Unit 2 Environmental Pollution

- Types of pollution (air, water soil,noice,etc)
- Source and impact of pollution
- Mitigation and control measures

Types of Pollution

Air Pollution

Soil Pollution

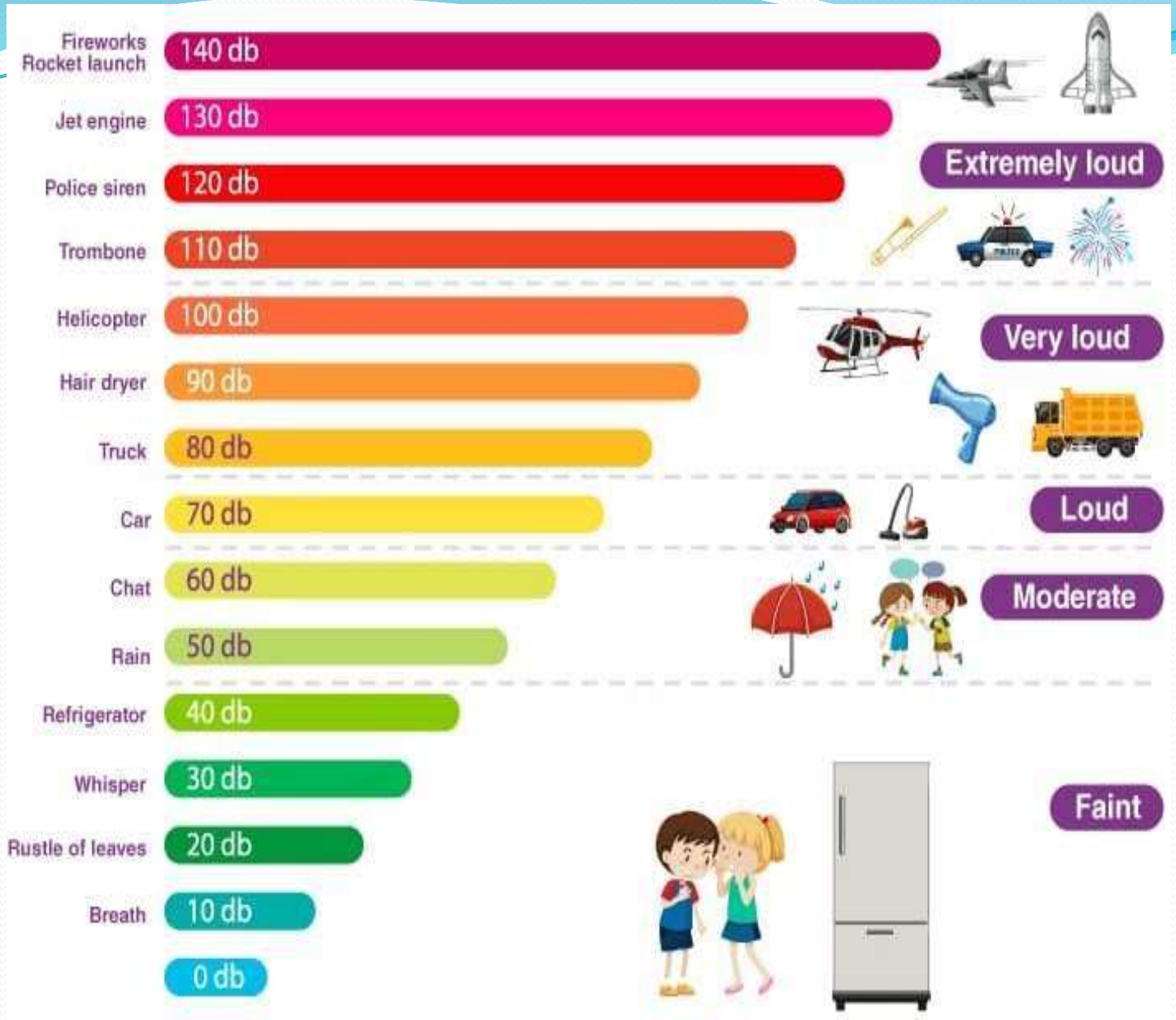
Noise Pollution

Water Pollution

- **Air pollution.**
- •Air pollution refers to any physical, chemical or biological change in the air. It is the contamination of air by harmful gases, dust and smoke which affects plants, animals and humans drastically.
- •There is a certain percentage of gases present in the atmosphere. An increase or decrease in the composition of these gases is harmful to survival. This imbalance in the gaseous composition has resulted in an increase in earth's temperature, which is known as global warming.

