GLOBAL WARMING

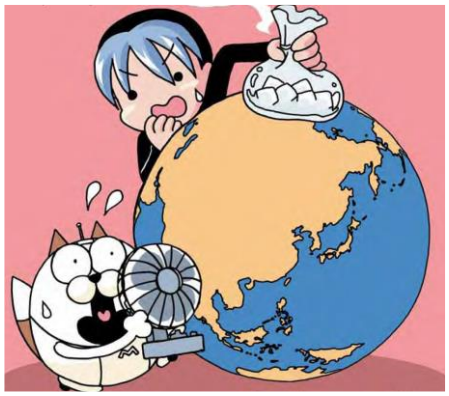
Global warming refers to the observed and projected increase in the earth's average temperature due to natural or man-made climate change. The earth's average temperature rose about 0.7^0 Celsius (1.3^0 Fahrenheit) in the 20^{th} century.

What is Global Warming?

- Global warming is the filling up of the earth's atmosphere with pollution.
- Global warming is the increase in the earths overall temperature.
- Global warming is the hole in the earth's atmosphere letting more heat in from the sun.

The warming of Earth's atmosphere, probably due to increased emissions of carbon dioxide is known as global warming.

Global warming, the most serious environmental problem is inextricably linked to the development and economic growth of any nation.



According to the latest figures available the United States undergoes the largest impact of global warming as it emits higher amount of carbon dioxide (Co_2): The United States produces 25% of all Co_2 which is more than China (17%) and India (4.1%) together (21.1%), the highly populated countries. Whole of Europe emits 17.2%, Russia 6%, Japan 4.7% and Australia 1.4%.

Causes of Global Warming

- Global warming is the consequence of increased greenhouse effect.

Effects of Global Warming

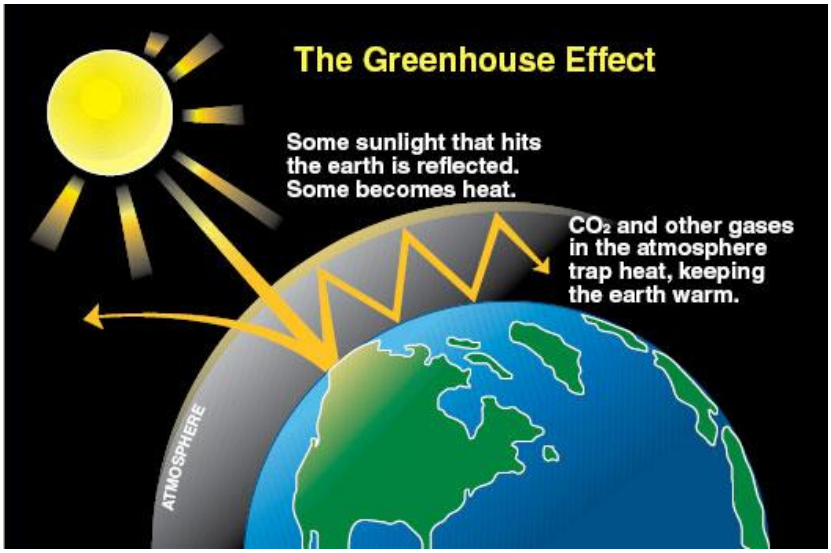
- Will cause sea levels to rise. Global sea levels could rise by almost a metre by 2100.
- Expansion of subtropical deserts.

Greenhouse Effect

What is Greenhouse Effect?

The "greenhouse effect" is the warming that happens when certain gases in Earth's atmosphere trap heat. These gases let in light, but keep heat from escaping, like glass walls.

Greenhouse Gases



- The major greenhouse gases are "water vapour", which causes about 36-70 per cent of the greenhouse effect.
- Carbon Dioxide (CO_2), which causes 9-26 per cent. CO_2 is created by burning fuels like oil, natural gas, diesel, organic-diesel, petrol, organic petrol and ethanol. CO_s emissions are increasing by almost 3% each year.
- Methane (CH_4), which causes 4-9 per cent.
- Ozone (O_3), which causes 3-7 per cent.

Human activity since the Industrial Revolution has increased the amount of greenhouse gases in the atmosphere. The concentrations of CO_2 and Methane, have increased by 36% and 148% respectively since 1750. Fossil fuel burning has produced about three-quarters of the increase in CO_2 from human activity over the past 20 years. The rest of this increase is caused mostly by changes in land-use, particularly **deforestation**.

