



Puducherry ENVIS Hub

(Environmental Information System)

Host Centre : Puducherry Pollution Control Committee
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05.12.2021



World Soil Day

THEME

"HALT SOIL SALINIZATION, BOOST SOIL PRODUCTIVITY"



ENVIS Puducherry



envispuducherry



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World soil day 2021

Theme

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**Halt soil salinization,
boost soil productivity**

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“Soil biodiversity is vital to soil health, which ultimately affects the health of our ecosystems and livelihoods.” – Lee Heng,

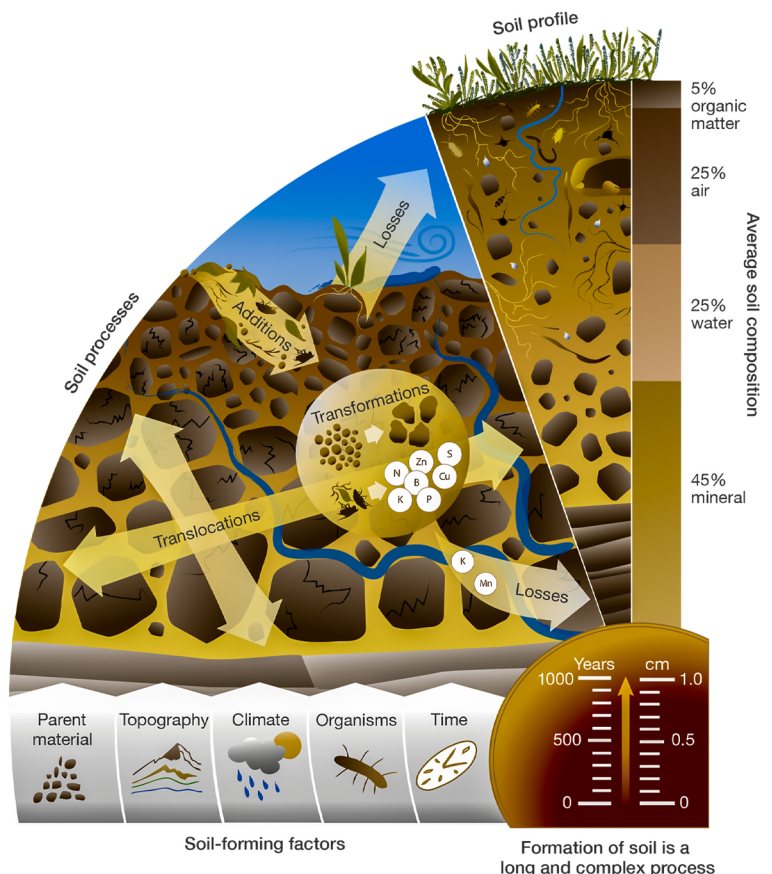
World Soil Day (WSD) is held annually on 5 December as a means to focus attention on the importance of healthy soil and to advocate for the sustainable management of soil resources.

WHAT IS SOIL?

Soils are complex mixtures of minerals, water, air, organic matter, and countless organisms that are the decaying remains of once-living things. It forms at the surface of land – it is the “skin of the earth.” Soil is capable of supporting plant life and is vital to life on earth.

THE FORMATION OF SOIL

Soils form over thousands of years through local interactions of climate, geology, hydrology and management. Physical and chemical alteration (weathering) break down parent materials (solid rocks and drift deposits). Finally, biological cycles of growth and decay produce the critical extra ingredient: organic matter (OM). Each field has unique soils.



Soil types in India

(Types of Soil)







