge of the continent outward to where the bottom sharply drops off into a steep slope.

Continental Slope - the steep incline between the continental shelf and the abyssal plain.

Ecosystem - a community of different but interdependent species and their non-living environment.

Estuary - body of water where a river meets the ocean

Fauna - animals

Flora - plants

Food Chain - a hierarchy of food relationships from the simplest to most complex

Habitat - the immediate space where an animal or plant lives and has food, water and protection.

Intertidal Zone - the area that lies between the low-tide and the high-tide line.

Mid-Ocean Ridge - a chain of undersea mountains that circles the earth through every ocean at diverging tectonic plate boundaries

Nekton - free-swimming organisms whose movements are independent of the tides, currents, and waves.

Neritic Zone - the first 200 meters (656 feet) of ocean water, which includes the seashore and most of the continental shelf.

Oceanic Zone - extends from 200 meters (656 feet) deep all the way down to the bottom of the ocean.

Ocean trench - the deepest parts of the ocean. The deepest one is the Marianas Trench (located in the South Pacific Ocean - almost 5 miles (8.05 kilometers) deep.

Photic Zone - the top layer of the ocean where sunlight penetrates, above 200 meters

Phytoplankton - the plant and algae component of the plankton; the primary producers of most ocean food webs.

Producer - a living thing that produces its own food within itself, usually by using sunlight energy in photosynthesis; an autotroph

Salinity - the amount of dissolved solids in seawater approximately 35 parts per thousand

Upwelling - the upward movement to the ocean surface of deeper, cold and usually nutrient-rich waters, especially along some shores, due to the offshore movement of surface waters

Echo sounder - a device used to determine depth by sound waves.

Fathom - a unit of measure for ocean depth. One fathom is 6 feet (1.83 meters).

Oceanography - the study and exploration of the world's ocean.

ROV (Remotely Operated Vehicle) - unmanned submersible tethered to a mother ship and operated by pilots using a joy stick.

Scuba - Self-Contained Underwater Breathing Apparatus - device that allows divers to breathe underwater for long periods of time.

SONAR - SOund NAvigation Ranging - used to measure ocean depth by sending sound to bounce off the ocean floor.

Submersible - a small submarine used to explore the ocean depths; equipped with windows, lights, mechanical arms, cameras and other scientific instruments capable of seeing and recording data.

Chemistry Interactions of Matter

Atom - the smallest unit of an element that maintains the chemical properties of that element; basic building block of matter

Boiling Point - temperature at which a liquid changes to a gas at a given pressure

Conservation- to have change in a chemical reaction but no net gain or loss of molecules

Chromatography- a method of separating a mixture made of color into the primary colors which made it

Compound -a substance made of two or more different atoms

Decomposition- a type of reaction in which the complex reactant breaks down into simpler products

Density -the measure of mass of a substance per unit volume

Ductility - the ability to be formed or pulled into a wire or tube

Electron- the tiny negatively charged particle found in the cloud of the atom

Element - a substance that cannot be separated or broken down into simpler substances by chemical means; all the same of type atoms

Endothermic - during a chemical reaction energy is absorbed by the molecules of the products.

Exothermic –during a chemical reaction energy is released

Heat - the energy transferred between objects that are at different temperatures

Ion- an atom or group of atoms that has a positive or negative electric charge from losing or gaining one or more electrons; occurs during bonding

Indicator- an organic compound used to indicate the presence of a chemical. It changes color to indicate the presence of ____ Ex. Hydrion paper tells if acid or base, iodine if a starch is present, phenol red if CO₂ is present.

Mass - amount of matter contained in a substance

Matter - anything that has mass and volume

Melting Point - the temperature and pressure at which a solid becomes a liquid

Malleability - able to be bended, shaped, or flattened or hammered flat

Motion - an object's change in position relative to a reference point

Neutron- the neutral particle of an atom-found in the nucleus.

Particles - a very small piece or part; a tiny portion or speck.

Phase - one of the four states or conditions in which a substance can exist: solid, liquid, gas, or plasma.

Physical Changes - a change which occurs without changing the identity of the substance.

Proton- the positive particle of an atom found in the nucleus. Makes the element unique.

Pure Substance - a sample of matter, either a single element or a single compound, that has definite chemical and physical properties

Saturation - a solution that cannot dissolve any more solute under the given conditions

Solubility - the solubility to dissolve in another substance

Solute - in a solution, the substance that dissolves in the solvent

Solvent - in a solution, the substance in which the solute dissolves

Solution- a homogenous mixture in which a solute dissolves in a solvent- it looks the same throughout. ex. saltwater, brass, air, . .

Synthesis- a chemical reaction in which simple reactants combine to form a more complex product(compound)

Volume - amount of space an object occupies

Mass - a measure of the amount of matter in an object

Crystal Pattern - a solid in which all the atoms are arranged in a regular, repeating pattern.

Evaporation - process in which liquid water changes to water vapor with the addition of energy.

