CURE

Clean Up & Recycle for Environment

IMPACT OF WASTE ON HEALTH AND THE ENVIRONMENT

CURE Jaipur, Rajasthan

Able to Understand

- Awareness on the potential solid waste (hazardous, non hazardous and mixed waste) disposal poses to human health and the environment.
- Health and environment impacts of solid wastes based on reports from studies
- Preventive measures

Types of waste

- Non Hazardous waste: refuse, garbage, sludge, municipal trash.
- Hazardous waste: solvents acid, heavy metals, pesticides, and chemical sludges
- Radioactive: high and low-level radioactive waste
- Mixed waste: Radioactive organic liquids, radio active heavy metals.

Waste treatment and disposal

Waste treatment

- Incineration
- Solidification
- Heat treatment:
- Chemical treatment

Waste disposal

- Landfills
- Underground injection wells
- Waste piles
- land treatment
- In less developed countries flowing rivers

Waste Treatments

- Incineration:
- Solidification: solid waste are melted or evaporated to produce a sand like residue.
- Heat treatment: Heat applied at moderate temperature, is used in treating volatile solvents.
- Chemical treatment: is the application of chemical treatment in the treatment of corrosive solid.

Waste Disposal

- Landfills: waste is placed into or onto the land in disposal facilities.
- Underground injection wells: waste are injected under pressure into a steel and concrete-encased shafts placed deep in the earth.
- Waste piles: is accumulations of insoluble solid, non flowing hazard waste. Piles serves as temporary or final disposal.

Waste Disposal

- land treatment: is a process in which solid waste, such as sludge from wastes is applied onto or incorporated into the soil surface.

- Waste are disposed in flowing rivers in less developed countries.

Causal of increase in solid waste

- Population growth
- Increase in industrials manufacturing
- Urbanization
- Modernization

Modernization, technological advancement and increase in global population created rising in demand for food and other essentials. This has resulted to rise in the amount of waste being generated daily by each household. 158 million tons of municipal solid waste is produced annually in U.S

Groups at risks due to solid waste

The groups at risk from the unscientific waste disposal include:

- Populations in areas where there is no proper waste treatment method.
- children
- Waste workers
- Populations living close to waste dump
- Animals

SOURCES OF HUMAN EXPOSURES

Exposures occurs through

- Ingestion of contaminated water or food
- Contact with disease vectors
- Inhalation
- Dermal

Hazardous substances in EEE

Substance	Occurence in EEE	Possible adverse effects
PBDEs, PBBs	Flame retardants in plastics	Hormonal effects, under thermal treatment possible formation of dioxines and furanes
Polychlorinated biphenyls (PCB)	Condensers, transformers	Cancer, effects on the immune system, reproductive system, nervous system, endocrine system and other health effects
Chlorofluorocarbon (CFC)	Cooling units, insulation foam	deleterious effect on the ozone layer -> increased incidence of skin cancer / genetic damage
Americium (Am)	Smoke detectors	radioactive element
Antimony	Flame retardants in plastics	carcinogenic potential
Arsenic	gallium arsenide inlight emitting diodes	skin diseases, decrease nerve conduction velocity, lung cancer
Barium	Getters in CRT	brain swelling, muscle weakness, damage to the heart, liver and spleen
Cadmium	NiCd-batteries, fluorescent layer (CRT screens), printer inks and toners	symptoms of poisoning (weakness, fever, headache, chills, sweating and muscular pain), lung cancer and kidney damage
Chromium VI	Data tapes, floppy-disks	irritating to eyes, skin and mucous membranes, DNA damage
Lead	CRT screens, batteries, printed wiring boards	vomiting, diarrhea, convulsions, coma or even death, appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability and headache
Mercury	Fluorescent lamps, some alkaline batteries, switches	brain and liver damage

E-WASTE AND HUMAN HEALTH

Many of the materials used to make electronics are not at all healthy for us. If they **ultimately end up in our bodies** (easier than you think), they wreak havoc on our health.