Arid or Desert Soil

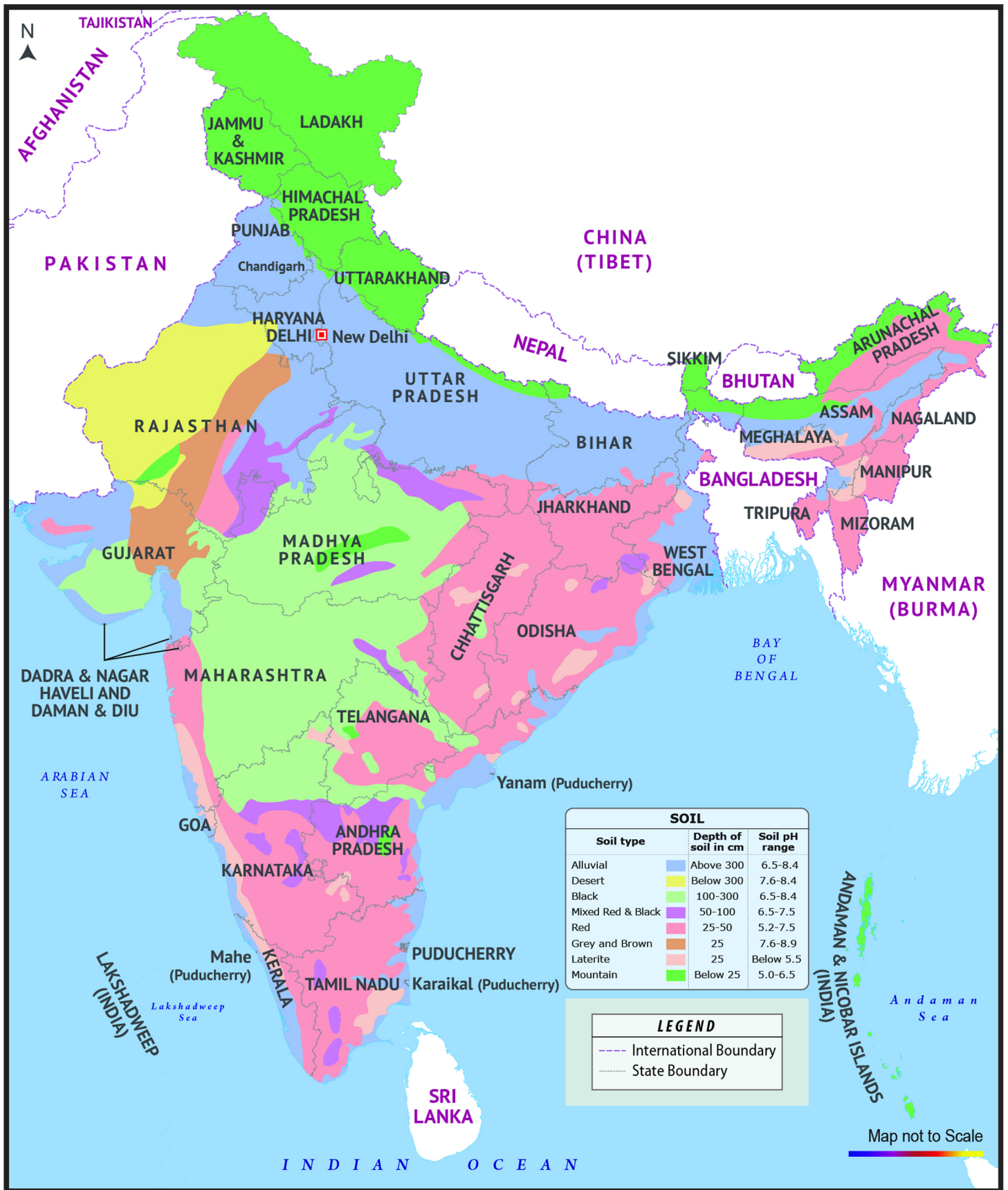


Saline and Alkaline Soil



Peaty, and Marshy Soil/Bog Soil

Soil Types



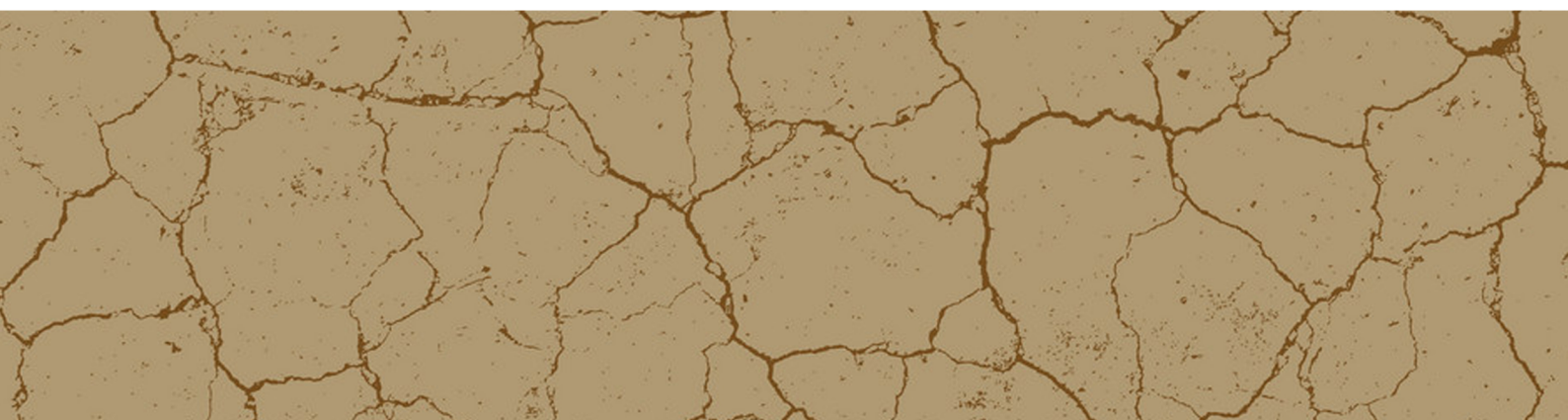
Source: Map of India

SOIL POLLUTION

Soil pollution is invisible to the human eye, but it compromises the quality of the food we eat, the water we drink and the air we breathe and puts human and environmental health at risk. Most contaminants originate from human activities such as industrial processes and mining, poor waste management, unsustainable farming practices, accidents ranging from small chemical spills to accidents at nuclear power plants, and the many effects of armed conflicts. Pollution knows no borders: contaminants are spread throughout terrestrial and aquatic ecosystems and many are distributed globally by atmospheric transport. In addition, they are redistributed through the global economy by way of food and production chains.