Filtering - a porous material through which a substance is passed in order to separate the fluid from suspended particulate matter.

Heterogeneous - a mixture that is not mixed evenly and each component retains its own properties

Homogenous - solid, liquid or gas that contains two or more substances blended evenly throughout.

Mixtures - the physical combination of 2 or more substances; can be separated by physical means.

Molecule - the smallest physical unit of a compound that can exist independently, consisting of one or more atoms held together by chemical forces; formed by bonding

Sifting - to separate and retain the coarse parts to remove lumps and large particles

Conductivity - property of metal and alloys that allow heat or electricity charges to pass through the material easily.

Metals - an element below and to the left of the stair-step line of metalloids; about 80% of the known elements are metals; metals are shiny, good conductors, low specific heat, high melting points, malleable, and ductile.

Model - a standard or example used for comparison.

Periodic Table - an arrangement of elements in order of increasing atomic numbers that demonstrates the periodic patterns that occur among the elements.

Physical Properties - a characteristic of a substance that can be observed without changing the identity of the substance

Reactivity - the ability of an atom or molecule to undergo a chemical reaction with another atom, molecule or compound.

Chemical bond -the "glue" that attracts and keeps atoms held together due to sharing of each atom's electrons

Chemical change - the process in which one or more substances are changed into one or more new substances

Chemical property - property that can be observed only when a substance is changed into a new substance

Chemical reaction - the process in which one or more substances are changed into one or more new substances

Precipitate - the solid that is formed as a result of a precipitation reaction

Closed System - the reactants and products in the reaction that are contained to reduce error

Law of Conservation of Mass - states that the total amount of mass and energy in the universe is conserved (does not change)

Products - materials present at the end of a reaction

Reactants - the starting materials in a reaction

Cell Processes, Digestion and Disease

Cells -Basic unit of life; smallest structural unit of an organism that is capable of functioning independently

Eukaryotic Cells -Cells that have a distinct, membrane-bound nucleus

Fuel -Something that gives nourishment; food

Molecule -The smallest physical unit of an element or compound, consisting of one or more like atoms in an element and two or more different atoms in a compound

Organelle -A specialized subunit (cell organ) within a cell that has a specific function and is usually separately enclosed with its own lipid layer

Prokaryotic Cells -Cells without a nucleus

Respiration -The process in which nutrients are converted into useful energy in a cell

Thermal Energy -The movement of atoms and molecules; portion of energy that is responsible for a system's temperature

Alcohol -An organic compound that is a volatile, flammable, colorless liquid that can be consumed by humans and in other forms used in thermometers, as a solvent, and as a fuel.

Dietary Habits -The decisions an individual makes when choosing what foods to eat

Digestion -Process by which food is broken up physically, by action of teeth, and chemically, by action of enzymes, and converted into a substance suitable for absorption into the body.

Respiration -The process in which nutrients are converted into useful energy in a cell; process where organisms take in oxygen and release carbon dioxide

Tobacco Product -processed from the leaves of a plant, it can be consumed, used as a drug, pesticide, and in some medicines.

Toxic Substance-Any chemical or mixture that may be harmful to the environment and to human health if inhaled, swallowed, or absorbed through the skin

Antibiotics- drug that kills bacteria and cures bacterial infections and diseases

Bacteria -domain of prokaryotes, some of which cause human diseases. Lacks a nucleus.

Disease- An abnormal functioning of the body or part of body, sometimes caused by infections.

Fungi -kingdom in the domain *Eukaryotes* that includes molds, mushrooms, and yeasts

Host Cell -Cell of species that is harmed in a parasitic relationship

Microbiology -The study of organisms which are too small to see without a microscope.

Parasite -Organism that forms symbiotic relationship in which one species benefits while the other species is harmed

Prevention -Methods of reducing the likelihood of contracting a disease. Methods of prevention depend on the organism that causes the disease.

Treatment -The response to a disease provided through medical professionals

Unicellular -An organism composed of one cell only

Virus -A particle that cannot independently reproduce yet contains genetic information and can evolve. Viruses may cause disease in the host cell/organism

Antimicrobial -Describing a substance that kills microbes in an effort to prevent the spread of a disease

Epidemic -Occurs when the incidence rate of a disease is higher than expected in a certain area

Microbes -Microscopic organisms

Microbiology -The study of microscopic organisms

Pandemic -An epidemic that spreads across a large area, like a continent

Pathogen -Disease causing organism; "germ"

Vector - Mechanisms or organisms (excluding humans) that spread diseases without showing symptoms

Biotechnology -The use of living systems and organisms to develop or make useful products. For thousands of years, humankind has used biotechnology in agriculture, food production and medicine

Populations Unit

Purpose: To understand the interaction among organisms in an ecosystem; to connect the flow of energy within living things to the flow of matter in our environment.