- **Water pollution.**
- Water pollution can be defined as the contamination of water bodies. Water pollutions caused when water bodies such as rivers, lakes, oceans, groundwater and aquifers get contaminated with industrial and agricultural effluents.
- When water gets polluted, it adversely affects all lifeforms that directly or indirectly depend on this source. The effects of water contamination can be felt for years to come

- **Noice pollution**
- The word noise is derived from the Latin word ‘Nausea’, which means sickness in which one feels the need to vomit. Noise is the unpleasant and undesirable sound which leads to discomfort in human beings.**The intensity of sound is measured in decibels (dB).** The faintest sound that the human ear can hear is 1 Db. Due to increasing noise around the civilizations, noise pollution has become a matter of concern. Some of its major causes are vehicles, aircraft, industrial machines, loudspeakers, crackers, etc. When used at high volume, some other appliances also contribute to noise pollution, like television, transistor, radio, etc.


Fireworks
Rocket launch
140 db
Jet engine
130 db
Police siren
120 db
Trombone
110 db
Extremely loud
Helicopter
100 db
Hair dryer
90 db
Truck
80 db
Very loud
Car
70 db
Chat
60 db
Rain
50 db
Loud
Moderate
Refrigerator
40 db
Whisper
30 db
Rustle of leaves
20 db
Breath
10 db
0 db
Faint

- **Soil pollution**
- Soil pollutionis defined as the presence of toxic chemicals (pollutants or contaminants) in soil, in high enough concentrations to pose a risk to human health and/or the ecosystem. In the case of contaminants which occur naturally in soil, even when their levels are not high enough to pose a risk, soil pollution is still said to occur if the levels of the contaminants in soil exceed the levels that should naturally be present.

Source and impact of pollution

- Sources of Pollution

1. **Industrial Activities**

-**Factories and Power Plants:** Release pollutants like particulate matter, sulfur dioxide, and nitrogen oxides into the air.

- **Chemical Plants:** Release toxic chemicals like pesticides and heavy metals into the air and water.

- **Mining Activities:** Release heavy metals and other pollutants into the air and water.

2. **Vehicular Emissions**

- Cars and Trucks: Release pollutants like carbon monoxide, particulate matter, and volatile organic compounds into the air.

- Airplanes: Release pollutants like carbon dioxide, nitrogen oxides, and particulate matter into the air.

3. **Agricultural Activities**

- **Fertilizers and Pesticides:** Release pollutants like nitrates, phosphates, and toxic chemicals into the soil and water.

- **Manure:** Releases pollutants like ammonia and pathogens into the air and water.

4. **Domestic Waste**

- **Improper Disposal:** Releases pollutants like plastics, glass, and metals into the environment.

- **Open Burning:** Releases pollutants like particulate matter, carbon monoxide, and volatile organic compounds into the air.

5. **Natural Sources**

- **Volcanic Eruptions:** Release pollutants like particulate matter, sulfur dioxide, and ash into the air.

- **Wildfires:** Release pollutants like particulate matter, carbon monoxide, and volatile organic compounds into the air.

Impacts of Pollution

1. **Human Health**

   - **Respiratory Problems:** Air pollution can cause respiratory problems like asthma, bronchitis, and lung cancer.

   - **Cancer:** Exposure to pollutants like benzene, asbestos, and radon can increase the risk of cancer.