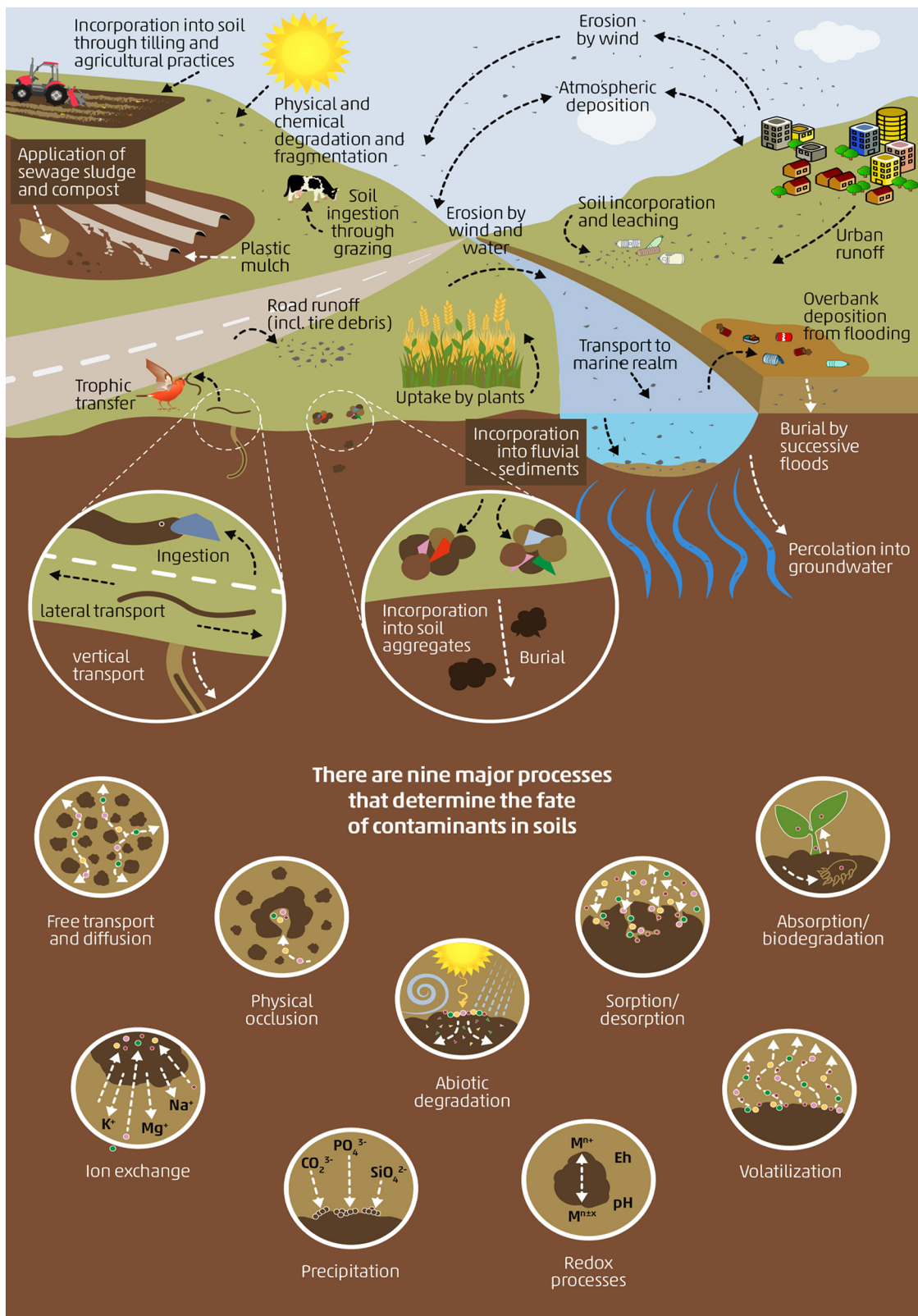
TYPES OF SOIL POLLUTION

- 1 Agriculture soil pollution caused due to the excessive use of pesticides and insecticides.*
- 2 Soil Pollution by industrial discharges of chemicals from mining and manufacturing of goods.*
- 3 Solid waste soil pollution/ Poor management or inefficient disposal of waste.*
- 4 Soil Pollution due to urban activities. etc*



