

Warm up:

Study Notes/Questions

Natural Phenomena and Ecosystems

Natural events such as hurricanes and volcanic eruptions are part of the dynamic quality of Earth and its ecosystems.

Weather-related events, including drought, fire, flooding and infestations can harm or enhance ecosystems.

E.g. Forest fires destroys food supplies, damages habitats and kills organisms but it may also kill pests and allow new plants to germinate

E.g. Floods may damage vegetation and drown organisms, but they rejuvenate soil along floodplains and replenish groundwater

Geological events such as volcanic eruptions, earthquakes and landslides cause changes to ecosystems.

E.g. Volcanic eruptions cover vegetation with mud, ash in the atmosphere affects weather, ash and weathered lava produces new soil, rivers are diverted

Healthy ecosystems will respond by adapting over time

E.g. New lakes will respond after new habitats.

Summary: (two to three sentences summarizing this section)

Self-Reflection Questions:

1. Describe one thing that you knew about this topic before today.

2. Describe one thing you learned about this topic today.

Warm up:

Study Notes/Questions

Pollutants are substances introduced into air, water, soil, or food in concentrations that threaten the health or survival of organisms

May be from natural sources (such as volcanic eruptions) or as a result of human technology (smoke from factories)

Human populations are producing more pollution than can be broken down in the biosphere

Pollutants can be grouped according to the part of the environment they affect (e.g. air, water, or land).

Air Pollution

Natural pollutants include pollen, volcanic ash, mould spores

Human activities produce air pollutants such as nitrogen monoxide from burning fossil fuels and volatile organic compounds (VOC's) like gasoline and propane

Acid Precipitation (acid rain) is caused by sulfur dioxide or nitrogen monoxide react with water to form acid molecules that return to Earth as rain, hail or even fog

Acid rain harms aquatic ecosystems the most, but also damages terrestrial plants and soils

Water Pollution

Besides acid precipitation, other pollutants can be carried into water systems

Solid organic waste from sewage or food waste promote growth of aquatic plants, but then these plants die and decompose, the amount of dissolved oxygen in the water is reduced

Study Notes/Questions

Heavy Metals from mining and industrial wastes are toxic and become concentrated in the food chain

Thermal energy from industry and hydro generating stations reduces the solubility of oxygen

Land Pollution

Much of the materials produced by humans ends up in landfills (household wastes, commercial and industrial wastes)

Chemicals from medical procedures and nuclear power plants leave radioactive waste.

Hazardous wastes also come from pesticides, fire retardants and mining

Must make conscious effort to Reduce, Reuse, Recycle

Summary: (two to three sentences summarizing this section)

Self-Reflection Questions:

1. Describe one thing that you knew about this topic before today.

2. Describe one thing you learned about this topic today.

Warm up:

Study Notes/Questions

Bioaccumulation is the build-up of chemical substances within the tissues of organisms over time. (a fish that eats contaminated plankton stores the pollutants that it can't break down)

Biomagnification of pollutants can occur in organisms at the top of food chains or food webs.

- becomes more concentrated at each trophic level

Pesticides

Some pesticides bioaccumulate e.g. DDT dissolves in fats, but not water so it remains in the fatty tissues in the body rather than being removed in sweat or urine

Other pesticides do not bioaccumulate, but are immediately toxic e.g. diazinon (now banned)

Endocrine Disrupting Compounds (EDC's)

The endocrine system is the hormone system so EDC's are substances that disrupt the hormones

Other substances mimic natural hormones

EDC's can affect development of organisms or reproduction

EDC's include DDT and PCB's

Heavy Metals

A group of metals found in the middle of the periodic table

having very high densities. (eg. copper, lead, mercury)

Metallic Mercury from various sources is converted by bacteria into an

organic form called methylmercury which is taken up by plankton and

moves through the food chain, binding to proteins

Large fish (e.g. tuna, swordfish) and whales contain high levels of mercury

Lead from old paint and plumbing fixtures is also a hazard

Summary: (two to three sentences summarizing this section)

Self-Reflection Questions:

1. Describe one thing that you knew about this topic before today.

2. Describe one thing you learned about this topic today.

Activity 5.3

1. Distinguish between bioaccumulation and biomagnification.

Warm up:

Study Notes/Questions

Agriculture

Clearing natural vegetation, soil degradation (using up nutrients & soil erosion),
use of pesticides and fertilizers, re-rout~~ing~~ing water flow

Forestry

1% of BC's forests logged each year, forests will be gone before
next generation reaches climax stage

Recreation and tourism brings people to wilderness areas - potential for mis-use
Deforestation - as cities expand, forests are cut down without replacing trees

Fisheries

Overfishing can eliminate species from some areas

Other species may be harmed by fishing methods

Farming of introduced species causes competition with native species

Potential for disease and pests spreading to native species

TEKW

Traditional Ecological Knowledge & Wisdom promotes sustainable use of
the environment.

Using traditional hunting methods and knowledge allows organisms to
flourish for generations