Consequences of Global Warming

Some of the consequences of global warming are listed below:

- Warmer temperatures
- More drought and wildfires
- More intense rainstorms
- More deadly heat waves
- Increased spread of disease
- More powerful and dangerous hurricanes (Rising ocean temperatures will lead to more hurricanes, typhoons, tornadoes, etc.)
- Melting glaciers , increase in sea-level and tsunamis (If all the polar and glacial ice melts, the water level will increase by 230 feet worldwide)
- Ecosystem changes and species die-off (Loss of biodiversity, animal extinction and death of ocean life)
- Desertification
- More outbreaks of deadly diseases
- Economic consequences
- Increased volcanic activity
- Migration, conflict and wars (People relocating from coastal areas will have to move more inland)
- Diminished food and water supplies (Droughts affect the water supply and prevent farmers from growing crops)

PLANT MORE TREES

Studies conducted by Lawrence Berkeley National Laboratory found, summer daytime air temperatures to be 3^0 to 6^0 F cooler in tree-shaded neighbourhood than in tree-less areas.

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Ozone Layer

Ozone is a special form of Oxygen. The ozone (O_3) is a layer in Earth's atmosphere which contains relatively high concentrations of ozone (O_3). This layer absorbs 97-99% of the Sun's high frequency "ultraviolet" light, which is potentially damaging to the life forms on Earth. It is mainly located in the lower portion of the stratosphere from approximately 20 to 30 kilometres above Earth.

What is "ozone hole"?

There is a common misconception that the "ozone hole" is really a hole in the ozone layer. It is a "hole" which is a depression, not in the sense of "a home in the windshield."

OZONE DEPLETION

Sources of Ozone Depleting Substances (ODS)

- Ozone layer is being depleted by free radical catalysts such as
- Nitric oxide (NO): Is of natural origin.
- Nitrous oxide (N_2O):
- Hydroxyl (OH): Is of natural origin.
- Atomic chlorine (CL):
- Atomic bromine (Br):
- Chlorofluorocarbons (CFCs): The primary cause of ozone depletion is the presence of CFCs and related halocarbons.

Consequences of Ozone Layer Depletion

A thinning ozone layer leads to a number of serious health risks for humans with children being particularly vulnerable. There are also serious impacts for biodiversity.

- Ozone layer depletion is expected to increase surface UV levels, which could lead to damage, including increase in skin cancer, cataract of the eye, and sun burn.

- An increase of UV radiation would be expected to affect crops. This would reduce agricultural productivity.
- Increased UV-B rays reduce levels of plankton in the oceans and subsequently diminish fish stocks.
- Another negative effect is the reduced lifespan of certain materials.
- Suppression of immune systems in organisms.

Consequences of UV Radiation

The ozone layer acts like a shield that protects against the harmful effects of UV radiation on human beings.

- **Suntan**: The skin produces the dark-coloured pigment "melanin" a s shield against damage from UV radiation. Any colour change from our natural skin colour is a sign of damage.
- **Sunburn**: High doses of UV radiation kill most of the cells in the upper skin layer, and cells that are not killed are damaged. The effects of a severe sunburn can last for several days, and may include blistering and peeling of the skin.
- **Skin ageing**: Chronic overexposure to the sun can change the texture and weaken the elasticity of the skin. Sun-induced skin damage causes premature wrinkling, sage and bags and easy bruising. Up to 90% of the visible changes commonly attributed to ageing may be caused by sun exposure.
- **Skin cancer**: Frequent UV radiation can cause skin cancer and accelerate cancer progression. The skin cancer incidence has been increasing in recent decades.
- **Eye inflammation and cataract**: Extreme UV radiation conditions can lead to inflammations of the cornea and the conjunctiva.
- **A weakened immune system**: UV radiation may reduce the effectiveness of the immune system. Consequently, too much sun exposure could potentially enhance the risk of infection.

Children are particularly at risk:

- Children's skin is sensitive to UV radiation damage.
- Sunburn in childhood increases the risk of melanoma and other skin cancers later in life.
- Children are more exposed to the sun as they spend a lot of time outdoors.

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Protection from Sun

- **Limit time in the midday sun**: The sun's UV rays are the strongest between 10 a.m. and 4. p.m. To the extent possible, limit exposure to the sun during these hours.

- **Use shade wisely**: Seek shade when UV rays are most intense, but keep in mind that shade structures such as trees, umbrellas or canopies do not offer complete sun protection.
- **Wear protective clothing**: A hat with a wide brim offers good sun protection for eyes, ears, face and the back of the neck. Sunglasses that provide 99% to 100% UVA and UVB protection will greatly reduce eye damage from sun exposure. Tightly-woven, loose-fitting clothes will provide additional protection from the sun.
- **Use sunscreen**: Apply a broad spectrum sunscreen of at least SPF15 (Sun Protection Factor) liberally and re-apply every two hours.

SPF

SPF stands for "sun protection factor". This is a laboratory measure, which grades the ability of a sunscreen to block UVB radiation. It is not a number that can be directly translated into an estimate of protection or safe behavior. Sunscreen should never be used to extend sun exposure.