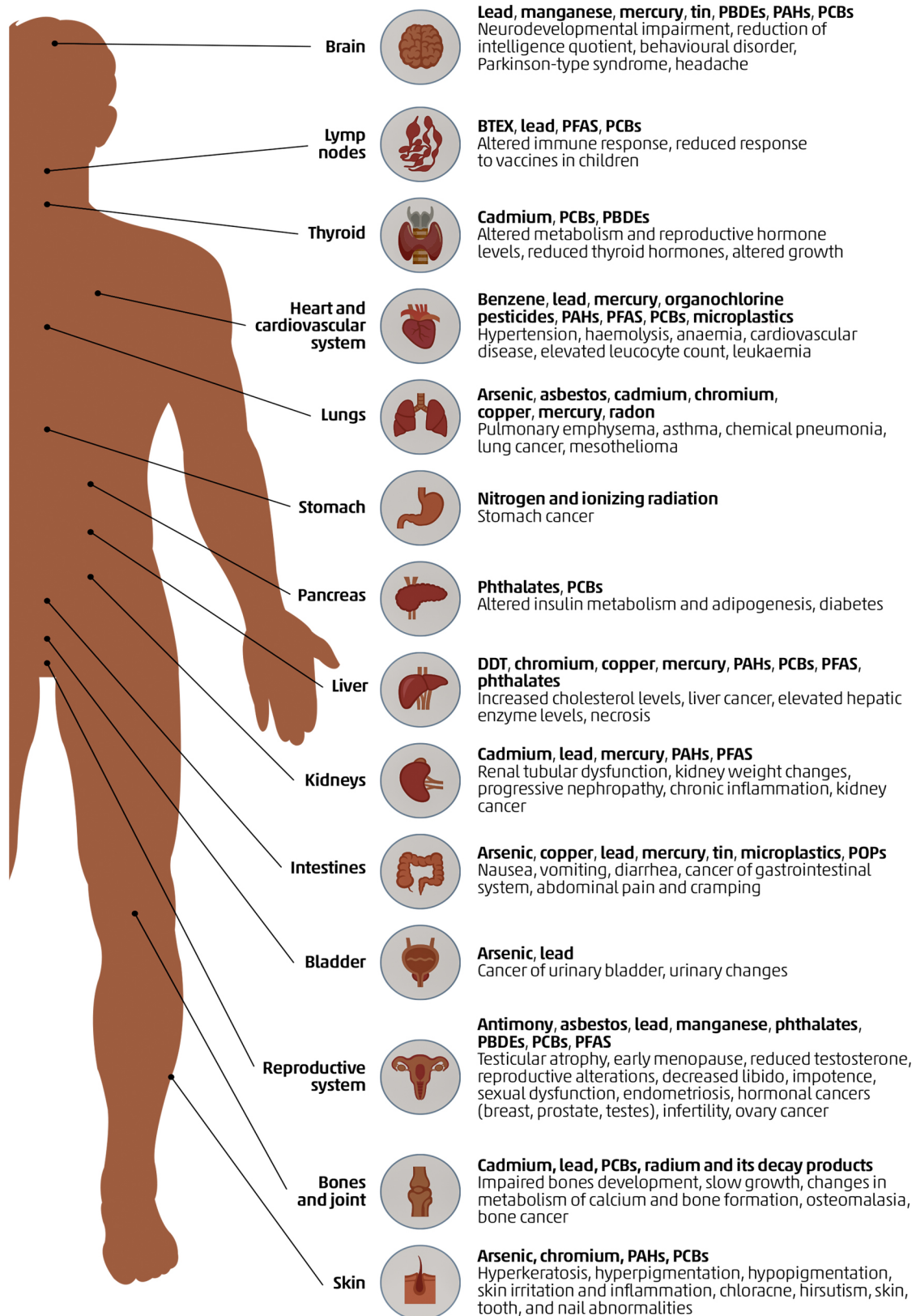
ROUTES OF ENTRANCE AND FATE OF CONTAMINANTS IN SOILS

The fate in the soil including retention or mobility to other environmental compartments and effects on living organisms is determined by the intrinsic characteristics of the contaminant and by the local soil properties. Identifying the sources of trace elements in the environment is of key importance to understanding their pollution patterns and for making decisions concerning pollution remediation.



SOIL POLLUTION IMPACT ON HUMAN HEALTH

Soil pollution often has a long-term impact on human health and many variables determine the relationship between exposure to soil pollution and disease, such as:



Main effects of soil contaminants on human health, indicating the organs or systems affected and the contaminants causing them

SOIL SALINIZATION: A THREAT TO OUR GLOBAL PANTRY

Salts are present naturally in soils and water, and they move freely through the soil. Naturally saline soils may support rich ecosystems, but natural processes such as droughts and human activities, especially improper irrigation, can increase how many salts are in soils, a process that is called salinization. Soil salinization breaks down our soils and reduces their ability to help our food grow.

Soil salinization and sodification are major soil degradation processes threatening ecosystem and are recognized as being among the most important problems at a global level for agricultural production, food security and sustainability in arid and semi-arid regions.

Salt-affected soils have serious impacts on soil functions, such as in the decrease in agricultural productivity, water quality, soil biodiversity, and soil erosion. Salt-affected soils have a decreased ability to act as a buffer and filter against pollutants. Salt-affected soils reduce both the ability of crops to take up water and the availability of micronutrients. They also concentrate ions that are toxic to plants and may degrade the soil structure.