Electronics Toxins

Antimony: Poisonous

Arsenic: Poisonous

Barium: Gastrointestinal, neurological, and cardiovascular toxin

Beryllium: Carcinogenic, Acute Beryllium Disease

Cadmium: Carcinogenic, organ toxin

Chromium: Organ toxin, carcinogenic

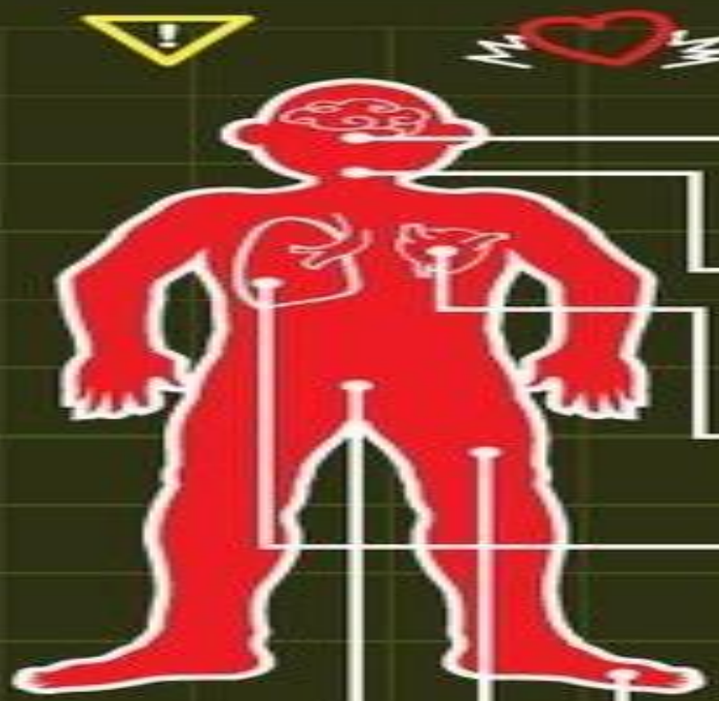
Dioxins: Carcinogenic

Lead: Central and peripheral nervous system toxin

Mercury: Central nervous system and endocrine system toxin

Nickel: Carcinogenic, respiratory toxin

Polychlorinated Biphenyls (PCBs): Blood, skin, and organ toxin



Health Impacts

- Nose bleeds, seizures, retardation, child development, sinus perforations
- Mouth, teeth, and gum damage; thyroid damage
- High blood pressure, irregular heartbeat
- Lung damage, asthma, bronchitis, cancer
- Kidney, liver, digestive system damage; fetus neurological damage; ulcers
- Skin cancer, paralysis
- DEATH

Component and Composition	Where Does it Exist?	Health Issues
Lead , 1.98 Kg	Solder in printed circuit boards and gaskets in computer monitors	➢ Damage to central and peripheral nervous systems, blood systems and kidney damage. ➢ Affects brain development of children.
Cadmium,2.9 Gms	Chip resistors and semiconductors	➢ Accumulates in kidney and liver. ➢ Causes neural damage.
Mercury, 0.6 Gms	Relays and switches and circuit boards	➢ Chronic damage to the brain. ➢ Respiratory and skin disorders due to bioaccumulation in fishes.
Chromium, 1.98 Gms	Corrosion protection of untreated and galvanized steel plates, decorator or hardener for steel housings	➢ Asthmatic bronchitis. ➢ DNA damage.
Plastic, 7.2 Gms	Cabling and computer housing	➢ Reproductive and developmental problems; ➢ Immune system damage; ➢ Interfere with regulatory hormones
Barium, 9.9 Gms	Front panel of CRTs	➢ Muscle weakness; ➢ Damage to heart, liver and spleen.
Beryllium, 4.9 Gms	Motherboard	➢ Carcinogenic (lung cancer) ➢ Inhalation of fumes and dust. ➢ Causes chronic beryllium disease ➢ Skin diseases such as warts.
Arsenic, 0.4 Gms	Plastic housing of electronic equipments and circuit boards.	➢ Disrupts endocrine system functions

Points of contact

- Soil adsorption, storage and biodegrading
- Plant uptake
- Ventilation
- Runoff
- Leaching
- Insects, birds, rats, flies and animals
- Direct dumping of untreated waste in seas, rivers and lakes results in the plants and animals that feed on it

Impacts of solid waste on health

Chemical poisoning through chemical inhalation

Uncollected waste can obstruct the storm water runoff resulting in flood

Low birth weight

Cancer

Congenital malformations

Neurological disease

Impacts of solid waste on health

- Nausea and vomiting
- Increase in hospitalization of diabetic residents living near hazard waste sites.
- Mercury toxicity from eating fish with high levels of mercury.

Impacts of solid waste on Environment.

- Waste breaks down in landfills to form methane, a potent greenhouse gas
- Change in climate and destruction of ozone layer due to waste biodegradable
- Littering, due to waste pollutions, illegal dumping, Leaching: is a process by which solid waste enter soil and ground water and contaminating them.

PREVENTIVE MEASURES

Waste Minimization is a process of reducing waste produce by individuals, communities and companies, which reduces the impact of chemical wastes on the environment to the greatest extent.

Household level of proper segregation of waste, recycling and reuse.

Process and product substitution e.g. use paper bag instead of plastic bags.

Thank you