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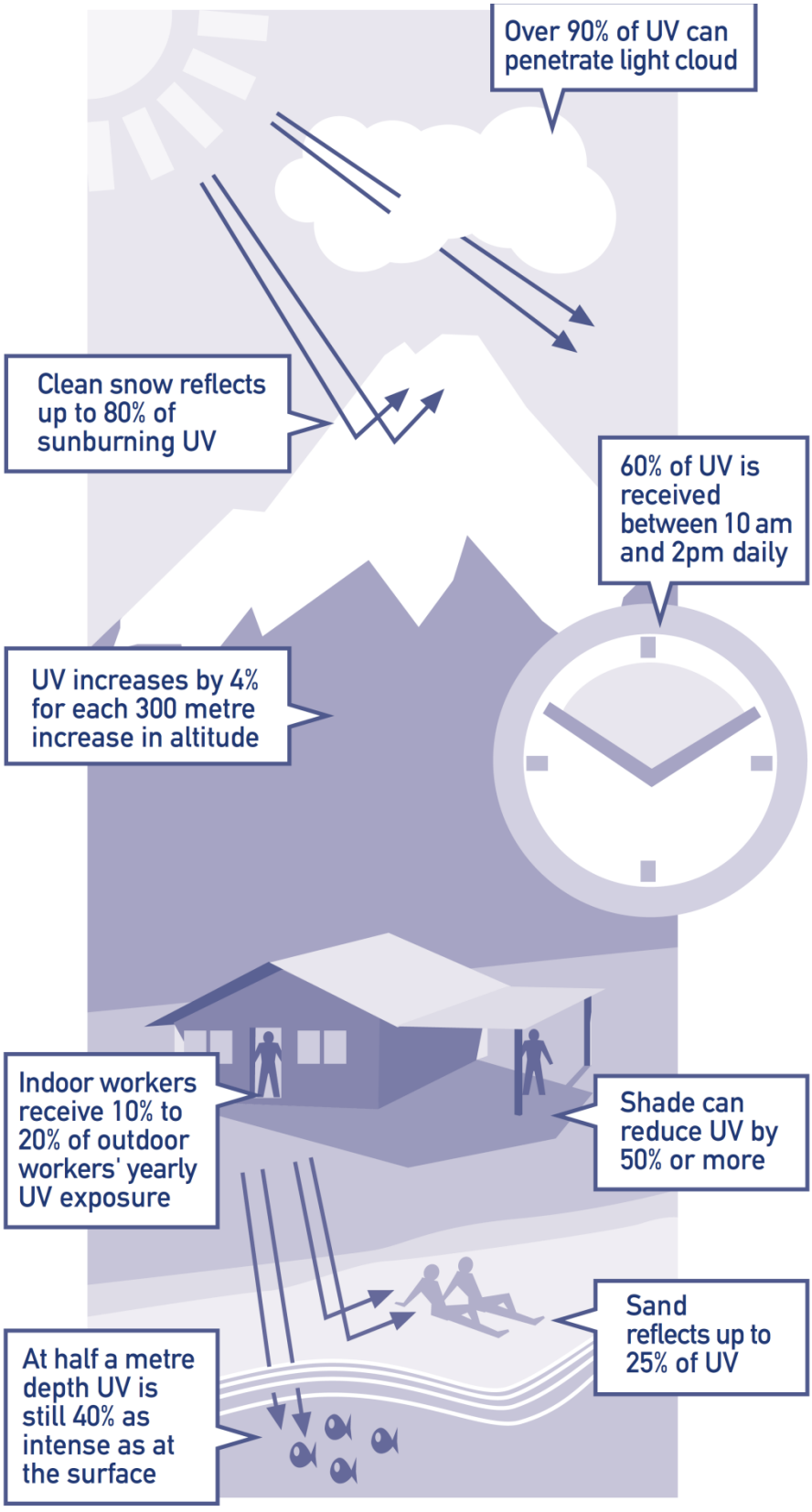
World Ozone Day

Ozone Day is observed every year on 16th of September. In 1994, the United Nations General Assembly voted to designate September 16 as "Wold Ozone Day".


Over 90% of UV can penetrate light cloud
Clean snow reflects up to 80% of sunburning UV
60% of UV is received between 10 am and 2pm daily
UV increases by 4% for each 300 metre increase in altitude
Indoor workers receive 10% to 20% of outdoor workers' yearly UV exposure
Shade can reduce UV by 50% or more
Sand reflects up to 25% of UV
At half a metre depth UV is still 40% as intense as at the surface

YOU CAN HELP!

- Drive less; use bi-cycles; walk or carpool whenever possible. (Transportation sector is the second largest contributor of carbon dioxide emissions into the atmosphere.
- Check your vehicle emission level periodically.
- Consider investing in hybrid or electric vehicle to reduce carbon dioxide emissions.
- Do not use deodorants which contain Chlorofluorocarbon.
- Do not burn garbage and wastes.

FUEL

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