Environmental pollution

Dr. Vijay K. Khorwal

CHE 110: Environmental Studies

Unit - 4

Environmental pollution

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Vijaykant Khorwal
Ph.D. Chemistry
(IIT Bombay,Mumbai)

Radiation pollution by cellular phones

- EMR is the radiation produced by sources such as electrical appliances, power lines, wiring in buildings, and electrical appliances etc.
- The extensive use of cellular phones, also exposes human beings to a large dose of EMR, which poses a serious health hazard for long duration each day.
- It being a radio that sends signals on waves to a base station
- Carrier signal consists of two radiation fields: a near-field plume and a far-field plume.
- Living organism is also generated EM fields at the cellular, tissue and organ level, called biofield.
- Cellular fields are interfere with the human biofield when they are in contact.
- If biofield disturbs , causes health disorders.
- The emr from the cell and from the tower carrying signals result somewhat in brain tumours, genetic damage

Soil Pollution

- Any change in the physical, chemical, and biological properties of soil due to natural or anthropogenic activities is known as *soil pollution*.

- Solid waste is that material (such as domestic trash, garbage, metal scrap etc.)
- Which arises from various human activities and which is normally discarded as useless or unwanted.
- It is responsible for land pollution in urban and industrial areas.

Major Types of Soil Pollutants and their Impact on Human Health

- **Heavy metals-**
  - It accumulate in the top few inches of soil, it pose a danger to important organs of humans such as the blood, kidneys, liver and nervous system.
- **Dioxins –**
  - dioxins are byproducts released with the production of pesticides and other industrial processes, released in air and settle down on soil. Its contamination in soil lead to nerve and liver damage as well as cancer.
- **Pesticides, Fertilizers and other Agricultural products-**
  - Although its important for improving the quality of soil, but it is also well known for its harmful effects, it cause development of cancer, heavy metal poisoning which contain heavy metals.

Continue…

- **Lead**
  - lead is available in soil naturally, but small amount of it deposits left by automobile exhaust when leaded gasoline is used.
  - Main sources is lead battery manufacturing plants or brass foundries. Inhalation of lead in humans causes damage in nervous system, urinary system and the reproductive system.
- **Cadmium**
  - used in metallurgical and electrical industries, exposed in atmosphere from the phosphate fertilizers, detergents and petroleum products.
  - Long term exposure of Cd may lead to renal dysfunction and obstructive lung disease, demineralization of the bone substances and osteoporosis.

Causes of Soil Pollution

- Natural causes
  - Earthquakes
    - landslide and
      - hurricanes etc.
- Manmade causes
  - Industrial waste
    - Urban waste
      - Mining
        - Agricultural waste
          - Domestic waste and garbage
            - Radioactive wastes

Effects of Soil Pollution

- Reducing the fertility of the soil and degrading the quality of land.
- Increase in the the growth of several mosquitoes, flies which cause diseases in human beings .
- Loss of soil microorganism
- Water Pollution
- Causing diverse health effects such as cancer, deformities in bones, etc in human beings
- Loss of aesthetic value of land.

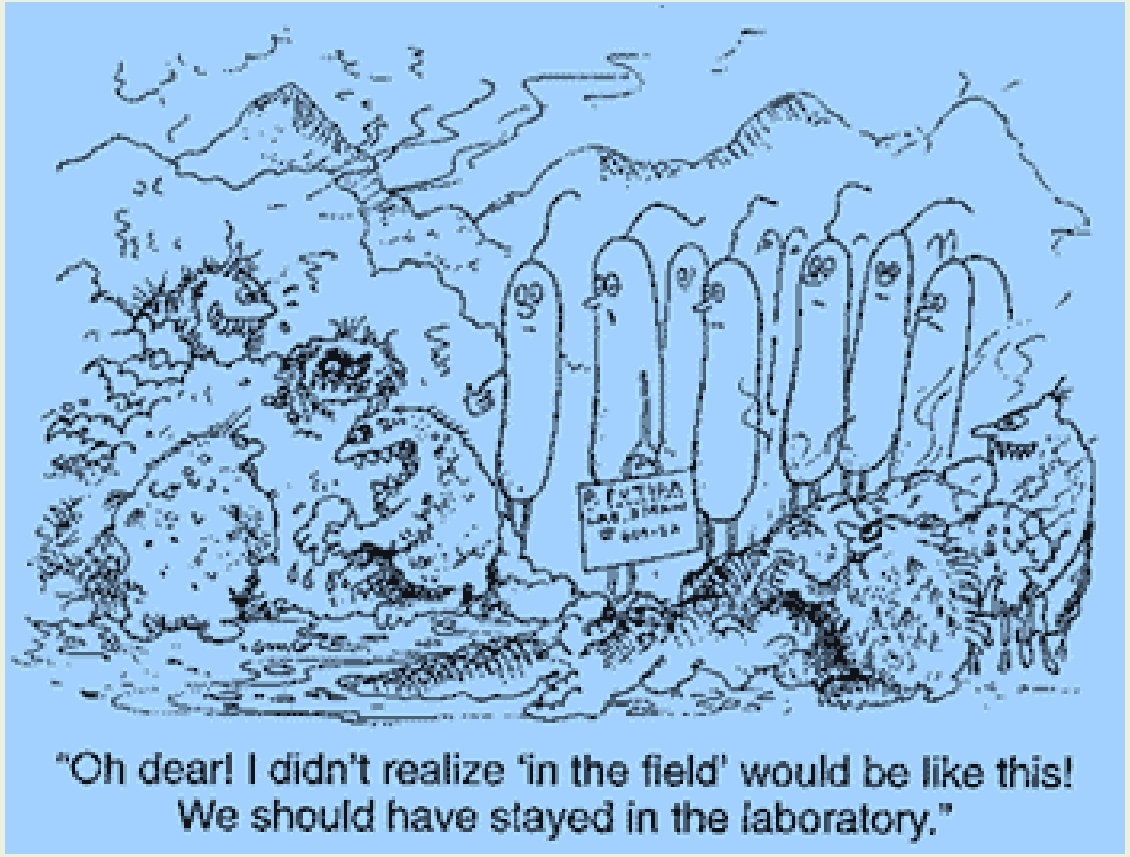
Control of Soil Pollution

- ✓ The industrial waste must be treated in the proper treatment plants and then allowed to be discharged through the proper drains.
- ✓ The city garbage must be properly separated so that the bio-degradable waste may be used to make fertilizers and non biodegradable waste may be recycled.
- ✓ Soil can be conserved by planting trees like mango, neem, etc. around the fields so that their leaves continuously supply the nutrients to the soil.

Control of Soil Pollution

- ✓ The release of radioactive materials in the soil should be minimized.
- ✓ Activities such as nuclear testing should be prohibited.
- ✓ Paper, glass, tin, iron present in solid waste should be reused after recycling.
- ✓ Solid waste can also be used for electricity generation by burning the solid.
- ✓ Use of chemical fertilizers and toxic chemicals should be minimized as far as possible.

Bioremediation



"Oh dear! I didn't realize 'in the field' would be like this!
We should have stayed in the laboratory."

Bioremediation

- Definition
  - Use of living organisms to transform, destroy or immobilize contaminants
- Goal
  - Detoxification of the parent compound(s) and conversion to products that are no longer hazardous to human health and the environment.
- Forms of Bioremediation
  - In situ Bioremediation: Treating the contaminated material at the site.
  - Ex situ Bioremediation: Removal of contaminated material and to be treated elsewhere.

https://www.youtube.com/watch?v=vP3pbh_-pu8&feature=youtu.be