   - **Neurological Problems:** Exposure to pollutants like lead, mercury, and pesticides can cause neurological problems like ADHD, autism, and Parkinson's disease.

2. **Environmental Damage**

   - **Climate Change:** Pollution can contribute to climate change, which can lead to rising sea levels, more frequent natural disasters, and changes in weather patterns.

   - **Water Pollution:** Pollution can contaminate water sources, harming aquatic life and human health.

   - **Soil Pollution:** Pollution can contaminate soil, affecting plant growth and human health.

3. **Economic Impacts**

- **Loss of Productivity:** Pollution can lead to loss of productivity, as people may need to take time off work due to health problems.
- **Damage to Infrastructure:** Pollution can damage infrastructure, like buildings and bridges, which can lead to costly repairs.
- **Economic Losses:** Pollution can lead to economic losses, as businesses may need to shut down or relocate due to environmental concerns.

4. **Social Impacts**

- **Social Injustice:** Pollution can disproportionately affect vulnerable populations, like low-income communities and indigenous peoples.
- **Community Disruption:** Pollution can disrupt communities, as people may need to relocate or take action to protect their health and environment.
- **Mental Health:** Pollution can affect mental health, as people may experience stress, anxiety, and trauma due to environmental concerns.

MITIGATION AND CONTROL MEASURES

- **Air Pollution Control Measures**

1. **Use of scrubbers:** Install scrubbers in factories and power plants to remove pollutants from exhaust gases.
2. **Electrostatic precipitators**: Use electrostatic precipitators to remove particulate matter from exhaust gases.
3. **Catalytic converters:** Install catalytic converters in vehicles to reduce emissions of nitrogen oxides, carbon monoxide, and volatile organic compounds.
4. **Alternative fuels:** Promote the use of alternative fuels like liquefied petroleum gas (LPG), compressed natural gas (CNG), and biofuels.

- **Water Pollution Control Measures**

1. **Wastewater treatment:** Establish wastewater treatment plants to remove pollutants from industrial and domestic wastewater.
2. **Use of coagulants:** Use coagulants to remove suspended solids and pollutants from wastewater.
3. **Bioremediation:** Use bioremediation techniques to remove pollutants from contaminated soil and groundwater.
4. **Rainwater harvesting:** Promote rainwater harvesting to reduce stormwater runoff and prevent pollution.

- Soil Pollution Control Measures

1. Use of organic fertilizers: Promote the use of organic fertilizers to reduce the use of chemical fertilizers.
2. Crop rotation: Practice crop rotation to reduce soil erosion and prevent pollution.
3. Soil conservation: Implement soil conservation measures like contour farming and terracing to reduce soil erosion.
4. Bioremediation: Use bioremediation techniques to remove pollutants from contaminated soil.

- **Noise Pollution Control Measures**

1. **Use of noise barriers:** Install noise barriers like sound walls and acoustic screens to reduce noise pollution.
2. **Noise reduction technologies:** Use noise reduction technologies like soundproofing and noise cancellation to reduce noise pollution.
3. **Regulation of noise levels:** Establish regulations to limit noise levels from industrial and commercial sources.
4. **Public education:** Educate the public about the importance of noise pollution control and the measures they can take to reduce noise pollution.

- **Waste Management**

1. **Reduce, Reuse, Recycle:** Implement the 3Rs (reduce, reuse, recycle) to minimize waste generation.
2. **Waste segregation:** Segregate waste into different categories like organic, inorganic, and hazardous waste.
3. **Composting:** Compost organic waste to produce nutrient-rich soil.
4. **Proper disposal:** Ensure proper disposal of hazardous waste through authorized facilities.

- **Renewable Energy**

1. **Solar energy:** Promote the use of solar energy to reduce dependence on fossil fuels.
2. **Wind energy:** Promote the use of wind energy to reduce dependence on fossil fuels.
3. **Hydro energy:** Promote the use of hydro energy to reduce dependence on fossil fuels.
4. **Geothermal energy:** Promote the use of geothermal energy to reduce dependence on fossil fuels.

Thank you