

SOIL POLLUTION

Environmental Science

CONTENTS

- What is Soil..?
- What is soil pollution ?
- How is it caused ?
- Types of soil pollution .
- What are the effects of soil pollution ?
- How can we control soil pollution ?

What is Soil..??

- Soil is the thin layer of organic and inorganic materials that covers the Earth's rocky surface.
- Soil is composed of particles of broken rock that have been altered by chemical and mechanical processes that include weathering and erosion.التجوية والتآكل

SOIL POLLUTION

- It is defined as the build-up in soils of persistent toxic compounds, chemicals, salts, radioactive materials, or disease-causing agents, which have adverse effects on plant growth and animal health.
- Soil pollution is also caused by means other than the direct addition of xenobiotic (man-made) chemicals such as agricultural runoff waters, industrial waste materials, acidic precipitates, and radioactive fallout.

Causes of Soil Pollution

- Seepage from a landfill رژان له زبلدانیکموه
- Discharge of industrial waste into the soil
- Percolation of contaminated water into the soil رژانی
ئاوی پیس بو ناو خاک
- Rupture of underground storage tanks پچرانی تانکی
هملگرتتی ژیر زهوی
- Excess application of pesticides, herbicides or fertilizer
- Solid waste seepage تسرب النفايات الصلبة
- Deforestation and Soil erosion إزالة الغابات وتآكل التربة

Excess application of pesticides etc





Excessuse & disposal of Plastics and polyethene wastes



Industrial seepage



Solid waste seepage

The most common chemicals involved in causing soil pollution are:

- Petroleum hydrocarbons
- Heavy metals
- Pesticides
- Solvents

Types of Soil Pollution

• Agricultural Soil Pollution

i) pollution of surface soil

ii) pollution of underground soil

• Soil pollution by industrial effluents and solid waste

i) pollution of surface soil

ii) disturbances in soil profile

• Pollution due to urban activities

i) pollution of surface soil

ii) pollution of underground soil

Agricultural Soil Pollution

- Plants on which we depend for food are under attack from insects, fungi, bacteria, viruses, rodents میٹھوولہ and other animals, and must compete with weeds گزوگیا for nutrients.
- To kill unwanted populations living in or on their crops, farmers use pesticides.
- The remnants پاشماوہکانی of such pesticides used on pests may get adsorbed by the soil particles and contaminate root crops grown in that soil.
- The consumption of such crops causes the pesticides remnants to enter human biological systems, affecting them adversely به شیوہیہکی نہرینی.

Agricultural effects:

- Reduced soil fertility
- Reduced nitrogen fixation
- Increased erodibility
- Larger loss of soil and nutrients
- Deposition of silt in tanks and reservoirs ترسب الطمي في الخزانات والخزانات
- Reduced crop yield
- Imbalance in soil fauna and flora • ناھاوسہنگی له گیانلہبهران و رووہکی خاکدا

Agricultural effects:



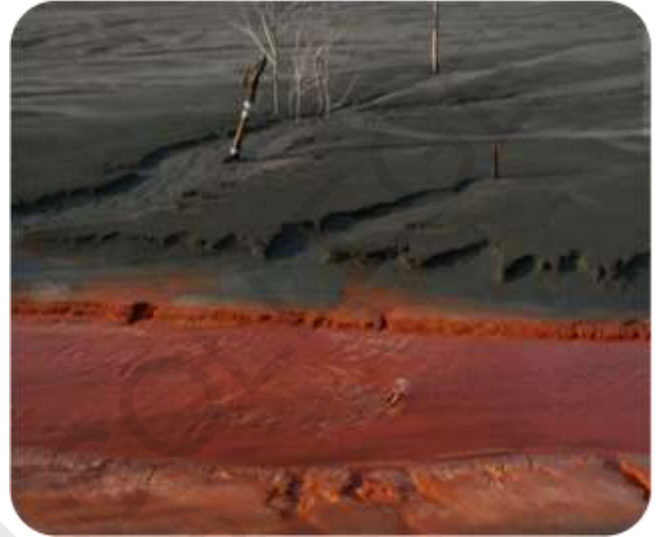
Industrial Soil Pollution

- Large quantity of solid wastes like unused and rejected chemicals (like sludge, press mud, saw dust, bottles, plastic materials etc.), unwanted industrial waste generated during manufacturing processes are dumped over on the surface of soil by almost all industries with difference in the degree.

بریکی زور له پاشماوهی رفق وهک ماده کیمیاییه بهکار نه هیئر او مکان و رتهکراو مکان (وهک شله، قوری پهستان، توزی برین، شوشه، کهرستهی پلاستیکی و هند)، پاشماوهی پیشهسازی نهخوار او که له کاتی پرۆسهکانی بهر همهیئاندا دروست دهبن له لایهن نزیکهی هموو پیشهسازییهکانهوه فریده درینه سهر رووی خاک به جیاوازی له پلهکهدا.

- Larger the production base, larger is the generation of wastes.
- Traditionally, these materials have been dumped around the factory site or around the entire city. Rarely, they are put to recycling or safe conversion.

Industrial Soil Pollution



Industrial effects:

- Dangerous chemicals entering underground water.
- Ecological imbalance.
- Release of pollutant gases.
- Increased salinity.
- Reduced vegetationالنباتات .

Industrial Effects:



Polluted land with dangerous chemicals

Soil Pollution due to Urbanization

- Urban activities generate large quantities of city wastes including several Biodegradable materials (like vegetables, animal wastes, papers, wooden pieces, carcasses جثث, plant twigs اغصان نباتية, leaves, cloth wastes as well as sweepings) and many non-biodegradable materials (such as plastic bags, plastic bottles, plastic wastes, glass bottles, glass pieces, stone / cement pieces).

Urbanization effects:

- Clogging of drains انسداد المجاري
- Inundation of areas ژیرناوکھوتنی ناوچہکان
- Public health problems
- Pollution of drinking water sources
- Foul smell بونی ناخوش and release of gases
- Waste management problems



Contamination of soil due to wastewater



Urbanization effects:

Some more effects of soil pollution:

- Pollution runs off into rivers and kills the fish, plants and other aquatic life.
- Crops and fodder علف grown on polluted soil may pass the pollutants on to the consumers.
- Polluted soil may no longer grow crops and fodder
- Soil structure is damaged (clay ionic structure impaired.)
- Corrosion of foundations and pipelines
- May release vapors and hydrocarbon into buildings and cellars
- May create toxic dust
- May poison children playing in the area



Some more effects of soil pollution:

Methods to control Soil Pollution

- **Reducing** chemical fertilizer and pesticide use.
- **Recycling** is another way to reduce and control soil pollution. Recycling paper, plastics and other materials reduces the volume of refuse in landfills, another common cause of soil pollution.
- **Reusing** of materials
- **De-forestation**, the cutting down of trees, causes erosion, pollution and the loss of fertility in the topsoil. Planting trees--or re-forestation--helps prevent soil erosion and pollution.

Weeds soak up الأعشاب الضارة تمتص minerals in the soil. Reducing weed growth helps reduce soil pollution. One of the more common methods of reducing weed growth is covering the soil with numerous layers of wet newspapers or a plastic sheet for several weeks before cultivation. This prevents light from reaching the weeds, which kills them.

- Designated pits الحفر المخصصة should be used for the dumping الإغراق of soil wastes. These wastes should be treated chemically and biologically to make them less toxic and hazardous.