Abiotic- are those non-living physical and chemical factors which affect the ability of organisms to survive and reproduce ex. Sunlight, temperature, soil or rocks, availability of water, pollutants

Biotic- all the living factors that impact an organism ex. Disease, parasitism, predation

Biome- a division based on climate, plants and animals; an environment that has a characteristic type of climax community ex. Freshwater biome—all of the lake, pond, stream, & river communities on Earth

Carrying Capacity- is the maximum number of organisms the resources of an ecosystem can support. The carrying capacity of the environment is limited by the available abiotic and biotic resources (**limiting factors**), as well as the ability of ecosystems to recycle the residue of dead organisms through the activities of bacteria and fungi

Climax community-a stable community that is in final stage of succession

Commensalism- a form of symbiosis in which one organism benefits and the other is not harmed

Community- the living part of an ecosystem composed of many species

Competition- the type of interaction among organisms; the struggle to obtain needed resources of food, water, shelter, . . .

Consumer- an organism that CANNOT make its own food

Decomposer-an organism that breaks down the bodies of dead organisms into simpler substances ex. Bacteria & fungi

Dispersal- the movement of living things from one place to another

Ecosystem-a unit consisting of all the living and nonliving things in a given area that interact with one another

Endangered- in danger of becoming extinct

Environment- all the living and nonliving things with which an organism may interact

Food Web- a diagram that show many overlapping food chains

Habitat- the place in which an organism lives and obtains the resources it needs to survive

Host- an organism that provides a home to another organism

Earth History

Absolute (radioactive) Dating - measurement of the known rates of decay of radioactive materials that an object contains in order to determine the age of the object

Index Fossil - fossil known to have lived in a particular geologic age that can be used to determine the date of the rock layer in which it was found

Law of Superposition - states that in undisturbed rock layers that newer layer will be deposited over older layers

Law of Crosscutting Relationships = states rock layers that cut across other rock layers are younger than those they cut

Relative Dating - determining the age or order of things from the past or past events without knowing or calculating the actual age

Sedimentary rock - rock formed by deposition of sand, clay and other pieces of rock that are compacted together under pressure

Uranium - radioactive heavy metal that is an abundant source of nuclear energy that has 14 known isotopes used in radioactive dating

Fault - fracture along which blocks of the Earth's crust that can be caused by the shifting or dislodging of the Earth's crust. Types include normal, strike slip, or reverse

Fossils - remains or traces of animals, plants and other organisms from the past; usually at least 10000 years old

Geologic Time Scale = system of chronological measurement that relate to the history of events in Earth's past, consisting of fossils and major events

Ice Core - a core sample of ice removed from a sheet of ice. Properties of the ice and the crystallized components in the ice are used to reconstruct climatic record

Igneous rocks - type of rock formed under or above ground when magma or lava cools

Metamorphic rock - rock created from the transformation of other types of rock through heat and pressure

Adaptation - an inherited mutation in an organism's DNA that provided an advantage for survival for a species.

Biologic Change - change in an organism's genetic makeup, DNA, that occurs through natural selection of advantageous traits for survival over an extended period of time.

Biological classification- the organization and identification of an organism from general to specific by identifying the organisms' Domain, Kingdom, Phylum, Class, Order, Genus, and Species

Comparative anatomy -the analysis of body structures (body systems , skeletal systems) between two or more different species that provides insight into the genetic/biologic similarities and differences across species

Continental Plate - the crust that makes up the continents

Embryological similarities - likenesses in the embryonic stage of development between different species; evidence for evolution.

Extinction -the complete elimination (dying out) of a species due to the species inability to survive and therefore adapt to its environment.

Geographic Change - the change in a geographic area caused by earthquakes, volcanoes, mountains forming, and other natural phenomena.

Geologic Time Scale - timeline that illustrates Earth's past. This timeline includes the divisors of the 4.6 billion years of Earth's geologic and biologic existence, and divides time into eons, eras, periods, and epochs. The divisions of the time scale are based on major events that have caused major geologic or biologic change throughout history, such as mass extinctions.

Geology - the study of the rocks, processes, and history of Earth

Homologous Body Structures - Similar body structures and systems between different species; evidence for biologic evolution

Oceanic Plate - the part of Earth's crust that underlies the oceans

Plate Tectonics -the Earth's lithosphere is broken into major and minor plates of continental or oceanic crust that are in constant motion due to their position above the convection currents of the asthenosphere. The movement of the tectonic plates is responsible for geologic and subsequent biologic change over time.

Theory of Evolution- the theory that organisms/species change over time, caused by the natural selection of advantageous traits for survival in a particular environment. This theory also proposes that all organisms evolved from a common ancestor.

Adaptation - a beneficial trait that helps an organism survive in its environment.

Genetic Variation - the characteristics that make members of the same species different from one another.

Variations - are the different forms of a trait.

Genotype - the genetic makeup of a cell or organism; defined by certain alleles for a particular trait.

Offspring - a child or animal in relation to its parent or parents.

Phenotype - the physical appearance that is a result of the genotype.

Natural Selection - explanation of how organisms in a population develop traits that allow them to survive and reproduce