PRESENCE OF EARTHWORMS AND BIOPORES IN SOIL AS INDICATORS OF SOIL HEALTH



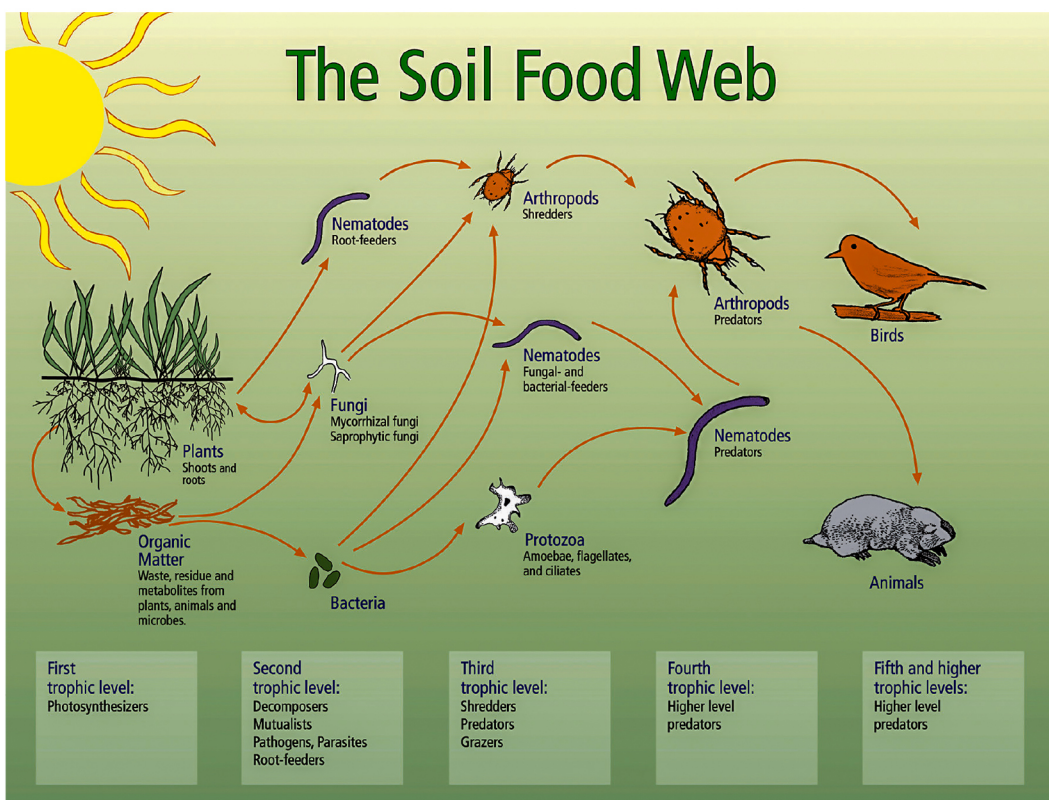
SIGNIFICANCE OF SOIL

Soil performs many critical functions in almost any ecosystem (whether a farm, forest, prairie, marsh, or suburban watershed). There are general roles that soils play:

- 1** Soils serve as media for growth of all kinds of plants.
- 2** Soils modify the atmosphere by emitting and absorbing gases (carbon dioxide, methane, water vapor, and the like) and dust.

- 3 Soils provide habitat for animals that live in the soil (such as groundhogs and mice) to organisms (such as bacteria and fungi), that account for most of the living things on Earth.
- 4 Soils absorb, hold, release, alter, and purify most of the water in terrestrial systems.
- 5 Soils process recycled nutrients, including carbon, so that living things can use them over and over again.
- 6 Soils serve as engineering media for construction of foundations, roadbeds, dams and buildings, and preserve or destroy artifacts of human endeavors.
- 7 Soils act as a living filter to clean water before it moves into an aquifer.
- 8 Soil is a living resource and home to more than 25% the planet's plant life.
- 9 95% of our food comes from the soil.
- 10 Quality and quantity of fruits, vegetables and food grains depend on the health of the soil .
- 11 Soil organisms are constantly at work to sustain life on Earth.
- 12 Quality of soil helps fight climate change and global warming.













THE SOIL FOOD WEB



The soil food web describing the various feeding relationships of the organisms in the soil

The biological component of the soil is perhaps the most intriguing attribute because it comprises both the living organisms and the dead organic materials they feed upon. It is important to note that bacteria, fungi, and many other living organisms in the soil, in association with living plants and dead organic matter, are the key drivers that maintain and even regenerate healthy soil functions. The soil food web is extremely complex, with different classes of organisms occupying different trophic (feeding) levels (Scheu, 2002). There are five trophic levels defined for the soil food web that transform nutrients from one form to another

WHAT WE MUST DO TO STOP SOIL POLLUTION

-  Plant more trees
-  Reduce Deforestation and Begin Reforestation
-  Using reusable bags instead of plastic
-  Use bio-fertilisers
-  Choose eco-friendly, gardening, cleaning and personal care products.
-  Dispose of hazardous waste like batteries responsibly.
-  Compost your food waste.
-  Adopt a plant-based diet.
-  Recycle your waste
-  Reduce your toxic waste levels
-  Reduce your waste in genera
-  Use natural soil additives

**“The nation that destroys its soil,
destroys itself.”**

– Franklin D. Roosevelt